

February 2023

VOLUME 2

TRANSPORTATION IMPACT STUDY

for

MOUNT JOY TOWN CENTER

on

Existing Commercially Zoned Land

in

**Mount Joy Township
Lancaster County, Pennsylvania**

Prepared for:

Penmark Management Company, Inc
1000 Germantown Pike, Suite A-2
Plymouth Meeting, PA 19462

Prepared by:

Grove Miller Engineering, Inc.
Gregory E. Creasy, P.E.
4800 Linglestown Road, Suite 307
Harrisburg, PA 17112
(717) 545-3636
www.grovemiller.com

APPENDIX G

COMMITTED DEVELOPMENTS

TRANSPORTATION IMPACT STUDY

FEATHERTON CROSSING PHASE 5 MOUNT JOY TOWNSHIP LANCASTER COUNTY, PA

February 2022
Revised March 2022

Prepared for:

*C2C Design Group
37 East Penn Avenue
Wernersville, PA 19565*



Prepared by:

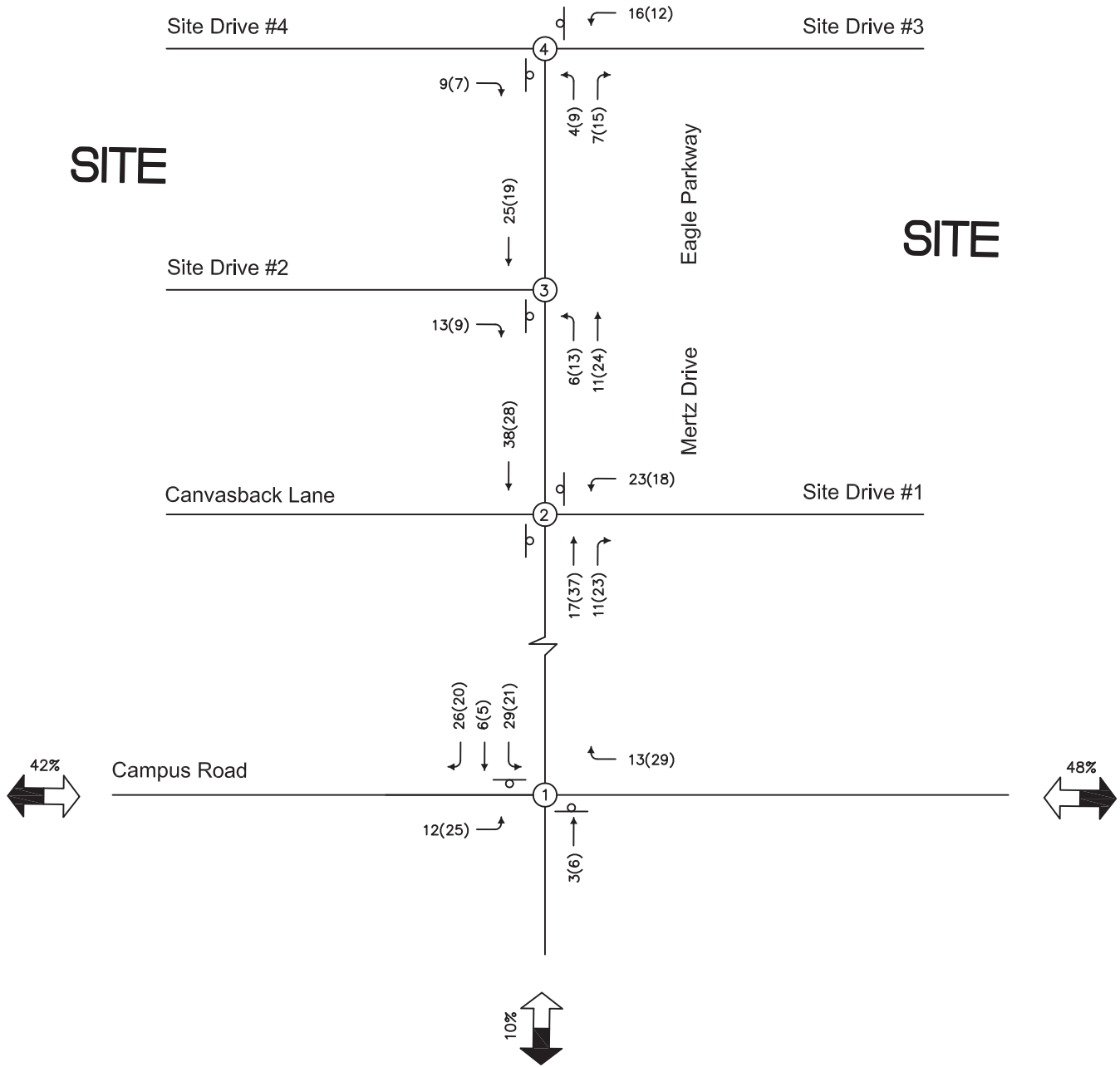
 **Dimmerling Consulting, Inc.**

*Commonwealth Plaza
200 Spring Ridge Drive, Suite 204
Wyomissing, PA 19610*



SITE

SITE



LEGEND

- ① INTERSECTION REFERENCE NUMBER
- ↷ TURNING MOVEMENT
- XXX AM PEAK HOUR
- (XXX) PM PEAK HOUR
- ⊖ STOP SIGN
- ⇨ APPROACH TRAFFIC DIRECTION
- ➡ DEPARTURE TRAFFIC DIRECTION

SCHEMATIC, NOT TO SCALE

FIGURE 3

TRIP ASSIGNMENTS

FEATHERTON CROSSING - PHASE 5
Mount Joy Township, Lancaster County, PA



Dimmerling Consulting, Inc.
Traffic and Transportation Engineering Services

Commonwealth Plaza
200 Spring Ridge Drive, Suite 204
Wyomissing, PA 19610

Phone (610) 898-8451

Fax (610) 898-8449

Featherton Crossing Phase 5 Location Map



★ Site Location

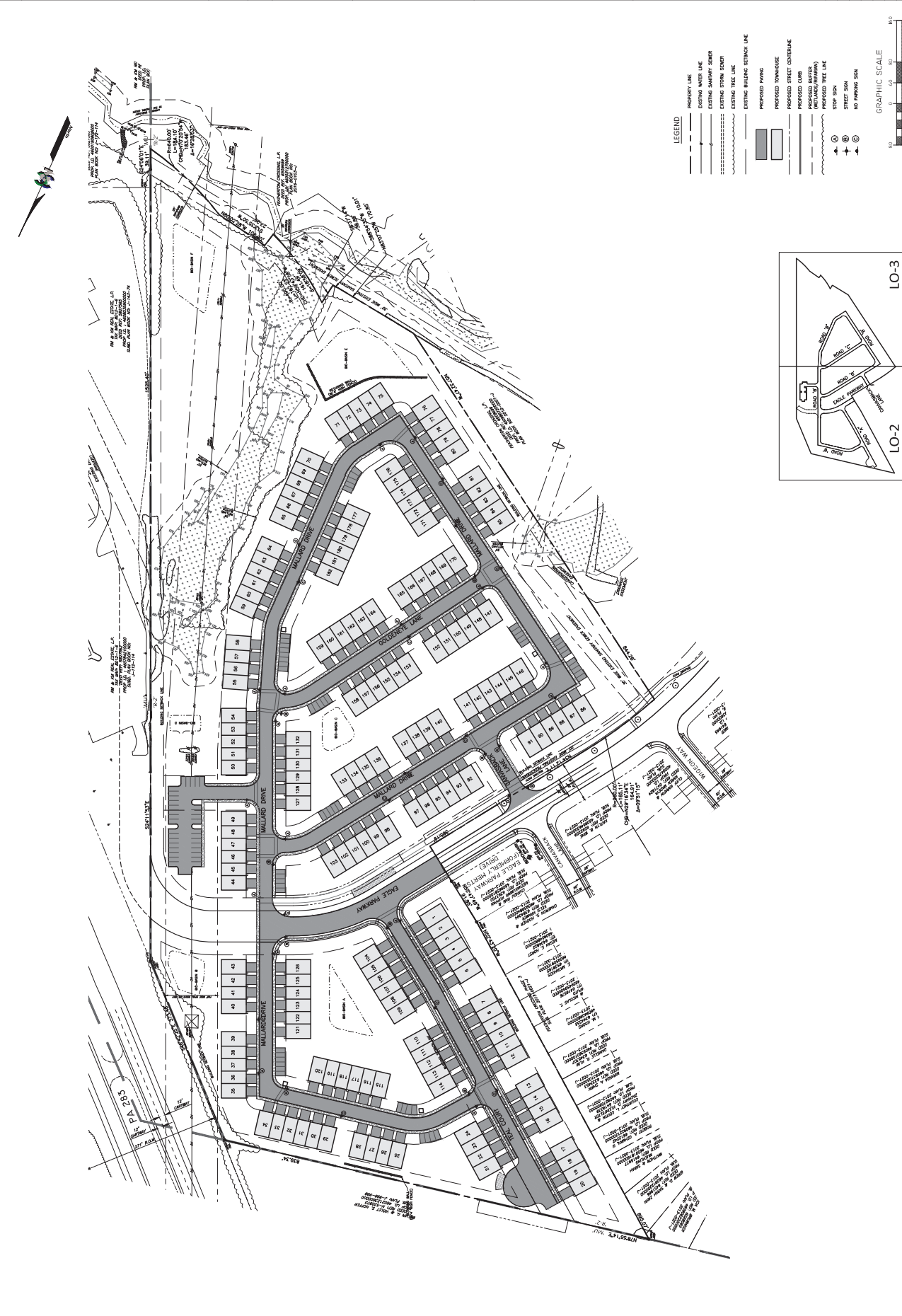
PRELIMINARY/FINAL PLAN
FEATHERTON CROSSING
PHASE 5

OVERALL LAYOUT PLAN
C2C DESIGN GROUP
Civil Engineering and Surveying
Solutions from Concept to Construction
610.860.6050 www.c2cdg.com
27 East Penn Avenue
Wilmington, PA 19865



REV NO.	DATE	DESCRIPTION
1	11/1/2021	ISSUED PER TOWNSHIP REVIEW LETTER DATED 10/21/2021
2	12/26/2021	ISSUED PER TOWNSHIP REVIEW LETTER DATED 11/24/2021

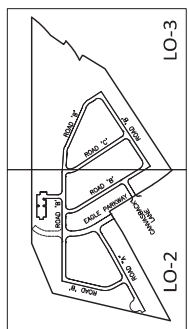
PROJECT NO. FE58-PTC-05
 SHEET NO. 1 OF 10
 DRAWN BY: CAD
 CHECKED BY: BCF
 DATE: 10/21/21
 SHEET NO. 4 OF 99



LEGEND

- PROPOSED LINE
- EXISTING LINE
- EXISTING DRAINAGE SWALE
- EXISTING DRAINAGE SWALE
- EXISTING TREE LINE
- EXISTING BUILDING DETRACK LINE
- PROPOSED DRIVE
- PROPOSED TOWNHOUSE
- PROPOSED STREET CENTERLINE
- PROPOSED CURB
- PROPOSED BUTTER (RELANDING/REPAIRING) SIDEWALK LINE
- STOP SIGN
- STREET SIGN
- NO PARKING SIGN

GRAPHIC SCALE
 (IN FEET)
 1 INCH = 60 FT.



NOT TO SCALE. ALL DIMENSIONS AND LOCATIONS SHOWN ARE APPROXIMATE. THE USER SHALL VERIFY ALL DIMENSIONS AND LOCATIONS SHOWN ON THIS PLAN. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

**TRAFFIC IMPACT ASSESSMENT
FOR THE
WESTBROOKE IV – PHASE 1
RESIDENTIAL DEVELOPMENT**

**MOUNT JOY TOWNSHIP
LANCASTER COUNTY**

**FEBRUARY 2018
REVISED MAY 2018**

PROJECT 481-037

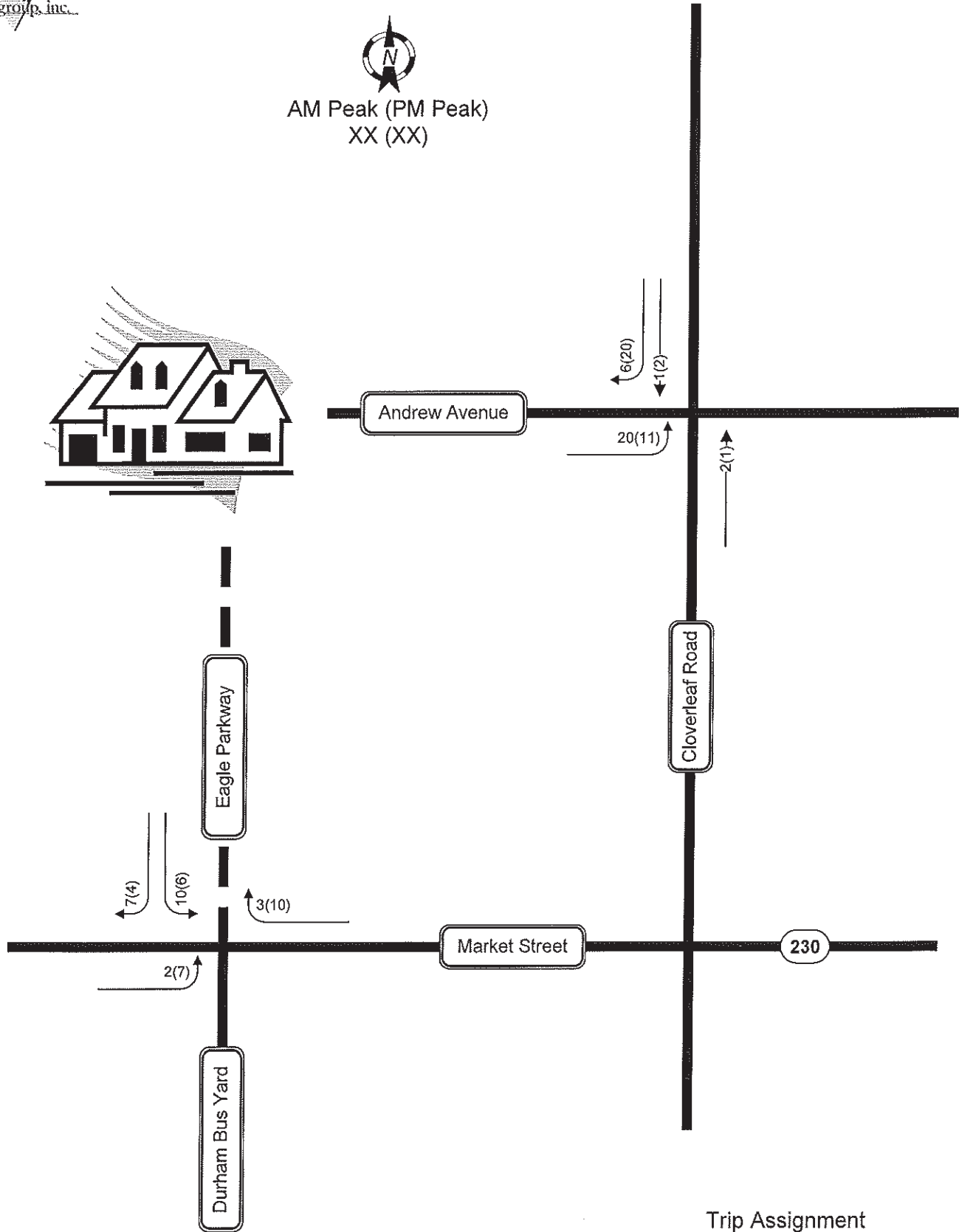
Prepared by: Mark L. Henise, P.E., PTOE



**ELA GROUP, INC.
LITITZ, PA
05/12/2018**



AM Peak (PM Peak)
XX (XX)



Trip Assignment
Exhibit 7

Raffensberger Tract

Transportation Impact Study

Mount Joy Township
Lancaster County, Pennsylvania

For Submission to:

Mount Joy Township

Prepared for:

Mr. Gerry Horst, President
Horst & Son, Inc.
120 North Pointe Blvd., #101
Lancaster, PA 17601

December 9, 2020

RETTEW Project No.: 019792000

Prepared by:

RETTEWSM

3020 Columbia Avenue
Lancaster, PA 17603

Tel: (717) 394-3721 Fax: (717) 394-1063

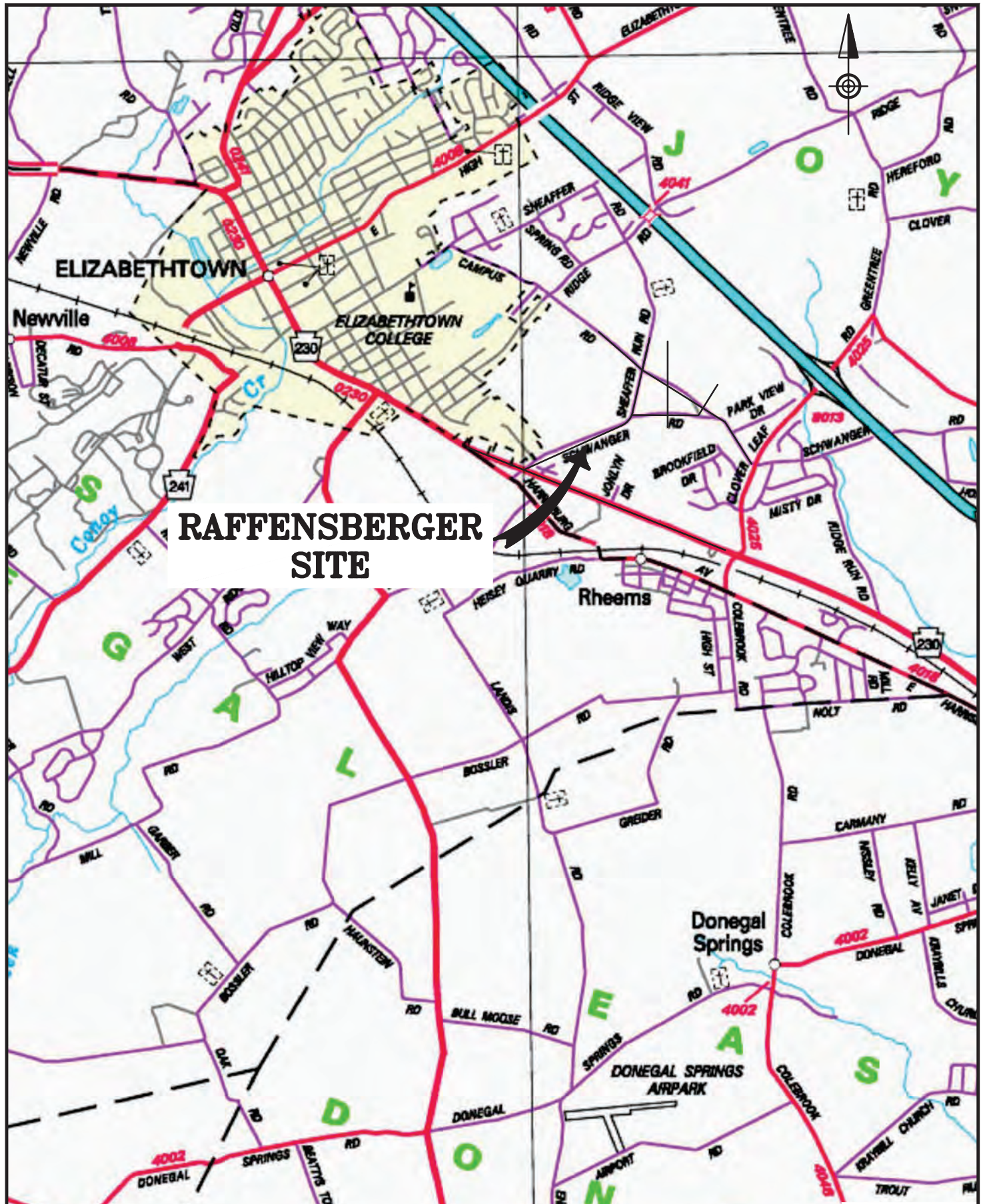
e-mail: jschick@rettew.com

Prepared by: _____

John M. Schick, EIT
Senior Project Manager - Transportation Engineering

Under the Direction of: _____

Jeffrey Case, PE
Director of Transportation Engineering



**RAFFENSBERGER
SITE**

COPYRIGHT: COMMONWEALTH OF PENNSYLVANIA, GENERAL HIGHWAY MAP LANCASTER COUNTY

NOT TO SCALE

Figure 1
Site Location
RAFFENSBERGER

Mount Joy Township

Lancaster County, PA

RETTEWSM

3020 Columbia Ave., Lancaster, PA 17603
TEL (717) 394-3721 FAX (717) 394-1063

C:_RettewVault\WIP\019792000-Raffensberger\Sheets\TR\019792000-TR-TIS_FIGS.dwg

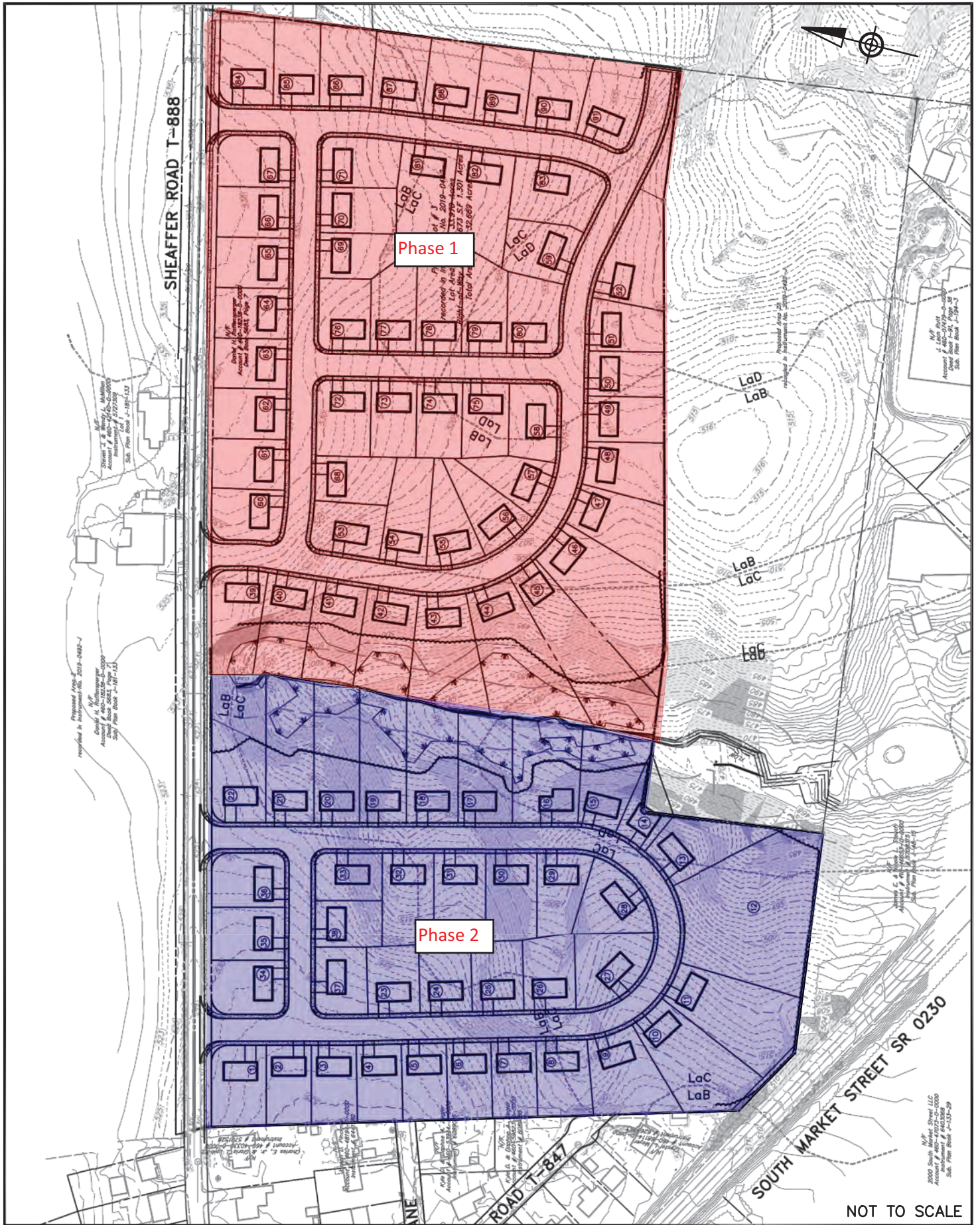


Figure 2
 Site Layout
RAFFENSBERGER

RAFFENSBERGER

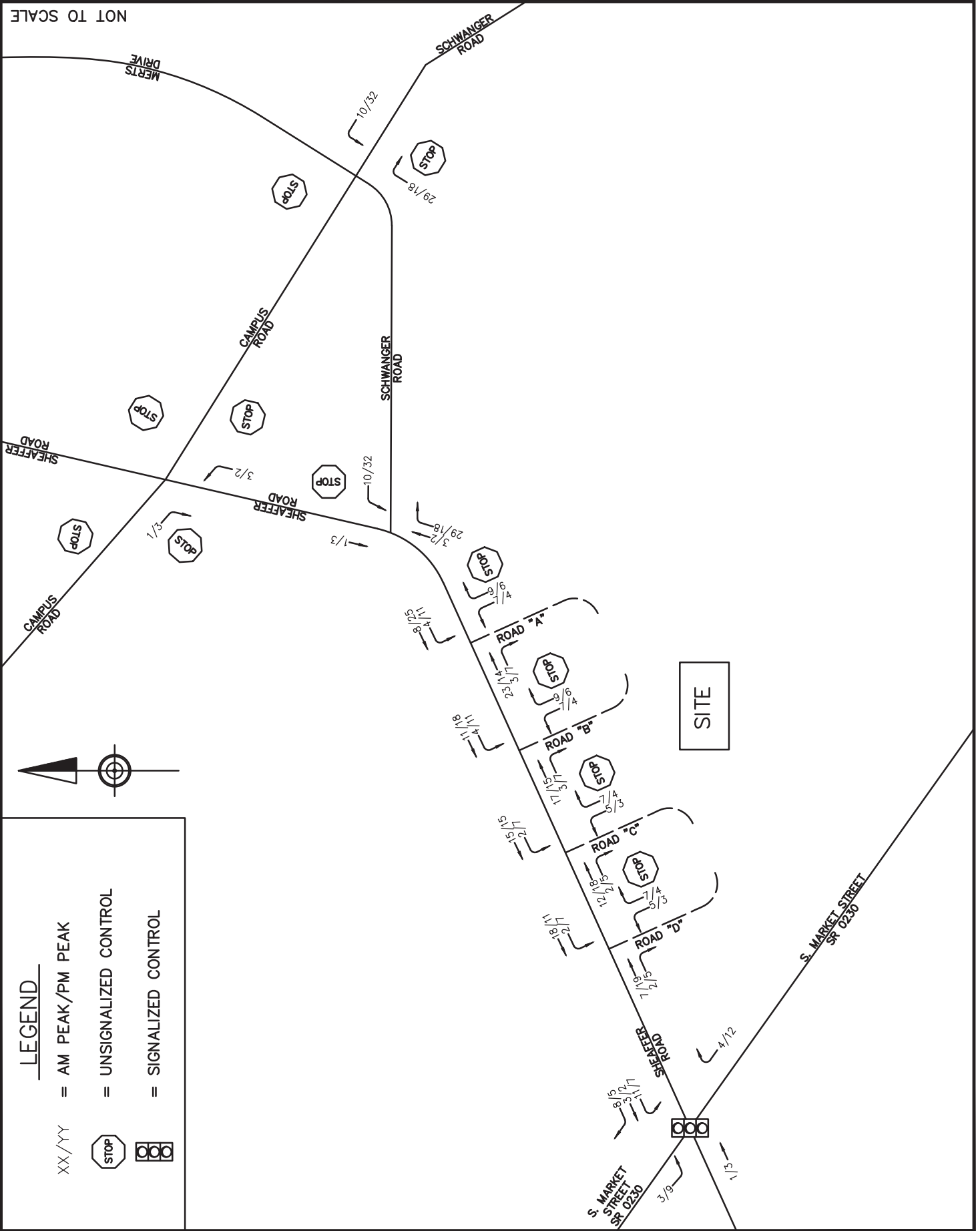
Site-Generated AM And PM Peak Hour Traffic Volumes

Figure 7



3020 Columbia Ave., Lancaster, PA 17603
 TEL (717) 394-3721 FAX (717) 394-1063

NOT TO SCALE



Transportation Impact Study

for the

Proposed 1376 Campus Road Development

Mount Joy Township
Lancaster County, Pennsylvania

prepared for

Catalyst Development Group

June 2021

prepared by



PA Office
2 East Market Street, Suite 2
York, PA 17401-1206
T: (717) 846-4660

MD Office
901 Dulaney Valley Road, Suite 805
Towson, MD 21204-2624
T: (443) 275-2344

www.consulttrg.com



A handwritten signature in blue ink that reads "Christopher E. Schwab".

Christopher E. Schwab, P.E.
Pennsylvania P.E. No. 074341

Project No.228.024.21

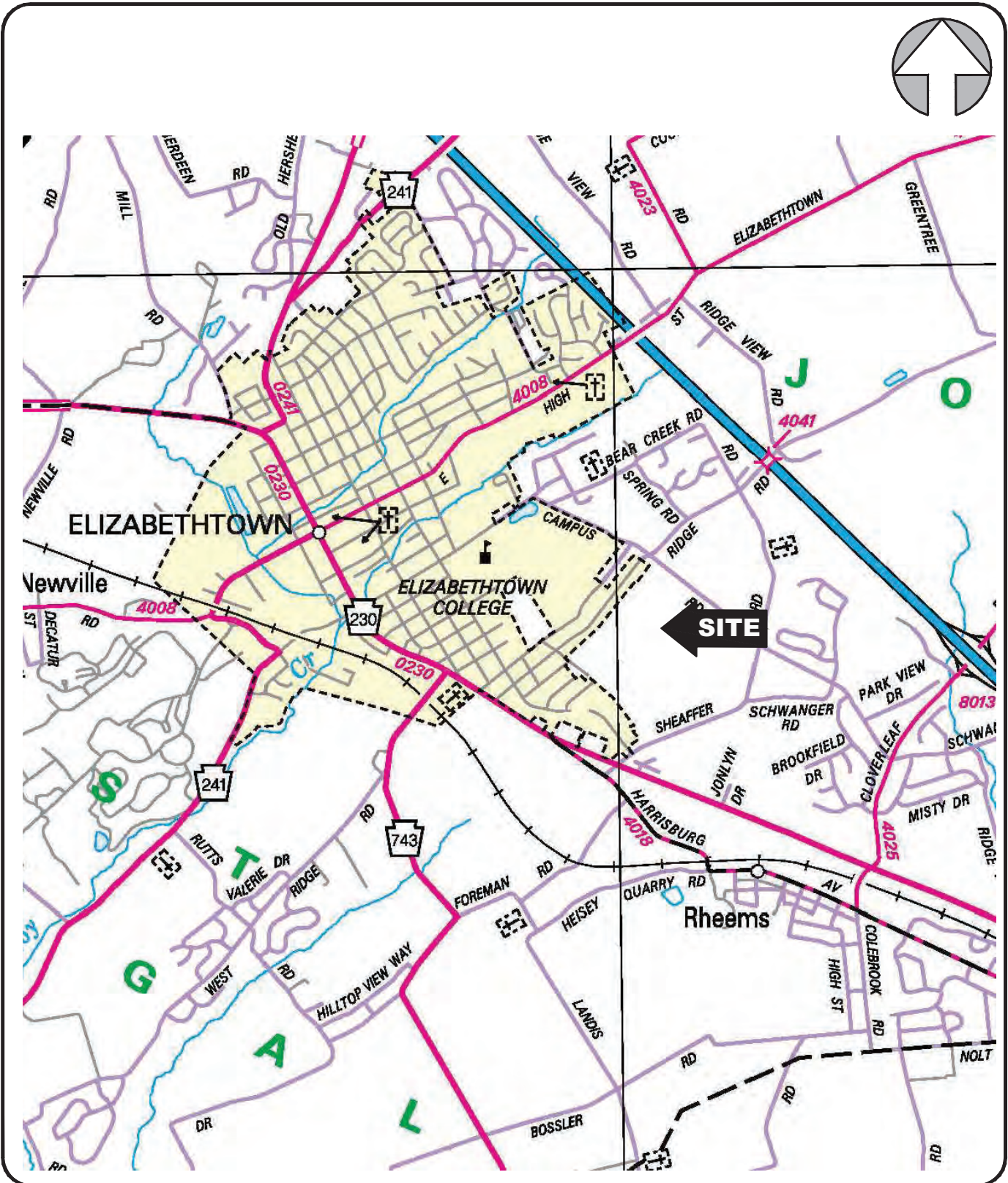
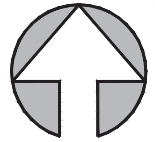
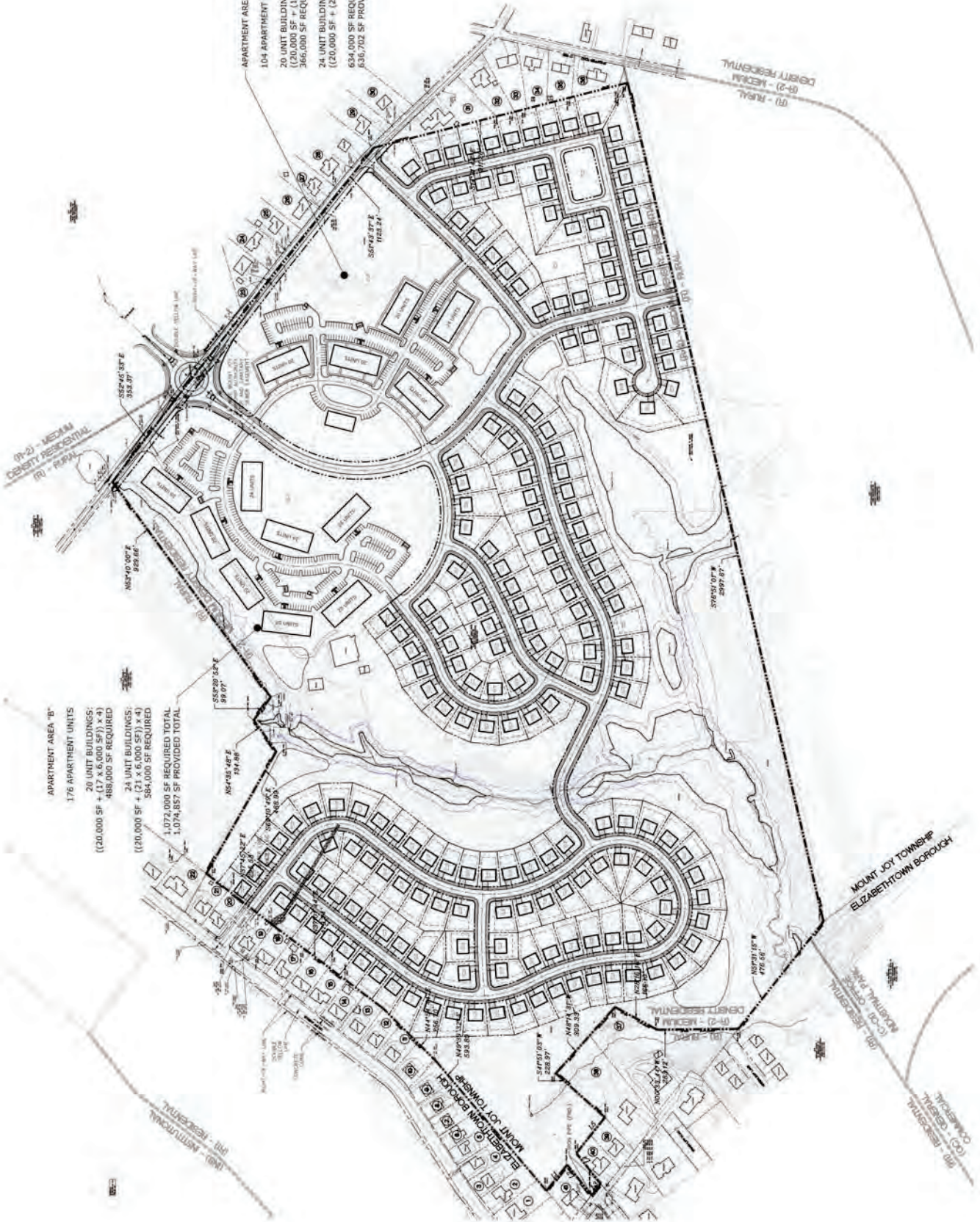


FIGURE 1
SITE LOCATION MAP

TRANSPORTATION IMPACT STUDY
1376 CAMPUS ROAD
MT. JOY TOWNSHIP
LANCASTER COUNTY, PA

APARTMENT AREA "A"
 104 APARTMENT UNITS
 20 UNIT BUILDINGS:
 (20,000 SF + (17 X 6,000 SF)) X 4)
 366,000 SF REQUIRED
 24 UNIT BUILDINGS:
 (20,000 SF + (21 X 6,000 SF)) X 1)
 634,000 SF REQUIRED
 636,702 SF PROVIDED

APARTMENT AREA "B"
 176 APARTMENT UNITS
 20 UNIT BUILDINGS:
 (20,000 SF + (17 X 6,000 SF)) X 4)
 488,000 SF REQUIRED
 24 UNIT BUILDINGS:
 (20,000 SF + (21 X 6,000 SF)) X 4)
 584,000 SF REQUIRED
 1,072,000 SF REQUIRED TOTAL
 1,079,857 SF PROVIDED TOTAL



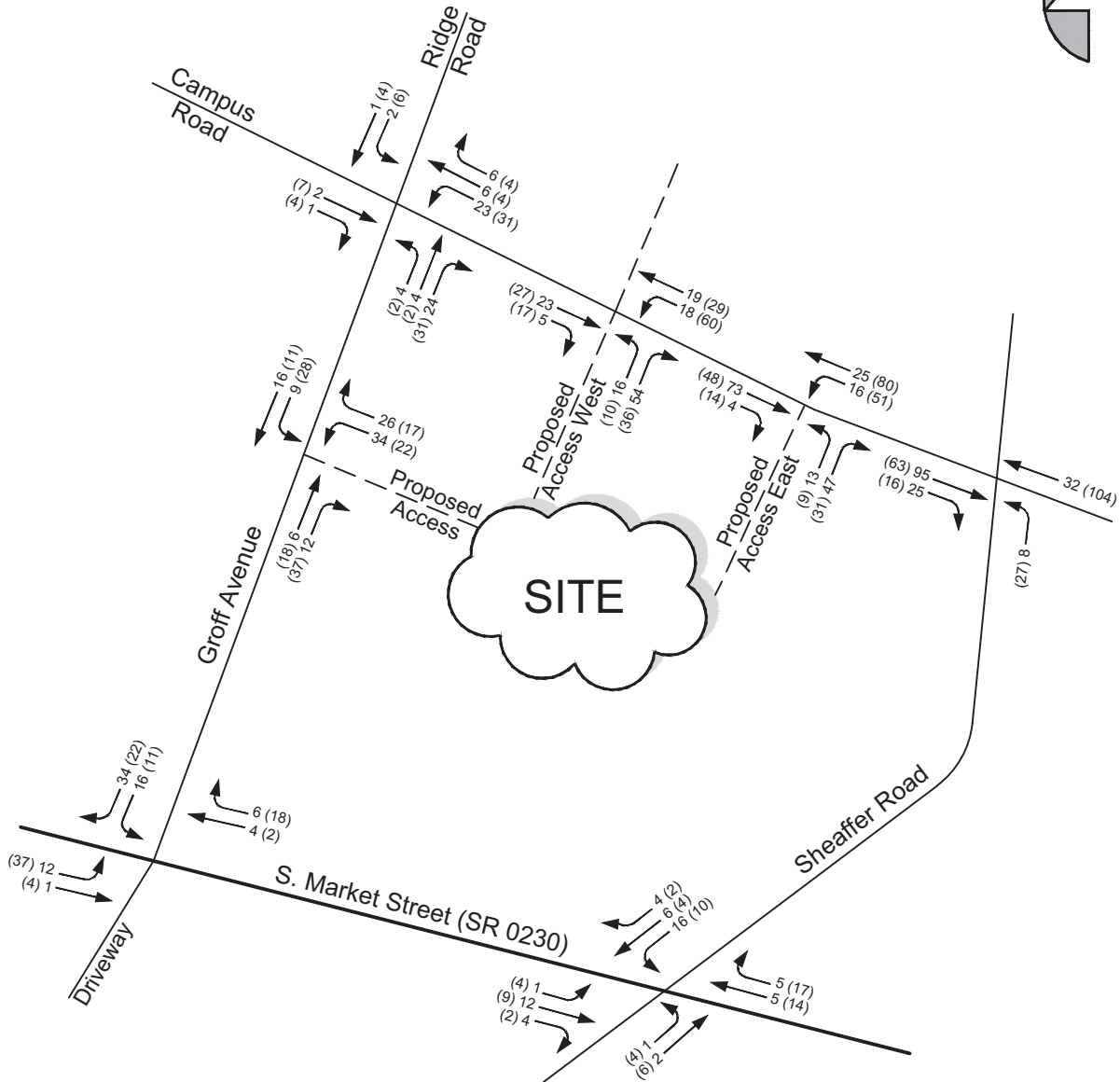
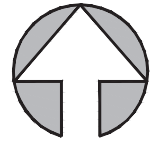
TOWNSHIP ROAD 100
 TOWNSHIP ROAD 100
 TOWNSHIP ROAD 100

MOUNT JOY TOWNSHIP
 ELIZABETH TOWN BOROUGH

DEWITT RESIDENTIAL
 (2-2) MEDIAN
 (2) - RESID.

MOUNT JOY TOWNSHIP
 ELIZABETH TOWN BOROUGH

DEWITT RESIDENTIAL
 (2-2) MEDIAN



LEGEND

- Existing Street
- - - Proposed Street/Driveway
- 000 AM Peak Hour Total Site Trips
- (000) PM Peak Hour Total Site Trips
- ← Vehicle Movement



FIGURE 9

TOTAL SITE TRIPS
AM & PM PEAK HOURS

TRANSPORTATION IMPACT STUDY

1376 CAMPUS ROAD

MT. JOY TOWNSHIP
LANCASTER COUNTY, PA

Transportation Impact Study

for the

Proposed 1925 Sheaffer Road Development

Mount Joy Township
Lancaster County, Pennsylvania

prepared for

Hershey Developers LLC

June 2021

prepared by



PA Office
2 East Market Street, Suite 2
York, PA 17401-1206
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MD Office
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Towson, MD 21204-2624
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www.consulttrg.com



A handwritten signature in blue ink that reads "Christopher E. Schwab".

Christopher E. Schwab, P.E.
Pennsylvania P.E. No. 074341

Project No.516.001.21

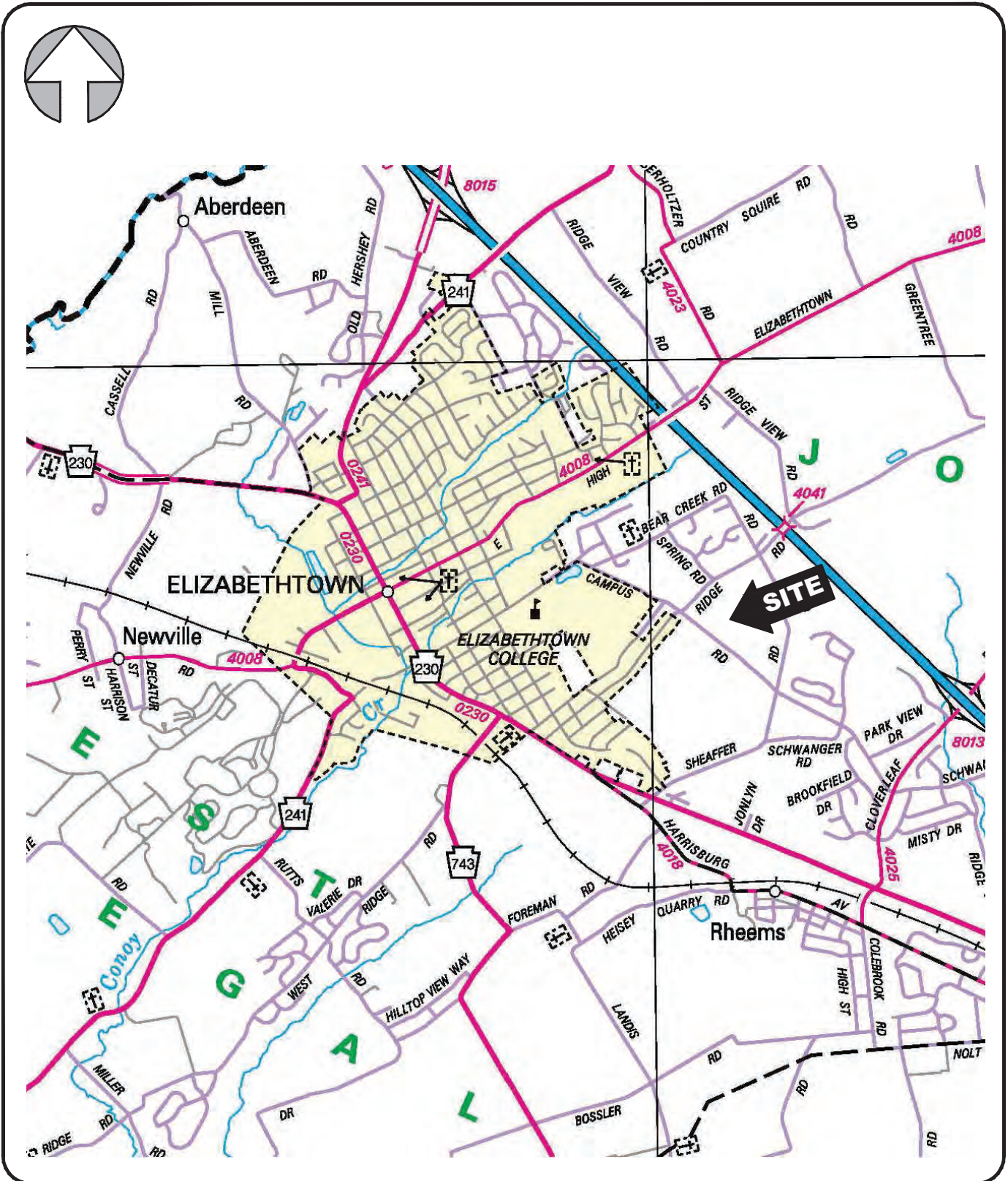


FIGURE 1
SITE LOCATION MAP

TRANSPORTATION IMPACT STUDY
1925 SHEAFFER ROAD
MT. JOY TOWNSHIP
LANCASTER COUNTY, PA



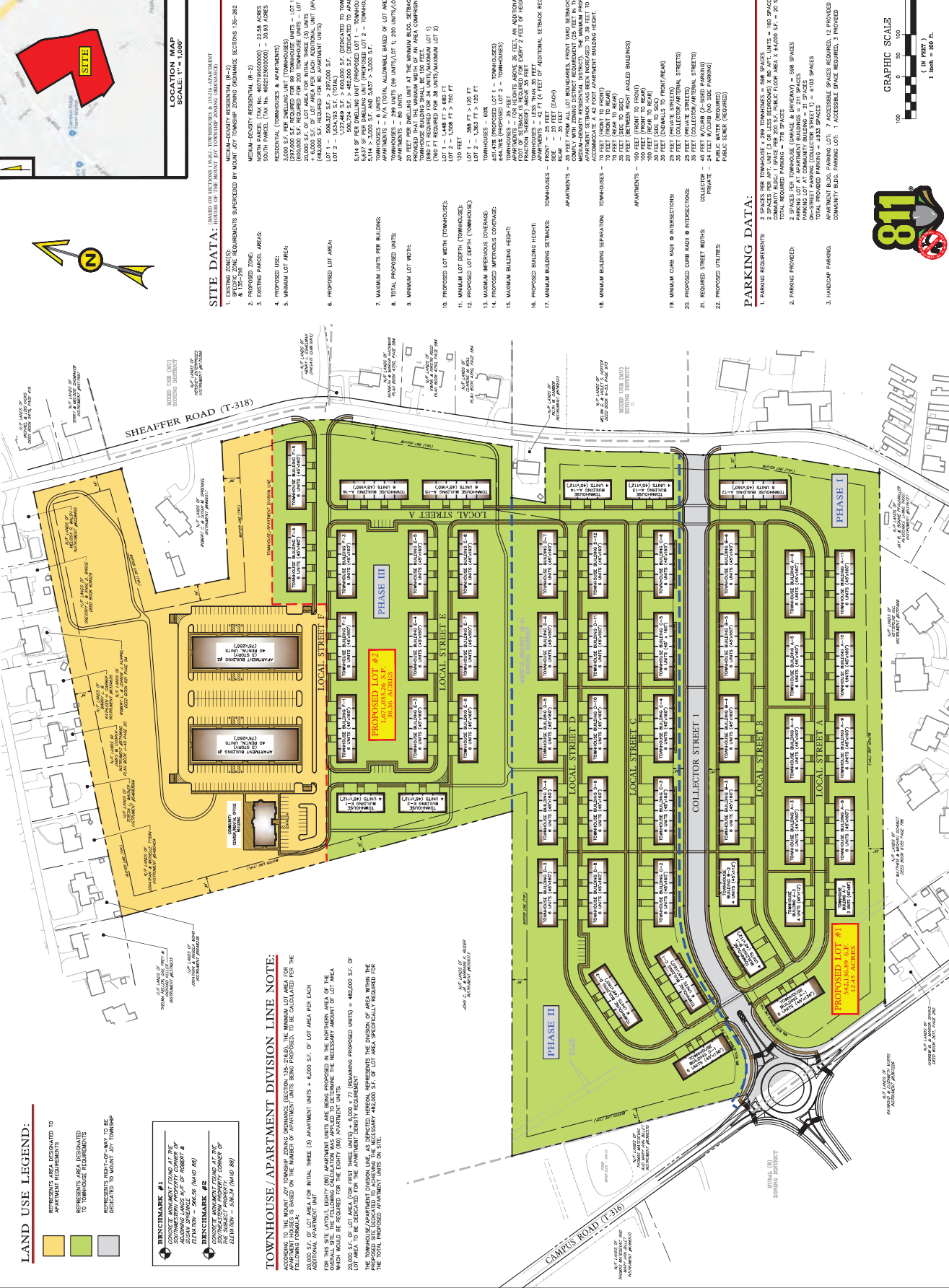
LOCATION MAP
SCALE: 1" = 1,000'

SITE DATA: (ALL INFORMATION SUBJECT TO THE MOUNT JOY TOWNSHIP ZONING ORDINANCE)
1. TOWNSHIP: MOUNT JOY TOWNSHIP
2. ZONING DISTRICT: MOUNT JOY TOWNSHIP ZONING DISTRICTS SECTIONS 135-262
3. PROPOSED ZONE: MEDIAN-DENSITY RESIDENTIAL (R-2)
4. PROPOSED LOT AREA: 191,033.26 S.F.
5. PROPOSED TOTAL LOT AREA: 482,000 S.F.
6. PROPOSED TOTAL UNIT COUNT: 100 UNITS

1. PARKING REQUIREMENTS:
2 SPACES PER APJT UNIT (OR LESS RESIDONS) X 80 APJT UNITS = 160 SPACES
2 SPACES PER APJT UNIT (OR LESS RESIDONS) X 80 APJT UNITS X 5,400 S.F. = 10 SPACES
2 SPACES PER TOWNHOUSE (GARAGE & DRIVEWAY) = 508 SPACES
ON-STREET PARKING (COLLECTOR STREET 1) = 130 SPACES
TOTAL PARKING SPACES PROVIDED = 700 SPACES
APARTMENT BLDG. PARKING LOT: 7 ACCESSIBLE SPACES REQUIRED, 12 PROVIDED
COMMUNITY BLDG. PARKING LOT: 1 ACCESSIBLE SPACE REQUIRED, 1 PROVIDED

2. PROPOSED LOT AREA:
LOT 1 - 506,327 S.F. > 297,000 S.F.
LOT 2 - 127,649 S.F. > 600,000 S.F. (DEDICATED TO TOWNHOUSES)
LOT 3 - 5,000 S.F. > 482,000 S.F. (DEDICATED TO APARTMENTS)
LOT 4 - 191,033.26 S.F. > 482,000 S.F. (DEDICATED TO APARTMENTS)
TOTAL TOWNHOUSE LOT AREA = 2,000 S.F. (TOWNHOUSES)
TOTAL APARTMENT LOT AREA = 1,819,966.74 S.F. (APARTMENTS)
TOTAL LOT AREA = 4,819,966.74 S.F. (TOTAL ALLOWABLE BASED ON LOT AREA)
APARTMENTS = 80 UNITS (99 UNITS/LOT 1; 200 UNITS/LOT 2)
TOWNHOUSES = 20 UNITS (10 UNITS/LOT 1; 10 UNITS/LOT 2)
20 FEET PER DWELLING UNIT AT THE MINIMUM BLDG. SETBACK LINE.
TOWNHOUSE BUILDING SHALL BE 150 FEET MINIMUM.
APARTMENT BUILDING SHALL BE 150 FEET MINIMUM.
LOT 1 - 1,448 FT > 480 FT
LOT 2 - 1,028 FT > 700 FT
LOT 3 - 336 FT > 120 FT
LOT 4 - 1,448 FT > 120 FT
MINIMUM LOT WIDTH: 100 FT
MINIMUM LOT DEPTH: 100 FT
MINIMUM LOT DEPTH: 100 FT
MINIMUM LOT DEPTH: 100 FT
MINIMUM LOT DEPTH: 100 FT

PARKING DATA:
1. PARKING REQUIREMENTS:
2 SPACES PER APJT UNIT (OR LESS RESIDONS) X 80 APJT UNITS = 160 SPACES
2 SPACES PER APJT UNIT (OR LESS RESIDONS) X 80 APJT UNITS X 5,400 S.F. = 10 SPACES
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COMMUNITY BLDG. PARKING LOT: 1 ACCESSIBLE SPACE REQUIRED, 1 PROVIDED



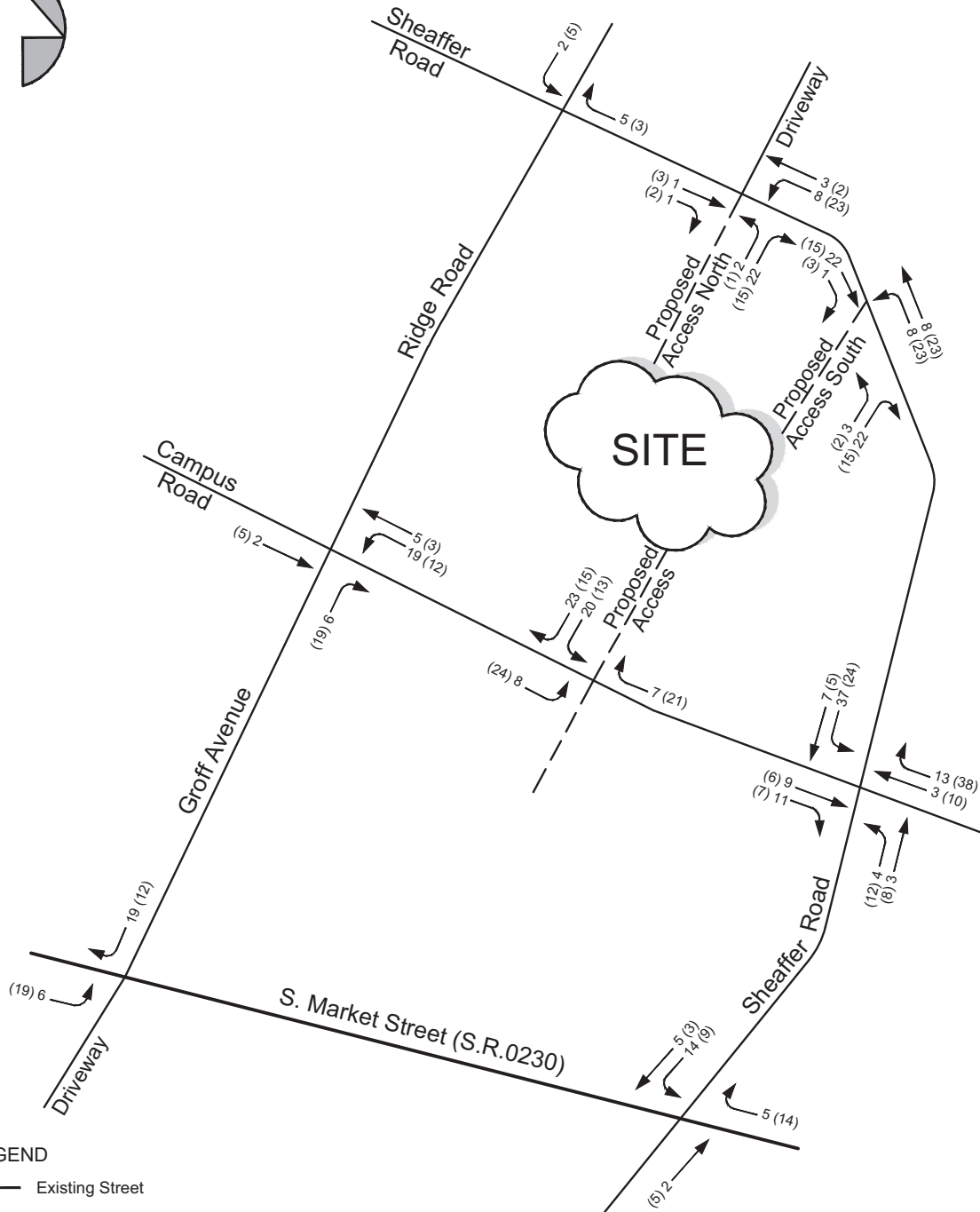
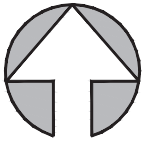
LAND USE LEGEND:

- REPRESENTS AREA DESIGNATED TO APARTMENT REQUIREMENTS
- REPRESENTS AREA DESIGNATED TO TOWNHOUSE REQUIREMENTS
- REPRESENTS AREA DESIGNATED TO APARTMENT PARKING REQUIREMENTS
- REPRESENTS AREA DESIGNATED TO TOWNHOUSE PARKING REQUIREMENTS
- REPRESENTS AREA DESIGNATED TO APARTMENT DRIVEWAY REQUIREMENTS
- REPRESENTS AREA DESIGNATED TO TOWNHOUSE DRIVEWAY REQUIREMENTS

BENCHMARK #1
CONCRETE MONUMENT CORNER AT THE SOUTHWESTERN PROPERTY CORNER OF THE TOWNSHIP ZONING DISTRICTS SECTIONS 135-262, 135-263 & 135-264 (MOUNT JOY TOWNSHIP, PA) (STATION = 508.24 (MOUNT JOY TOWNSHIP))

BENCHMARK #2
CONCRETE MONUMENT CORNER AT THE NORTHWEST PROPERTY CORNER OF THE TOWNSHIP ZONING DISTRICTS SECTIONS 135-262, 135-263 & 135-264 (MOUNT JOY TOWNSHIP, PA) (STATION = 508.24 (MOUNT JOY TOWNSHIP))

TOWNHOUSE / APARTMENT DIVISION LINE NOTE:
ACCORDING TO THE MOUNT JOY TOWNSHIP ZONING ORDINANCE (SECTION 135-242), THE MINIMAL LOT AREA FOR APARTMENT UNITS IS BASED ON THE NUMBER OF APARTMENT UNITS BEING PROPOSED, TO BE CALCULATED PER THE FOLLOWING FORMULA:
 $20,000 \text{ S.F.} \times (\text{NUMBER OF APARTMENT UNITS}) + 4,000 \text{ S.F. OF LOT AREA PER EACH ADDITIONAL APARTMENT UNIT}$
FOR THIS SITE LAYOUT, EIGHTY (80) APARTMENT UNITS ARE BEING PROPOSED IN THE NORTHERN AREA OF THE TOWNSHIP ZONING DISTRICTS SECTIONS 135-262, 135-263 & 135-264 (MOUNT JOY TOWNSHIP, PA) WITH A TOTAL LOT AREA OF 482,000 S.F. WHICH WOULD BE REQUIRED FOR THE EIGHTY (80) APARTMENT UNITS.
THE TOWNSHIP / APARTMENT DIVISION LINE, AS DEPICTED HEREON, REPRESENTS THE DIVISION OF AREA WITHIN THE PROPOSED LOT AREA TO ACCOMMODATE THE NECESSARY 482,000 S.F. OF LOT AREA SPECIFICALLY REQUIRED FOR THE TOTAL PROPOSED APARTMENT UNITS ON SITE.



LEGEND

- Existing Street
- - - Proposed Street/Driveway
- 000 AM Peak Hour Total Site Trips
- (000) PM Peak Hour Total Site Trips
- ← Vehicle Movement

FIGURE 9

TOTAL SITE TRIPS
AM & PM PEAK HOURS

TRANSPORTATION IMPACT STUDY

1925 SHEAFFER ROAD

MT. JOY TOWNSHIP
LANCASTER COUNTY, PA



APPENDIX H

TURNING MOVEMENT COUNTS



www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Mt. Joy, PA
Route 230 & Maytown Rd
Tuesday, March 29, 2022
Location: 40.143142, -
76.596207

Count Name: Rt. 230 &
Maytown Rd
Site Code:
Start Date: 03/29/2022
Page No: 1

Turning Movement Data

Start Time	Rt. 230 Eastbound						Rt. 230 Westbound					Maytown Rd Northbound						Int. Total
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	67	17	4	0	0	88	7	45	0	0	52	15	12	2	0	0	29	169
6:15 AM	68	14	4	0	0	86	8	61	0	0	69	22	20	0	0	0	42	197
6:30 AM	79	9	3	0	0	91	14	80	0	0	94	23	18	0	0	1	41	226
6:45 AM	60	14	1	0	0	75	11	73	0	0	84	24	30	0	0	0	54	213
Hourly Total	274	54	12	0	0	340	40	259	0	0	299	84	80	2	0	1	166	805
7:00 AM	70	11	3	0	0	84	11	73	0	0	84	30	37	0	0	0	67	235
7:15 AM	90	25	0	0	0	115	12	89	0	0	101	47	36	0	0	1	83	299
7:30 AM	95	17	0	0	0	112	22	84	0	0	106	35	38	0	0	0	73	291
7:45 AM	110	16	3	0	0	129	22	92	0	0	114	41	36	0	0	1	77	320
Hourly Total	365	69	6	0	0	440	67	338	0	0	405	153	147	0	0	2	300	1145
8:00 AM	91	14	2	0	0	107	23	66	0	0	89	17	26	0	0	0	43	239
8:15 AM	82	12	0	0	0	94	14	50	0	0	64	22	30	0	0	0	52	210
8:30 AM	76	10	1	0	0	87	22	65	0	0	87	19	34	0	0	0	53	227
8:45 AM	95	8	1	0	0	104	19	78	0	0	97	19	34	0	0	0	53	254
Hourly Total	344	44	4	0	0	392	78	259	0	0	337	77	124	0	0	0	201	930
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	115	18	0	0	0	133	46	99	0	0	145	15	33	0	0	0	48	326
3:15 PM	119	21	1	0	0	141	52	93	0	0	145	23	36	1	0	0	60	346
3:30 PM	133	23	4	0	0	160	43	93	0	0	136	20	29	0	0	0	49	345
3:45 PM	140	21	0	0	0	161	52	88	0	0	140	32	22	0	0	1	54	355
Hourly Total	507	83	5	0	0	595	193	373	0	0	566	90	120	1	0	1	211	1372
4:00 PM	161	18	4	0	0	183	39	92	0	0	131	20	26	0	0	1	46	360
4:15 PM	137	19	0	0	0	156	54	82	0	0	136	22	42	0	0	1	64	356
4:30 PM	160	22	1	0	1	183	56	126	0	0	182	24	26	0	0	0	50	415
4:45 PM	150	16	4	0	0	170	38	90	0	0	128	19	32	0	0	0	51	349
Hourly Total	608	75	9	0	1	692	187	390	0	0	577	85	126	0	0	2	211	1480
5:00 PM	146	23	2	0	0	171	47	120	0	0	167	38	26	0	0	0	64	402
5:15 PM	165	15	1	0	0	181	48	132	0	0	180	40	39	0	0	0	79	440
5:30 PM	133	22	1	0	0	156	58	127	0	0	185	25	38	0	0	0	63	404
5:45 PM	120	16	3	0	0	139	42	104	0	0	146	29	25	0	0	0	54	339
Hourly Total	564	76	7	0	0	647	195	483	0	0	678	132	128	0	0	0	260	1585
6:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
Grand Total	2662	401	43	0	1	3106	760	2103	0	0	2863	621	725	3	0	6	1349	7318
Approach %	85.7	12.9	1.4	0.0	-	-	26.5	73.5	0.0	-	-	46.0	53.7	0.2	0.0	-	-	-
Total %	36.4	5.5	0.6	0.0	-	42.4	10.4	28.7	0.0	-	39.1	8.5	9.9	0.0	0.0	-	18.4	-
Lights	2516	388	41	0	-	2945	733	1982	0	-	2715	599	711	3	0	-	1313	6973
% Lights	94.5	96.8	95.3	-	-	94.8	96.4	94.2	-	-	94.8	96.5	98.1	100.0	-	-	97.3	95.3
Buses	36	5	0	0	-	41	12	22	0	-	34	8	5	0	0	-	13	88
% Buses	1.4	1.2	0.0	-	-	1.3	1.6	1.0	-	-	1.2	1.3	0.7	0.0	-	-	1.0	1.2
Trucks	110	8	2	0	-	120	15	99	0	-	114	14	9	0	0	-	23	257
% Trucks	4.1	2.0	4.7	-	-	3.9	2.0	4.7	-	-	4.0	2.3	1.2	0.0	-	-	1.7	3.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	16.7	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	83.3	-	-



www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Mt. Joy, PA
Route 230 & Maytown Rd
Tuesday, March 29, 2022
Location: 40.143142, -
76.596207

Count Name: Rt. 230 &
Maytown Rd
Site Code:
Start Date: 03/29/2022
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Rt. 230 Eastbound						Rt. 230 Westbound					Maytown Rd Northbound						Int. Total
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	
7:15 AM	90	25	0	0	0	115	12	89	0	0	101	47	36	0	0	1	83	299
7:30 AM	95	17	0	0	0	112	22	84	0	0	106	35	38	0	0	0	73	291
7:45 AM	110	16	3	0	0	129	22	92	0	0	114	41	36	0	0	1	77	320
8:00 AM	91	14	2	0	0	107	23	66	0	0	89	17	26	0	0	0	43	239
Total	386	72	5	0	0	463	79	331	0	0	410	140	136	0	0	2	276	1149
Approach %	83.4	15.6	1.1	0.0	-	-	19.3	80.7	0.0	-	-	50.7	49.3	0.0	0.0	-	-	-
Total %	33.6	6.3	0.4	0.0	-	40.3	6.9	28.8	0.0	-	35.7	12.2	11.8	0.0	0.0	-	24.0	-
PHF	0.877	0.720	0.417	0.000	-	0.897	0.859	0.899	0.000	-	0.899	0.745	0.895	0.000	0.000	-	0.831	0.898
Lights	350	65	3	0	-	418	74	291	0	-	365	134	133	0	0	-	267	1050
% Lights	90.7	90.3	60.0	-	-	90.3	93.7	87.9	-	-	89.0	95.7	97.8	-	-	-	96.7	91.4
Buses	5	3	0	0	-	8	3	2	0	-	5	2	0	0	0	-	2	15
% Buses	1.3	4.2	0.0	-	-	1.7	3.8	0.6	-	-	1.2	1.4	0.0	-	-	-	0.7	1.3
Trucks	31	4	2	0	-	37	2	38	0	-	40	4	3	0	0	-	7	84
% Trucks	8.0	5.6	40.0	-	-	8.0	2.5	11.5	-	-	9.8	2.9	2.2	-	-	-	2.5	7.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Mt. Joy, PA
Route 230 & Groff Ave
Tuesday, March 29, 2022
Location: 40.141363, -
76.592594

Count Name: Rt. 230 & Groff Ave
Site Code:
Start Date: 03/29/2022
Page No: 1

Turning Movement Data

Start Time	Rt. 230 Eastbound						Rt. 230 Westbound						Northbound Approach Northbound						Groff Ave Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
	6:00 AM	1	95	0	0	0	96	0	51	0	0	0	51	0	0	0	0	0	0	8	0	1	0	0	
6:15 AM	1	93	0	0	0	94	0	77	4	0	0	81	0	0	0	0	0	0	5	0	8	0	0	13	188
6:30 AM	1	112	0	0	0	113	0	101	5	0	0	106	0	0	0	0	1	0	8	0	0	0	0	8	227
6:45 AM	3	104	0	0	0	107	0	94	4	0	0	98	0	0	0	0	0	0	8	0	6	0	0	14	219
Hourly Total	6	404	0	0	0	410	0	323	13	0	0	336	0	0	0	0	1	0	29	0	15	0	0	44	790
7:00 AM	8	109	0	0	0	117	0	115	6	0	0	121	0	0	0	0	0	0	9	0	6	0	0	15	253
7:15 AM	9	125	0	0	0	134	0	134	7	0	0	141	0	0	0	0	0	0	4	0	9	0	0	13	288
7:30 AM	7	142	0	0	0	149	0	125	8	0	0	133	0	0	0	0	0	0	15	0	9	0	1	24	306
7:45 AM	2	160	0	0	0	162	0	138	11	0	0	149	0	0	0	0	1	0	14	0	11	0	0	25	336
Hourly Total	26	536	0	0	0	562	0	512	32	0	0	544	0	0	0	0	1	0	42	0	35	0	1	77	1183
8:00 AM	7	123	1	0	0	131	0	105	14	0	0	119	0	0	2	0	0	2	7	0	5	0	0	12	264
8:15 AM	9	110	0	0	0	119	2	83	12	0	0	97	0	0	0	0	0	0	9	0	4	0	0	13	229
8:30 AM	5	110	0	0	0	115	0	97	8	0	0	105	0	0	0	0	0	0	14	1	9	0	0	24	244
8:45 AM	2	144	1	0	0	147	0	132	6	0	0	138	0	0	0	0	0	0	13	0	11	0	0	24	309
Hourly Total	23	487	2	0	0	512	2	417	40	0	0	459	0	0	2	0	0	2	43	1	29	0	0	73	1046
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	1	177	0	0	0	178	0	198	25	0	0	223	0	0	1	0	0	1	11	0	10	0	0	21	423
3:15 PM	5	162	0	0	0	167	0	197	21	0	0	218	0	0	2	0	0	2	12	0	9	0	1	21	408
3:30 PM	7	182	0	0	0	189	0	186	20	0	0	206	0	0	0	0	0	0	14	0	10	0	0	24	419
3:45 PM	3	183	0	0	0	186	0	200	32	0	0	232	0	0	0	0	1	0	13	0	12	0	0	25	443
Hourly Total	16	704	0	0	0	720	0	781	98	0	0	879	0	0	3	0	1	3	50	0	41	0	1	91	1693
4:00 PM	8	208	0	0	0	216	0	211	15	0	0	226	0	0	0	0	0	0	8	0	6	0	0	14	456
4:15 PM	14	182	1	0	0	197	0	204	17	0	0	221	0	0	1	0	1	1	12	0	13	0	0	25	444
4:30 PM	8	195	0	0	0	203	0	238	20	0	0	258	1	0	0	0	0	1	7	0	18	0	0	25	487
4:45 PM	3	191	0	0	0	194	0	198	24	0	0	222	0	0	2	0	0	2	7	0	6	0	1	13	431
Hourly Total	33	776	1	0	0	810	0	851	76	0	0	927	1	0	3	0	1	4	34	0	43	0	1	77	1818
5:00 PM	8	183	0	0	0	191	0	230	22	0	0	252	0	0	0	0	0	0	7	0	13	0	0	20	463
5:15 PM	8	208	0	0	0	216	0	260	17	0	0	277	0	0	0	0	0	0	8	0	10	0	0	18	511
5:30 PM	9	175	0	0	0	184	0	234	19	0	0	253	0	0	1	0	0	1	7	0	7	0	1	14	452
5:45 PM	4	147	0	0	0	151	0	205	13	0	0	218	1	0	0	0	0	1	8	0	8	1	2	17	387
Hourly Total	29	713	0	0	0	742	0	929	71	0	0	1000	1	0	1	0	0	2	30	0	38	1	3	69	1813
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	133	3620	3	0	0	3756	2	3813	330	0	0	4145	2	0	9	0	4	11	228	1	201	1	6	431	8343
Approach %	3.5	96.4	0.1	0.0	-	-	0.0	92.0	8.0	0.0	-	-	18.2	0.0	81.8	0.0	-	-	52.9	0.2	46.6	0.2	-	-	-
Total %	1.6	43.4	0.0	0.0	-	45.0	0.0	45.7	4.0	0.0	-	49.7	0.0	0.0	0.1	0.0	-	0.1	2.7	0.0	2.4	0.0	-	5.2	-
Lights	125	3474	3	0	-	3602	2	3667	324	0	-	3993	2	0	8	0	-	10	226	1	181	1	-	409	8014
% Lights	94.0	96.0	100.0	-	-	95.9	100.0	96.2	98.2	-	-	96.3	100.0	-	88.9	-	-	90.9	99.1	100.0	90.0	100.0	-	94.9	96.1
Buses	1	40	0	0	-	41	0	39	1	0	-	40	0	0	0	0	-	0	0	0	3	0	-	3	84
% Buses	0.8	1.1	0.0	-	-	1.1	0.0	1.0	0.3	-	-	1.0	0.0	-	0.0	-	-	0.0	0.0	0.0	1.5	0.0	-	0.7	1.0
Trucks	7	106	0	0	-	113	0	107	5	0	-	112	0	0	1	0	-	1	2	0	17	0	-	19	245
% Trucks	5.3	2.9	0.0	-	-	3.0	0.0	2.8	1.5	-	-	2.7	0.0	-	11.1	-	-	9.1	0.9	0.0	8.5	0.0	-	4.4	2.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Mt. Joy, PA
Route 230 & Groff Ave
Tuesday, March 29, 2022
Location: 40.141363, -
76.592594

Count Name: Rt. 230 & Groff Ave
Site Code:
Start Date: 03/29/2022
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Rt. 230 Eastbound						Rt. 230 Westbound						Northbound Approach Northbound						Groff Ave Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:15 AM	9	125	0	0	0	134	0	134	7	0	0	141	0	0	0	0	0	0	4	0	9	0	0	13	288
7:30 AM	7	142	0	0	0	149	0	125	8	0	0	133	0	0	0	0	0	0	15	0	9	0	1	24	306
7:45 AM	2	160	0	0	0	162	0	138	11	0	0	149	0	0	0	0	1	0	14	0	11	0	0	25	336
8:00 AM	7	123	1	0	0	131	0	105	14	0	0	119	0	0	2	0	0	2	7	0	5	0	0	12	264
Total	25	550	1	0	0	576	0	502	40	0	0	542	0	0	2	0	1	2	40	0	34	0	1	74	1194
Approach %	4.3	95.5	0.2	0.0	-	-	0.0	92.6	7.4	0.0	-	-	0.0	0.0	100.0	0.0	-	-	54.1	0.0	45.9	0.0	-	-	-
Total %	2.1	46.1	0.1	0.0	-	48.2	0.0	42.0	3.4	0.0	-	45.4	0.0	0.0	0.2	0.0	-	0.2	3.4	0.0	2.8	0.0	-	6.2	-
PHF	0.694	0.859	0.250	0.000	-	0.889	0.000	0.909	0.714	0.000	-	0.909	0.000	0.000	0.250	0.000	-	0.250	0.667	0.000	0.773	0.000	-	0.740	0.888
Lights	23	514	1	0	-	538	0	459	36	0	-	495	0	0	1	0	-	1	40	0	28	0	-	68	1102
% Lights	92.0	93.5	100.0	-	-	93.4	-	91.4	90.0	-	-	91.3	-	-	50.0	-	-	50.0	100.0	-	82.4	-	-	91.9	92.3
Buses	0	5	0	0	-	5	0	7	0	0	-	7	0	0	0	0	-	0	0	0	1	0	-	1	13
% Buses	0.0	0.9	0.0	-	-	0.9	-	1.4	0.0	-	-	1.3	-	-	0.0	-	-	0.0	0.0	-	2.9	-	-	1.4	1.1
Trucks	2	31	0	0	-	33	0	36	4	0	-	40	0	0	1	0	-	1	0	0	5	0	-	5	79
% Trucks	8.0	5.6	0.0	-	-	5.7	-	7.2	10.0	-	-	7.4	-	-	50.0	-	-	50.0	0.0	-	14.7	-	-	6.8	6.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Mt. Joy, PA
Route 230 & Groff Ave
Tuesday, March 29, 2022
Location: 40.141363, -
76.592594

Count Name: Rt. 230 & Groff Ave
Site Code:
Start Date: 03/29/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Rt. 230 Eastbound						Rt. 230 Westbound						Northbound Approach Northbound						Groff Ave Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	8	195	0	0	0	203	0	238	20	0	0	258	1	0	0	0	0	1	7	0	18	0	0	25	487
4:45 PM	3	191	0	0	0	194	0	198	24	0	0	222	0	0	2	0	0	2	7	0	6	0	1	13	431
5:00 PM	8	183	0	0	0	191	0	230	22	0	0	252	0	0	0	0	0	0	7	0	13	0	0	20	463
5:15 PM	8	208	0	0	0	216	0	260	17	0	0	277	0	0	0	0	0	0	8	0	10	0	0	18	511
Total	27	777	0	0	0	804	0	926	83	0	0	1009	1	0	2	0	0	3	29	0	47	0	1	76	1892
Approach %	3.4	96.6	0.0	0.0	-	-	0.0	91.8	8.2	0.0	-	-	33.3	0.0	66.7	0.0	-	-	38.2	0.0	61.8	0.0	-	-	-
Total %	1.4	41.1	0.0	0.0	-	42.5	0.0	48.9	4.4	0.0	-	53.3	0.1	0.0	0.1	0.0	-	0.2	1.5	0.0	2.5	0.0	-	4.0	-
PHF	0.844	0.934	0.000	0.000	-	0.931	0.000	0.890	0.865	0.000	-	0.911	0.250	0.000	0.250	0.000	-	0.375	0.906	0.000	0.653	0.000	-	0.760	0.926
Lights	27	758	0	0	-	785	0	921	83	0	-	1004	1	0	2	0	-	3	29	0	45	0	-	74	1866
% Lights	100.0	97.6	-	-	-	97.6	-	99.5	100.0	-	-	99.5	100.0	-	100.0	-	-	100.0	100.0	-	95.7	-	-	97.4	98.6
Buses	0	10	0	0	-	10	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	11
% Buses	0.0	1.3	-	-	-	1.2	-	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.6
Trucks	0	9	0	0	-	9	0	4	0	0	-	4	0	0	0	0	-	0	0	0	2	0	-	2	15
% Trucks	0.0	1.2	-	-	-	1.1	-	0.4	0.0	-	-	0.4	0.0	-	0.0	-	-	0.0	0.0	-	4.3	-	-	2.6	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Mt. Joy, PA
Route 230 & Groff Ave
Saturday, March 26, 2022
Location: 40.141363, -
76.592594

Count Name: Rt. 230 & Groff
Ave Sat
Site Code:
Start Date: 03/26/2022
Page No: 1

Turning Movement Data

Start Time	Rt. 230 Eastbound						Rt. 230 Westbound						Northbound Approach Northbound						Groff Ave Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
	11:00 AM	4	183	0	0	0	187	0	172	13	0	0	185	0	0	0	0	0	0	9	0	4	0	0	
11:15 AM	6	180	0	0	0	186	0	173	23	0	0	196	0	0	0	0	0	0	13	0	1	0	1	14	396
11:30 AM	2	189	0	0	0	191	1	190	20	0	0	211	0	0	0	0	0	0	8	0	12	0	0	20	422
11:45 AM	2	196	0	0	0	198	0	206	25	0	0	231	0	0	0	0	0	0	17	0	7	0	0	24	453
Hourly Total	14	748	0	0	0	762	1	741	81	0	0	823	0	0	0	0	0	0	47	0	24	0	1	71	1656
12:00 PM	5	198	0	0	0	203	0	208	20	0	0	228	0	0	0	0	0	0	10	0	2	1	0	13	444
12:15 PM	7	201	0	0	0	208	0	198	34	0	0	232	0	0	1	0	0	1	12	0	13	0	0	25	466
12:30 PM	6	165	0	0	0	171	0	208	23	0	0	231	0	0	0	0	0	0	14	0	3	0	0	17	419
12:45 PM	1	178	0	0	0	179	0	176	16	0	0	192	0	0	0	0	0	0	9	0	4	0	0	13	384
Hourly Total	19	742	0	0	0	761	0	790	93	0	0	883	0	0	1	0	0	1	45	0	22	1	0	68	1713
1:00 PM	3	186	0	0	0	189	0	155	23	0	0	178	0	0	0	0	0	0	10	0	3	0	0	13	380
1:15 PM	6	155	0	0	0	161	0	197	26	0	0	223	0	0	0	0	0	0	17	0	7	0	0	24	408
1:30 PM	5	146	0	0	0	151	0	189	23	0	0	212	0	0	0	0	0	0	12	0	3	0	0	15	378
1:45 PM	3	179	0	0	0	182	0	171	15	0	0	186	0	0	0	0	0	0	18	0	7	0	0	25	393
Hourly Total	17	666	0	0	0	683	0	712	87	0	0	799	0	0	0	0	0	0	57	0	20	0	0	77	1559
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	50	2156	0	0	0	2206	1	2243	261	0	0	2505	0	0	1	0	0	1	149	0	66	1	1	216	4928
Approach %	2.3	97.7	0.0	0.0	-	-	0.0	89.5	10.4	0.0	-	-	0.0	0.0	100.0	0.0	-	-	69.0	0.0	30.6	0.5	-	-	-
Total %	1.0	43.8	0.0	0.0	-	44.8	0.0	45.5	5.3	0.0	-	50.8	0.0	0.0	0.0	0.0	-	0.0	3.0	0.0	1.3	0.0	-	4.4	-
Lights	50	2143	0	0	-	2193	1	2230	261	0	-	2492	0	0	1	0	-	1	149	0	65	1	-	215	4901
% Lights	100.0	99.4	-	-	-	99.4	100.0	99.4	100.0	-	-	99.5	-	-	100.0	-	-	100.0	100.0	-	98.5	100.0	-	99.5	99.5
Buses	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Buses	0.0	0.0	-	-	-	0.0	0.0	0.1	0.0	-	-	0.1	-	-	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.1
Trucks	0	13	0	0	-	13	0	10	0	0	-	10	0	0	0	0	-	0	0	0	1	0	-	1	24
% Trucks	0.0	0.6	-	-	-	0.6	0.0	0.4	0.0	-	-	0.4	-	-	0.0	-	-	0.0	0.0	-	1.5	0.0	-	0.5	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Mt. Joy, PA
 Route 230 & Giant Plaza
 Driveway
 Tuesday, March 29, 2022
 Location: 40.139774, -
 76.589419

www.TSTData.com
 184 Baker Rd

Coatesville, Pennsylvania, United States 19320
 610-466-1469
 Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Giant
 Plaza Driveway
 Site Code:
 Start Date: 03/29/2022
 Page No: 3

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Giant Plaza Driveway Northbound							Carey Ln Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	
7:15 AM	0	97	5	3	0	0	105	15	116	0	0	0	0	131	22	0	8	8	0	0	38	1	0	0	0	0	0	1	275
7:30 AM	1	124	7	5	0	0	137	21	110	1	1	0	0	133	26	1	13	9	0	0	49	1	1	0	0	0	1	2	321
7:45 AM	1	143	6	5	0	0	155	12	117	3	0	0	0	132	24	0	8	8	0	0	40	2	2	2	0	0	0	6	333
8:00 AM	1	99	11	1	1	0	113	13	91	1	0	1	0	106	28	1	7	9	0	0	45	0	0	0	0	0	0	0	264
Total	3	463	29	14	1	0	510	61	434	5	1	1	0	502	100	2	36	34	0	0	172	4	3	2	0	0	1	9	1193
Approach %	0.6	90.8	5.7	2.7	0.2	-	-	12.2	86.5	1.0	0.2	0.2	-	-	58.1	1.2	20.9	19.8	0.0	-	-	44.4	33.3	22.2	0.0	0.0	-	-	-
Total %	0.3	38.8	2.4	1.2	0.1	-	42.7	5.1	36.4	0.4	0.1	0.1	-	42.1	8.4	0.2	3.0	2.8	0.0	-	14.4	0.3	0.3	0.2	0.0	0.0	-	0.8	-
PHF	0.750	0.809	0.659	0.700	0.250	-	0.823	0.726	0.927	0.417	0.250	0.250	-	0.944	0.893	0.500	0.692	0.944	0.000	-	0.878	0.500	0.375	0.250	0.000	0.000	-	0.375	0.896
Lights	3	427	28	14	0	-	472	60	392	5	1	0	-	458	97	2	34	33	0	-	166	4	3	2	0	0	-	9	1105
% Lights	100.0	92.2	96.6	100.0	0.0	-	92.5	98.4	90.3	100.0	100.0	0.0	-	91.2	97.0	100.0	94.4	97.1	-	-	96.5	100.0	100.0	100.0	-	-	-	100.0	92.6
Buses	0	5	0	0	0	-	5	0	8	0	0	0	-	8	0	0	0	0	0	-	0	0	0	0	0	0	-	0	13
% Buses	0.0	1.1	0.0	0.0	0.0	-	1.0	0.0	1.8	0.0	0.0	0.0	-	1.6	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-	0.0	1.1
Trucks	0	31	1	0	1	-	33	1	34	0	0	1	-	36	3	0	2	1	0	-	6	0	0	0	0	0	-	0	75
% Trucks	0.0	6.7	3.4	0.0	100.0	-	6.5	1.6	7.8	0.0	0.0	100.0	-	7.2	3.0	0.0	5.6	2.9	-	-	3.5	0.0	0.0	0.0	-	-	-	0.0	6.3
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Mt. Joy, PA
 Route 230 & Giant Plaza
 Driveway
 Tuesday, March 29, 2022
 Location: 40.139774, -
 76.589419

www.TSTData.com
 184 Baker Rd

Coatesville, Pennsylvania, United States 19320
 610-466-1469
 Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Giant
 Plaza Driveway
 Site Code:
 Start Date: 03/29/2022
 Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Giant Plaza Driveway Northbound							Carey Ln Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:30 PM	2	153	6	4	0	1	165	30	188	7	0	0	0	225	66	0	21	10	0	0	97	6	5	4	1	0	1	16	503
4:45 PM	4	147	1	3	1	0	156	47	166	2	0	0	0	215	55	2	18	12	1	0	88	2	1	2	1	0	1	6	465
5:00 PM	6	126	12	3	1	0	148	40	185	1	1	0	0	227	70	0	14	5	0	0	89	10	1	3	0	0	0	14	478
5:15 PM	2	157	3	4	0	0	166	32	188	4	2	0	0	226	73	1	23	11	0	0	108	5	1	4	1	0	0	11	511
Total	14	583	22	14	2	1	635	149	727	14	3	0	0	893	264	3	76	38	1	0	382	23	8	13	3	0	2	47	1957
Approach %	2.2	91.8	3.5	2.2	0.3	-	-	16.7	81.4	1.6	0.3	0.0	-	-	69.1	0.8	19.9	9.9	0.3	-	-	48.9	17.0	27.7	6.4	0.0	-	-	-
Total %	0.7	29.8	1.1	0.7	0.1	-	32.4	7.6	37.1	0.7	0.2	0.0	-	45.6	13.5	0.2	3.9	1.9	0.1	-	19.5	1.2	0.4	0.7	0.2	0.0	-	2.4	-
PHF	0.583	0.928	0.458	0.875	0.500	-	0.956	0.793	0.967	0.500	0.375	0.000	-	0.983	0.904	0.375	0.826	0.792	0.250	-	0.884	0.575	0.400	0.813	0.750	0.000	-	0.734	0.957
Lights	14	569	22	14	2	-	621	149	722	14	3	0	-	888	264	3	76	38	1	-	382	23	8	13	3	0	-	47	1938
% Lights	100.0	97.6	100.0	100.0	100.0	-	97.8	100.0	99.3	100.0	100.0	-	99.4	100.0	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	-	-	100.0	99.0	
Buses	0	10	0	0	0	-	10	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	11
% Buses	0.0	1.7	0.0	0.0	0.0	-	1.6	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.6	
Trucks	0	4	0	0	0	-	4	0	4	0	0	0	-	4	0	0	0	0	0	-	0	0	0	0	0	0	-	0	8
% Trucks	0.0	0.7	0.0	0.0	0.0	-	0.6	0.0	0.6	0.0	0.0	-	0.4	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.4	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	



Mt. Joy, PA
 Route 230 & Giant Plaza
 Driveway
 Saturday, March 26, 2022
 Location: 40.139774, -
 76.589419

www.TSTData.com
 184 Baker Rd

Coatesville, Pennsylvania, United States 19320
 610-466-1469
 Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Giant
 Plaza Driveway Sat
 Site Code:
 Start Date: 03/26/2022
 Page No: 1

Turning Movement Data

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Giant Plaza Driveway Northbound							Carey Ln Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	
11:00 AM	6	122	15	3	1	1	147	27	118	6	0	0	0	151	54	2	19	10	0	0	85	10	1	5	3	0	0	19	402
11:15 AM	5	124	13	7	0	1	149	36	140	7	1	0	0	184	54	4	16	14	0	0	88	8	3	3	2	0	0	16	437
11:30 AM	6	131	7	0	1	0	145	26	158	5	1	0	0	190	48	1	24	11	1	0	85	10	3	1	1	0	0	15	435
11:45 AM	11	148	9	2	0	0	170	38	162	2	0	0	0	202	49	1	21	14	0	0	85	10	2	3	2	0	0	17	474
Hourly Total	28	525	44	12	2	2	611	127	578	20	2	0	0	727	205	8	80	49	1	0	343	38	9	12	8	0	0	67	1748
12:00 PM	6	129	7	7	0	0	149	40	153	2	1	0	1	196	70	1	20	15	0	0	106	7	1	1	4	0	0	13	464
12:15 PM	3	154	4	3	0	0	164	36	158	2	4	0	1	200	73	1	33	15	0	0	122	9	0	2	1	0	0	12	498
12:30 PM	1	122	7	9	1	0	140	36	171	4	0	0	0	211	59	0	21	18	0	0	98	8	1	1	0	0	0	10	459
12:45 PM	4	135	5	6	0	0	150	41	141	5	2	0	0	189	43	0	21	16	0	0	80	3	0	4	2	0	0	9	428
Hourly Total	14	540	23	25	1	0	603	153	623	13	7	0	2	796	245	2	95	64	0	0	406	27	2	8	7	0	0	44	1849
1:00 PM	6	128	14	2	0	0	150	26	126	4	1	0	0	157	44	2	19	11	0	0	76	5	3	1	2	0	1	11	394
1:15 PM	4	120	12	3	0	0	139	32	154	2	1	0	0	189	63	4	25	16	0	0	108	6	2	3	1	0	1	12	448
1:30 PM	1	118	7	3	0	0	129	30	155	4	1	0	0	190	53	1	19	19	0	0	92	3	2	2	1	0	0	8	419
1:45 PM	2	143	9	6	0	0	160	35	129	8	4	0	0	176	49	0	23	14	0	1	86	7	1	2	1	0	0	11	433
Hourly Total	13	509	42	14	0	0	578	123	564	18	7	0	0	712	209	7	86	60	0	1	362	21	8	8	5	0	2	42	1694
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	55	1574	109	51	3	2	1792	403	1765	51	16	0	2	2235	659	17	261	173	1	1	1111	86	19	28	20	0	2	153	5291
Approach %	3.1	87.8	6.1	2.8	0.2	-	-	18.0	79.0	2.3	0.7	0.0	-	-	59.3	1.5	23.5	15.6	0.1	-	-	56.2	12.4	18.3	13.1	0.0	-	-	-
Total %	1.0	29.7	2.1	1.0	0.1	-	33.9	7.6	33.4	1.0	0.3	0.0	-	42.2	12.5	0.3	4.9	3.3	0.0	-	21.0	1.6	0.4	0.5	0.4	0.0	-	2.9	-
Lights	55	1562	109	51	3	-	1780	403	1752	51	16	0	-	2222	658	17	259	173	1	-	1108	86	19	28	20	0	-	153	5263
% Lights	100.0	99.2	100.0	100.0	100.0	-	99.3	100.0	99.3	100.0	100.0	-	99.4	99.8	100.0	99.2	100.0	100.0	-	99.7	100.0	100.0	100.0	100.0	-	-	100.0	99.5	
Buses	0	0	0	0	0	-	0	0	3	0	0	0	-	3	0	0	0	0	0	-	0	0	0	0	0	0	-	0	3
% Buses	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.1	
Trucks	0	12	0	0	0	-	12	0	10	0	0	0	-	10	1	0	2	0	0	-	3	0	0	0	0	0	-	0	25
% Trucks	0.0	0.8	0.0	0.0	0.0	-	0.7	0.0	0.6	0.0	0.0	-	0.4	0.2	0.0	0.8	0.0	0.0	-	0.3	0.0	0.0	0.0	0.0	-	-	0.0	0.5	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	50.0	-	-



Mt. Joy, PA
 Route 230 & Market St Square
 Driveway
 Tuesday, March 29, 2022
 Location: 40.138148, -
 76.585146

www.TSTData.com
 184 Baker Rd

Coatesville, Pennsylvania, United States 19320
 610-466-1469
 Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Market
 St Square Driveway
 Site Code:
 Start Date: 03/29/2022
 Page No: 1

Turning Movement Data

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Speedway Driveway Northbound							Market St Square Driveway Southbound							Int. Total	
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total		
	6:00 AM	0	81	2	0	0	0	83	2	44	2	0	0	0	48	1	0	0	4	0	0	5	0	0	0	1	0	0		1
6:15 AM	0	75	3	0	0	0	78	1	70	1	0	0	0	72	1	0	1	3	0	0	5	2	0	1	1	0	0	4	159	
6:30 AM	2	89	3	0	0	0	94	2	91	1	0	0	0	94	0	0	0	3	0	0	3	1	1	0	0	0	0	2	193	
6:45 AM	4	80	1	0	0	0	85	0	84	1	0	0	0	85	2	0	0	3	0	0	5	1	0	1	1	0	0	3	178	
Hourly Total	6	325	9	0	0	0	340	5	289	5	0	0	0	299	4	0	1	13	0	0	18	4	1	2	3	0	0	10	667	
7:00 AM	5	82	4	0	0	0	91	1	104	3	0	0	0	108	1	0	2	1	0	0	4	2	0	0	3	0	0	5	208	
7:15 AM	1	98	1	0	0	0	100	2	117	3	0	0	0	122	2	0	6	0	0	0	8	2	0	0	2	0	0	4	234	
7:30 AM	7	106	5	0	0	0	118	1	127	3	0	0	1	131	3	0	1	0	0	0	4	0	0	0	3	0	1	3	256	
7:45 AM	12	105	3	0	0	0	120	1	121	3	0	0	0	125	3	0	4	0	0	0	7	2	0	0	0	0	0	2	254	
Hourly Total	25	391	13	0	0	0	429	5	469	12	0	0	1	486	9	0	13	1	0	0	23	6	0	0	8	0	1	14	952	
8:00 AM	6	83	3	0	0	1	92	2	95	2	1	0	0	100	2	0	0	1	0	0	2	1	0	1	2	0	0	4	198	
8:15 AM	7	87	3	0	0	0	97	0	79	10	0	0	0	89	1	1	0	2	0	0	4	4	0	4	6	0	0	14	204	
8:30 AM	12	70	3	0	0	0	85	2	100	10	1	0	0	113	0	0	1	0	0	0	1	4	0	2	8	0	0	14	213	
8:45 AM	6	81	3	0	0	0	90	5	110	9	1	0	0	125	2	1	1	0	0	0	4	5	1	1	8	0	0	15	234	
Hourly Total	31	321	12	0	0	1	364	9	384	31	3	0	0	427	5	2	2	2	0	0	11	14	1	8	24	0	0	47	849	
9:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hourly Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
3:00 PM	23	116	2	0	0	0	141	0	144	8	1	0	0	153	2	0	0	2	0	0	4	11	1	16	17	0	0	45	343	
3:15 PM	18	107	2	1	0	0	128	1	160	10	4	0	0	175	0	0	3	2	0	0	5	7	1	11	17	0	0	36	344	
3:30 PM	23	124	3	1	0	0	151	4	156	13	2	0	0	175	1	0	1	1	0	0	3	4	2	5	17	0	0	28	357	
3:45 PM	20	102	4	0	0	0	126	2	169	15	1	0	0	187	4	0	0	0	0	0	4	20	0	26	11	0	0	57	374	
Hourly Total	84	449	11	2	0	0	546	7	629	46	8	0	0	690	7	0	4	5	0	0	16	42	4	58	62	0	0	166	1418	
4:00 PM	22	112	4	0	0	0	138	2	152	18	4	0	0	176	3	0	2	0	0	0	5	14	0	16	11	0	0	41	360	
4:15 PM	14	125	1	0	0	0	140	3	164	19	2	0	0	188	2	1	0	1	0	0	4	10	0	14	18	0	0	42	374	
4:30 PM	14	121	1	0	0	0	136	1	154	17	0	0	0	172	4	0	0	0	0	0	4	12	2	8	17	0	0	39	351	
4:45 PM	14	103	0	0	0	0	117	2	161	16	2	0	0	181	5	0	0	0	0	0	5	12	1	12	18	0	0	43	346	
Hourly Total	64	461	6	0	0	0	531	8	631	70	8	0	0	717	14	1	2	1	0	0	18	48	3	50	64	0	0	165	1431	
5:00 PM	20	96	0	0	0	0	116	4	189	14	1	0	0	208	1	2	0	0	0	0	3	10	0	13	12	0	1	35	362	
5:15 PM	26	110	0	0	0	0	136	3	176	23	2	0	0	204	2	0	0	0	0	0	2	11	1	12	15	0	0	39	381	
5:30 PM	23	105	1	0	0	0	129	1	206	10	4	0	0	221	1	0	0	1	0	0	2	8	1	20	8	0	1	37	389	
5:45 PM	12	104	2	0	0	0	118	1	136	8	2	0	0	147	1	1	0	2	0	0	4	12	3	7	15	0	0	37	306	
Hourly Total	81	415	3	0	0	0	499	9	707	55	9	0	0	780	5	3	0	3	0	0	11	41	5	52	50	0	2	148	1438	
6:00 PM	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Grand Total	291	2363	54	2	0	1	2710	43	3111	219	28	0	1	3401	44	6	22	25	0	0	97	155	14	170	211	0	3	550	6758	
Approach %	10.7	87.2	2.0	0.1	0.0	-	-	1.3	91.5	6.4	0.8	0.0	-	-	45.4	6.2	22.7	25.8	0.0	-	-	28.2	2.5	30.9	38.4	0.0	-	-	-	
Total %	4.3	35.0	0.8	0.0	0.0	-	40.1	0.6	46.0	3.2	0.4	0.0	-	50.3	0.7	0.1	0.3	0.4	0.0	-	1.4	2.3	0.2	2.5	3.1	0.0	-	8.1	-	
Lights	290	2253	54	2	0	-	2599	41	2953	217	28	0	-	3239	44	6	22	25	0	-	97	153	14	170	207	0	-	544	6479	
% Lights	99.7	95.3	100.0	100.0	-	-	95.9	95.3	94.9	99.1	100.0	-	-	95.2	100.0	100.0	100.0	100.0	-	-	100.0	98.7	100.0	100.0	98.1	-	-	98.9	95.9	
Buses	0	36	0	0	0	-	36	0	38	0	0	0	-	38	0	0	0	0	0	-	0	0	0	0	1	0	-	1	75	
% Buses	0.0	1.5	0.0	0.0	-	-	1.3	0.0	1.2	0.0	0.0	-	-	1.1	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.5	-	-	0.2	1.1	
Trucks	1	74	0	0	0	-	75	2	120	2	0	0	-	124	0	0	0	0	0	-	0	2	0	0	3	0	-	5	204	
% Trucks	0.3	3.1	0.0	0.0	-	-	2.8	4.7	3.9	0.9	0.0	-	-	3.6	0.0	0.0	0.0	0.0	-	-	0.0	1.3	0.0	0.0	1.4	-	-	0.9	3.0	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	0	-	-	-	-	-	-	3	-	-	
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	



Mt. Joy, PA
 Route 230 & Market St Square
 Driveway
 Tuesday, March 29, 2022
 Location: 40.138148, -
 76.585146

www.TSTData.com
 184 Baker Rd

Coatesville, Pennsylvania, United States 19320
 610-466-1469
 Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Market
 St Square Driveway
 Site Code:
 Start Date: 03/29/2022
 Page No: 3

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Speedway Driveway Northbound							Market St Square Driveway Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	
7:00 AM	5	82	4	0	0	0	91	1	104	3	0	0	0	108	1	0	2	1	0	0	4	2	0	0	3	0	0	5	208
7:15 AM	1	98	1	0	0	0	100	2	117	3	0	0	0	122	2	0	6	0	0	0	8	2	0	0	2	0	0	4	234
7:30 AM	7	106	5	0	0	0	118	1	127	3	0	0	1	131	3	0	1	0	0	0	4	0	0	0	3	0	1	3	256
7:45 AM	12	105	3	0	0	0	120	1	121	3	0	0	0	125	3	0	4	0	0	0	7	2	0	0	0	0	0	2	254
Total	25	391	13	0	0	0	429	5	469	12	0	0	1	486	9	0	13	1	0	0	23	6	0	0	8	0	1	14	952
Approach %	5.8	91.1	3.0	0.0	0.0	-	-	1.0	96.5	2.5	0.0	0.0	-	-	39.1	0.0	56.5	4.3	0.0	-	-	42.9	0.0	0.0	57.1	0.0	-	-	-
Total %	2.6	41.1	1.4	0.0	0.0	-	45.1	0.5	49.3	1.3	0.0	0.0	-	51.1	0.9	0.0	1.4	0.1	0.0	-	2.4	0.6	0.0	0.0	0.8	0.0	-	1.5	-
PHF	0.52 1	0.922	0.650	0.000	0.000	-	0.894	0.625	0.923	1.000	0.000	0.000	-	0.927	0.750	0.000	0.542	0.250	0.000	-	0.719	0.750	0.000	0.000	0.667	0.000	-	0.700	0.930
Lights	25	368	13	0	0	-	406	5	416	11	0	0	-	432	9	0	13	1	0	-	23	6	0	0	8	0	-	14	875
% Lights	100.0	94.1	100.0	-	-	-	94.6	100.0	88.7	91.7	-	-	-	88.9	100.0	-	100.0	100.0	-	-	100.0	100.0	-	-	100.0	-	-	100.0	91.9
Buses	0	5	0	0	0	-	5	0	10	0	0	0	-	10	0	0	0	0	0	-	0	0	0	0	0	0	-	0	15
% Buses	0.0	1.3	0.0	-	-	-	1.2	0.0	2.1	0.0	-	-	-	2.1	0.0	-	0.0	0.0	-	-	0.0	0.0	-	-	0.0	-	-	0.0	1.6
Trucks	0	18	0	0	0	-	18	0	43	1	0	0	-	44	0	0	0	0	0	-	0	0	0	0	0	0	-	0	62
% Trucks	0.0	4.6	0.0	-	-	-	4.2	0.0	9.2	8.3	-	-	-	9.1	0.0	-	0.0	0.0	-	-	0.0	0.0	-	-	0.0	-	-	0.0	6.5
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	



Mt. Joy, PA
 Route 230 & Market St Square
 Driveway
 Tuesday, March 29, 2022
 Location: 40.138148, -
 76.585146

www.TSTData.com
 184 Baker Rd

Coatesville, Pennsylvania, United States 19320
 610-466-1469
 Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Market
 St Square Driveway
 Site Code:
 Start Date: 03/29/2022
 Page No: 5

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Speedway Driveway Northbound							Market St Square Driveway Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	
4:45 PM	14	103	0	0	0	0	117	2	161	16	2	0	0	181	5	0	0	0	0	0	5	12	1	12	18	0	0	43	346
5:00 PM	20	96	0	0	0	0	116	4	189	14	1	0	0	208	1	2	0	0	0	0	3	10	0	13	12	0	1	35	362
5:15 PM	26	110	0	0	0	0	136	3	176	23	2	0	0	204	2	0	0	0	0	0	2	11	1	12	15	0	0	39	381
5:30 PM	23	105	1	0	0	0	129	1	206	10	4	0	0	221	1	0	0	1	0	0	2	8	1	20	8	0	1	37	389
Total	83	414	1	0	0	0	498	10	732	63	9	0	0	814	9	2	0	1	0	0	12	41	3	57	53	0	2	154	1478
Approach %	16.7	83.1	0.2	0.0	0.0	-	-	1.2	89.9	7.7	1.1	0.0	-	-	75.0	16.7	0.0	8.3	0.0	-	-	26.6	1.9	37.0	34.4	0.0	-	-	-
Total %	5.6	28.0	0.1	0.0	0.0	-	33.7	0.7	49.5	4.3	0.6	0.0	-	55.1	0.6	0.1	0.0	0.1	0.0	-	0.8	2.8	0.2	3.9	3.6	0.0	-	10.4	-
PHF	0.798	0.941	0.250	0.000	0.000	-	0.915	0.625	0.888	0.685	0.563	0.000	-	0.921	0.450	0.250	0.000	0.250	0.000	-	0.600	0.854	0.750	0.713	0.736	0.000	-	0.895	0.950
Lights	83	407	1	0	0	-	491	9	728	63	9	0	-	809	9	2	0	1	0	-	12	41	3	57	53	0	-	154	1466
% Lights	100.0	98.3	100.0	-	-	-	98.6	90.0	99.5	100.0	100.0	-	-	99.4	100.0	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	100.0	-	-	100.0	99.2
Buses	0	3	0	0	0	-	3	0	2	0	0	0	-	2	0	0	0	0	0	-	0	0	0	0	0	0	-	0	5
% Buses	0.0	0.7	0.0	-	-	-	0.6	0.0	0.3	0.0	0.0	-	-	0.2	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Trucks	0	4	0	0	0	-	4	1	2	0	0	0	-	3	0	0	0	0	0	-	0	0	0	0	0	0	-	0	7
% Trucks	0.0	1.0	0.0	-	-	-	0.8	10.0	0.3	0.0	0.0	-	-	0.4	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Mt. Joy, PA
 Route 230 & Market St Square
 Driveway
 Saturday, March 26, 2022
 Location: 40.138148, -
 76.585146

www.TSTData.com
 184 Baker Rd

Coatesville, Pennsylvania, United States 19320
 610-466-1469
 Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Market
 St Square Driveway Sat
 Site Code:
 Start Date: 03/26/2022
 Page No: 1

Turning Movement Data

Start Time	Rt. 230 Eastbound								Rt. 230 Westbound								Speedway Driveway Northbound								Market St Square Driveway Southbound								Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total					
	11:00 AM	28	117	3	0	0	0	148	4	127	16	2	0	0	149	2	1	0	1	0	0	4	6	0	11	23	0	0	40	341			
11:15 AM	20	118	3	1	0	0	142	3	149	15	2	0	0	169	2	0	1	1	0	0	4	10	3	19	13	0	0	45	360				
11:30 AM	29	112	2	0	1	0	144	2	159	25	2	0	0	188	4	0	4	2	0	0	10	8	1	14	21	0	0	44	386				
11:45 AM	34	135	3	0	0	0	172	0	158	16	7	0	0	181	4	2	2	0	0	0	8	18	2	19	20	0	0	59	420				
Hourly Total	111	482	11	1	1	0	606	9	593	72	13	0	0	687	12	3	7	4	0	0	26	42	6	63	77	0	0	188	1507				
12:00 PM	18	123	2	0	0	0	143	2	157	16	0	0	0	175	2	1	1	1	0	0	5	15	13	11	13	1	0	53	376				
12:15 PM	32	116	4	1	0	0	153	2	147	11	1	0	0	161	2	0	2	1	0	0	5	10	12	15	18	0	0	55	374				
12:30 PM	21	127	1	1	0	0	150	0	165	10	4	0	0	179	1	0	1	2	0	0	4	17	11	14	15	0	1	57	390				
12:45 PM	31	108	2	0	0	0	141	0	147	14	4	0	0	165	3	1	1	1	0	0	6	15	6	21	13	0	0	55	367				
Hourly Total	102	474	9	2	0	0	587	4	616	51	9	0	0	687	8	2	5	5	0	0	20	57	42	61	59	1	1	220	1507				
1:00 PM	26	103	0	0	0	0	129	2	127	18	0	0	0	147	0	1	1	0	0	0	2	12	10	9	20	0	0	51	329				
1:15 PM	22	118	2	0	0	0	142	2	144	14	1	0	0	161	2	0	0	0	0	0	2	10	8	19	17	0	0	54	359				
1:30 PM	20	106	2	0	0	0	128	2	142	11	1	0	0	156	4	1	0	1	0	0	6	12	9	18	20	0	0	59	349				
1:45 PM	30	114	2	0	0	0	146	1	142	14	1	0	0	158	5	0	0	2	0	0	7	7	15	6	21	0	0	49	360				
Hourly Total	98	441	6	0	0	0	545	7	555	57	3	0	0	622	11	2	1	3	0	0	17	41	42	52	78	0	0	213	1397				
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Grand Total	311	1397	26	3	1	0	1738	20	1764	180	25	0	0	1989	31	7	13	12	0	0	63	140	90	176	214	1	1	621	4411				
Approach %	17.9	80.4	1.5	0.2	0.1	-	-	1.0	88.7	9.0	1.3	0.0	-	-	49.2	11.1	20.6	19.0	0.0	-	-	22.5	14.5	28.3	34.5	0.2	-	-	-				
Total %	7.1	31.7	0.6	0.1	0.0	-	39.4	0.5	40.0	4.1	0.6	0.0	-	45.1	0.7	0.2	0.3	0.3	0.0	-	1.4	3.2	2.0	4.0	4.9	0.0	-	14.1	-				
Lights	311	1385	26	3	1	-	1726	20	1751	179	25	0	-	1975	31	7	13	12	0	-	63	139	90	176	214	1	-	620	4384				
% Lights	100.0	99.1	100.0	100.0	100.0	-	99.3	100.0	99.3	99.4	100.0	-	-	99.3	100.0	100.0	100.0	100.0	-	-	100.0	99.3	100.0	100.0	100.0	100.0	-	99.8	99.4				
Buses	0	1	0	0	0	-	1	0	3	0	0	0	-	3	0	0	0	0	0	-	0	0	0	0	0	0	-	0	4				
% Buses	0.0	0.1	0.0	0.0	0.0	-	0.1	0.0	0.2	0.0	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1				
Trucks	0	11	0	0	0	-	11	0	10	1	0	0	-	11	0	0	0	0	0	-	0	1	0	0	0	0	-	1	23				
% Trucks	0.0	0.8	0.0	0.0	0.0	-	0.6	0.0	0.6	0.6	0.0	-	-	0.6	0.0	0.0	0.0	0.0	-	-	0.0	0.7	0.0	0.0	0.0	0.0	-	0.2	0.5				
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-				
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-				
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-				
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-				



Mt. Joy, PA
 Route 230 & Market St Square
 Driveway
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Count Name: Rt. 230 & Market
 St Square Driveway Sat
 Site Code:
 Start Date: 03/26/2022
 Page No: 3

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Speedway Driveway Northbound							Market St Square Driveway Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
11:45 AM	34	135	3	0	0	0	172	0	158	16	7	0	0	181	4	2	2	0	0	0	8	18	2	19	20	0	0	59	420
12:00 PM	18	123	2	0	0	0	143	2	157	16	0	0	0	175	2	1	1	1	0	0	5	15	13	11	13	1	0	53	376
12:15 PM	32	116	4	1	0	0	153	2	147	11	1	0	0	161	2	0	2	1	0	0	5	10	12	15	18	0	0	55	374
12:30 PM	21	127	1	1	0	0	150	0	165	10	4	0	0	179	1	0	1	2	0	0	4	17	11	14	15	0	1	57	390
Total	105	501	10	2	0	0	618	4	627	53	12	0	0	696	9	3	6	4	0	0	22	60	38	59	66	1	1	224	1560
Approach %	17.0	81.1	1.6	0.3	0.0	-	-	0.6	90.1	7.6	1.7	0.0	-	-	40.9	13.6	27.3	18.2	0.0	-	-	26.8	17.0	26.3	29.5	0.4	-	-	-
Total %	6.7	32.1	0.6	0.1	0.0	-	39.6	0.3	40.2	3.4	0.8	0.0	-	44.6	0.6	0.2	0.4	0.3	0.0	-	1.4	3.8	2.4	3.8	4.2	0.1	-	14.4	-
PHF	0.77 2	0.928	0.625	0.500	0.000	-	0.898	0.500	0.950	0.828	0.429	0.000	-	0.961	0.563	0.375	0.750	0.500	0.000	-	0.688	0.833	0.731	0.776	0.825	0.250	-	0.949	0.929
Lights	105	495	10	2	0	-	612	4	626	53	12	0	-	695	9	3	6	4	0	-	22	60	38	59	66	1	-	224	1553
% Lights	100.0	98.8	100.0	100.0	-	-	99.0	100.0	99.8	100.0	100.0	-	-	99.9	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	100.0	100.0	-	100.0	99.6
Buses	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1
% Buses	0.0	0.2	0.0	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Trucks	0	5	0	0	0	-	5	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	6
% Trucks	0.0	1.0	0.0	0.0	-	-	0.8	0.0	0.2	0.0	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



www.TSTData.com
184 Baker Rd

Mt. Joy, PA
Route 230 & Scheaffer Rd
Tuesday, March 29, 2022
Location: 40.137499, -
76.583113

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt. 230 & Scheaffer Rd
Site Code:
Start Date: 03/29/2022
Page No: 1

Turning Movement Data

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Sheaffer Rd Northbound							Sheaffer Rd Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	2	85	0	0	0	0	87	2	40	2	0	0	0	44	2	1	2	3	0	0	8	0	2	3	3	0	0	8	147
6:15 AM	2	77	0	0	0	0	79	0	68	4	0	0	0	72	3	5	4	5	0	0	17	8	0	1	2	0	0	11	179
6:30 AM	2	87	0	0	0	0	89	2	84	5	0	0	0	91	4	3	3	3	0	0	13	7	1	2	3	0	0	13	206
6:45 AM	7	81	1	0	0	0	89	6	69	0	2	0	0	77	7	1	1	2	0	0	11	4	11	6	4	0	0	25	202
Hourly Total	13	330	1	0	0	0	344	10	261	11	2	0	0	284	16	10	10	13	0	0	49	19	14	12	12	0	0	57	734
7:00 AM	8	76	0	0	0	0	84	3	88	3	1	0	0	95	9	10	3	4	0	0	26	4	1	1	7	0	0	13	218
7:15 AM	10	97	0	1	0	0	108	2	83	7	0	0	0	92	25	8	3	5	0	0	41	1	4	7	3	0	0	15	256
7:30 AM	5	96	0	0	1	0	102	0	105	3	0	0	0	108	15	1	6	6	0	1	28	8	1	4	5	0	0	18	256
7:45 AM	8	99	0	0	0	0	107	5	112	6	0	0	0	123	9	6	3	5	0	0	23	4	6	3	2	0	0	15	268
Hourly Total	31	368	0	1	1	0	401	10	388	19	1	0	0	418	58	25	15	20	0	1	118	17	12	15	17	0	0	61	998
8:00 AM	8	74	0	0	0	0	82	1	79	6	1	0	0	87	14	5	3	2	0	1	24	4	5	2	2	0	0	13	206
8:15 AM	8	78	1	0	0	0	87	4	69	4	0	0	0	77	11	8	5	2	0	0	26	4	8	7	4	0	0	23	213
8:30 AM	5	73	2	0	0	0	80	4	86	3	0	0	0	93	12	8	1	2	0	0	23	23	9	12	2	0	0	46	242
8:45 AM	4	73	2	0	0	0	79	5	99	3	2	1	0	110	15	7	2	0	0	0	24	13	5	10	2	0	0	30	243
Hourly Total	25	298	5	0	0	0	328	14	333	16	3	1	0	367	52	28	11	6	0	1	97	44	27	31	10	0	0	112	904
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	13	104	3	2	0	0	122	8	119	7	1	0	0	135	22	12	2	4	0	0	40	2	8	10	6	0	0	26	323
3:15 PM	12	95	5	0	0	0	112	7	138	4	0	0	0	149	18	3	2	1	0	0	24	4	5	9	6	0	0	24	309
3:30 PM	16	110	5	2	0	0	133	13	122	3	0	0	0	138	33	6	4	3	0	0	46	4	9	9	8	0	0	30	347
3:45 PM	14	94	7	0	0	0	115	7	137	5	0	0	0	149	25	6	7	3	0	0	41	6	10	21	5	0	0	42	347
Hourly Total	55	403	20	4	0	0	482	35	516	19	1	0	0	571	98	27	15	11	0	0	151	16	32	49	25	0	0	122	1326
4:00 PM	9	107	2	1	0	0	119	7	137	9	1	0	0	154	22	3	12	2	1	0	40	11	7	11	6	0	0	35	348
4:15 PM	8	121	4	2	0	0	135	9	155	10	2	0	0	176	18	7	2	2	0	0	29	7	4	10	4	0	0	25	365
4:30 PM	13	113	7	0	0	1	133	3	142	6	0	0	0	151	11	5	3	0	0	0	19	10	7	10	9	0	0	36	339
4:45 PM	8	106	2	0	0	0	116	16	147	3	0	0	0	166	22	10	0	2	0	0	34	9	5	11	3	0	0	28	344
Hourly Total	38	447	15	3	0	1	503	35	581	28	3	0	0	647	73	25	17	6	1	0	122	37	23	42	22	0	0	124	1396
5:00 PM	10	83	6	0	0	0	99	7	161	8	1	0	0	177	19	6	5	6	0	0	36	11	6	18	7	0	1	42	354
5:15 PM	18	94	7	0	1	0	120	8	149	4	0	0	0	161	26	4	5	7	0	0	42	3	13	17	7	0	0	40	363
5:30 PM	10	95	5	1	0	1	111	9	175	3	1	0	0	188	23	12	2	2	0	0	39	3	17	16	3	0	0	39	377
5:45 PM	11	94	5	1	1	0	112	7	108	6	0	0	0	121	19	3	3	2	0	0	27	6	11	8	10	0	0	35	295
Hourly Total	49	366	23	2	2	1	442	31	593	21	2	0	0	647	87	25	15	17	0	0	144	23	47	59	27	0	1	156	1389
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total	211	2212	64	10	3	2	2500	135	2672	114	12	1	0	2934	384	140	83	73	1	2	681	156	155	208	113	0	1	632	6747
Approach %	8.4	88.5	2.6	0.4	0.1	-	-	4.6	91.1	3.9	0.4	0.0	-	-	56.4	20.6	12.2	10.7	0.1	-	-	24.7	24.5	32.9	17.9	0.0	-	-	-
Total %	3.1	32.8	0.9	0.1	0.0	-	37.1	2.0	39.6	1.7	0.2	0.0	-	43.5	5.7	2.1	1.2	1.1	0.0	-	10.1	2.3	2.3	3.1	1.7	0.0	-	9.4	-
Lights	206	2110	64	9	3	-	2392	125	2565	103	11	1	-	2805	346	134	74	70	1	-	625	124	144	203	113	0	-	584	6406
% Lights	97.6	95.4	100.0	90.0	100.0	-	95.7	92.6	96.0	90.4	91.7	100.0	-	95.6	90.1	95.7	89.2	95.9	100.0	-	91.8	79.5	92.9	97.6	100.0	-	-	92.4	94.9
Buses	0	39	0	0	0	-	39	4	31	5	1	0	-	41	3	2	5	1	0	-	11	28	5	1	0	0	-	34	125
% Buses	0.0	1.8	0.0	0.0	0.0	-	1.6	3.0	1.2	4.4	8.3	0.0	-	1.4	0.8	1.4	6.0	1.4	0.0	-	1.6	17.9	3.2	0.5	0.0	-	-	5.4	1.9
Trucks	5	63	0	1	0	-	69	6	76	6	0	0	-	88	35	4	4	2	0	-	45	4	6	4	0	0	-	14	216
% Trucks	2.4	2.8	0.0	10.0	0.0	-	2.8	4.4	2.8	5.3	0.0	0.0	-	3.0	9.1	2.9	4.8	2.7	0.0	-	6.6	2.6	3.9	1.9	0.0	-	-	2.2	3.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	



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184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Mt. Joy, PA
Route 230 & Scheaffer Rd
Tuesday, March 29, 2022
Location: 40.137499, -
76.583113

Count Name: Rt. 230 & Scheaffer Rd
Site Code:
Start Date: 03/29/2022
Page No: 5

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Rt. 230 Eastbound							Rt. 230 Westbound							Sheaffer Rd Northbound							Sheaffer Rd Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:45 PM	8	106	2	0	0	0	116	16	147	3	0	0	0	166	22	10	0	2	0	0	34	9	5	11	3	0	0	28	344
5:00 PM	10	83	6	0	0	0	99	7	161	8	1	0	0	177	19	6	5	6	0	0	36	11	6	18	7	0	1	42	354
5:15 PM	18	94	7	0	1	0	120	8	149	4	0	0	0	161	26	4	5	7	0	0	42	3	13	17	7	0	0	40	363
5:30 PM	10	95	5	1	0	1	111	9	175	3	1	0	0	188	23	12	2	2	0	0	39	3	17	16	3	0	0	39	377
Total	46	378	20	1	1	1	446	40	632	18	2	0	0	692	90	32	12	17	0	0	151	26	41	62	20	0	1	149	1438
Approach %	10.3	84.8	4.5	0.2	0.2	-	-	5.8	91.3	2.6	0.3	0.0	-	-	59.6	21.2	7.9	11.3	0.0	-	-	17.4	27.5	41.6	13.4	0.0	-	-	-
Total %	3.2	26.3	1.4	0.1	0.1	-	31.0	2.8	43.9	1.3	0.1	0.0	-	48.1	6.3	2.2	0.8	1.2	0.0	-	10.5	1.8	2.9	4.3	1.4	0.0	-	10.4	-
PHF	0.639	0.892	0.714	0.250	0.250	-	0.929	0.625	0.903	0.563	0.500	0.000	-	0.920	0.865	0.667	0.600	0.607	0.000	-	0.899	0.591	0.603	0.861	0.714	0.000	-	0.887	0.954
Lights	45	368	20	1	1	-	435	39	627	18	2	0	-	686	90	31	12	16	0	-	149	26	40	61	20	0	-	147	1417
% Lights	97.8	97.4	100.0	100.0	100.0	-	97.5	97.5	99.2	100.0	100.0	-	99.1	100.0	96.9	100.0	94.1	-	-	98.7	100.0	97.6	98.4	100.0	-	-	98.7	98.5	
Buses	0	3	0	0	0	-	3	1	1	0	0	0	-	2	0	0	0	1	0	-	1	0	0	0	0	0	-	0	6
% Buses	0.0	0.8	0.0	0.0	0.0	-	0.7	2.5	0.2	0.0	0.0	-	0.3	0.0	0.0	0.0	5.9	-	-	0.7	0.0	0.0	0.0	0.0	-	-	0.0	0.4	
Trucks	1	7	0	0	0	-	8	0	4	0	0	0	-	4	0	1	0	0	0	-	1	0	1	1	0	0	-	2	15
% Trucks	2.2	1.9	0.0	0.0	0.0	-	1.8	0.0	0.6	0.0	0.0	-	0.6	0.0	3.1	0.0	0.0	-	-	0.7	0.0	2.4	1.6	0.0	-	-	1.3	1.0	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	



www.TSTData.com
184 Baker Rd

Mt. Joy, PA
Route 230 & Ridge Run Rd
Tuesday, March 29, 2022
Location: 40.126796, -
76.551134

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rte 230 & Ridge
Run Rd (3/29)
Site Code:
Start Date: 03/29/2022
Page No: 1

Turning Movement Data

Start Time	Rte 230 Eastbound					Rte 230 Westbound					Ridge Run Rd Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
6:00 AM	0	31	0	0	31	54	2	0	0	56	0	0	0	0	0	87
6:15 AM	0	38	0	0	38	57	1	0	0	58	5	0	0	0	5	101
6:30 AM	0	42	0	0	42	71	3	0	0	74	5	0	0	0	5	121
6:45 AM	0	47	0	0	47	71	5	0	0	76	4	0	0	0	4	127
Hourly Total	0	158	0	0	158	253	11	0	0	264	14	0	0	0	14	436
7:00 AM	0	60	0	0	60	84	2	0	0	86	2	0	0	0	2	148
7:15 AM	0	62	0	0	62	88	4	0	0	92	6	0	0	0	6	160
7:30 AM	3	54	0	0	57	109	7	0	0	116	12	0	0	0	12	185
7:45 AM	0	82	0	0	82	83	10	0	0	93	5	3	0	0	8	183
Hourly Total	3	258	0	0	261	364	23	0	0	387	25	3	0	0	28	676
8:00 AM	0	54	0	0	54	73	1	0	0	74	3	1	0	0	4	132
8:15 AM	1	60	0	0	61	75	2	0	0	77	6	0	0	0	6	144
8:30 AM	1	73	0	0	74	56	2	0	0	58	5	1	0	0	6	138
8:45 AM	2	67	0	0	69	68	8	0	0	76	8	1	0	1	9	154
Hourly Total	4	254	0	0	258	272	13	0	0	285	22	3	0	1	25	568
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	1	100	0	0	101	81	11	0	0	92	8	1	0	0	9	202
3:15 PM	1	77	0	0	78	110	5	0	0	115	4	0	0	0	4	197
3:30 PM	1	102	0	0	103	88	8	0	0	96	12	0	0	0	12	211
3:45 PM	1	103	0	0	104	105	7	0	0	112	10	0	0	0	10	226
Hourly Total	4	382	0	0	386	384	31	0	0	415	34	1	0	0	35	836
4:00 PM	2	104	0	0	106	104	6	0	0	110	12	0	0	0	12	228
4:15 PM	2	127	0	0	129	97	13	0	0	110	6	0	0	0	6	245
4:30 PM	1	115	0	0	116	90	12	0	0	102	9	1	0	0	10	228
4:45 PM	0	109	0	0	109	93	15	0	0	108	13	0	0	0	13	230
Hourly Total	5	455	0	0	460	384	46	0	0	430	40	1	0	0	41	931
5:00 PM	3	107	0	0	110	104	15	0	0	119	9	0	0	0	9	238
5:15 PM	0	113	0	0	113	96	13	0	0	109	9	1	0	0	10	232
5:30 PM	1	101	0	0	102	106	7	0	0	113	10	3	0	0	13	228
5:45 PM	2	91	0	0	93	73	3	0	0	76	9	0	0	0	9	178
Hourly Total	6	412	0	0	418	379	38	0	0	417	37	4	0	0	41	876
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	22	1919	0	0	1941	2036	162	0	0	2198	172	12	0	1	184	4323
Approach %	1.1	98.9	0.0	-	-	92.6	7.4	0.0	-	-	93.5	6.5	0.0	-	-	-
Total %	0.5	44.4	0.0	-	44.9	47.1	3.7	0.0	-	50.8	4.0	0.3	0.0	-	4.3	-
Lights	18	1838	0	-	1856	1958	156	0	-	2114	166	8	0	-	174	4144
% Lights	81.8	95.8	-	-	95.6	96.2	96.3	-	-	96.2	96.5	66.7	-	-	94.6	95.9
Buses	0	14	0	-	14	15	2	0	-	17	1	0	0	-	1	32
% Buses	0.0	0.7	-	-	0.7	0.7	1.2	-	-	0.8	0.6	0.0	-	-	0.5	0.7
Trucks	4	67	0	-	71	63	4	0	-	67	5	4	0	-	9	147
% Trucks	18.2	3.5	-	-	3.7	3.1	2.5	-	-	3.0	2.9	33.3	-	-	4.9	3.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
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Mt. Joy, PA
Cloverleaf Rd & Harrisburg Ave
Tuesday, March 29, 2022
Location: 40.128779, -
76.564958

Count Name: Cloverleaf Rd &
Harrisburg Ave (3/29)
Site Code:
Start Date: 03/29/2022
Page No: 3

Turning Movement Peak Hour Data (6:45 AM)

Start Time	Harrisburg Ave Eastbound						Harrisburg Ave Westbound						Cloverleaf Rd Northbound						Cloverleaf Rd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:45 AM	14	2	5	0	1	21	0	10	28	0	0	38	14	78	3	0	0	95	8	42	22	0	0	72	226
7:00 AM	12	6	9	0	0	27	3	6	34	0	0	43	12	74	2	0	0	88	5	32	17	0	0	54	212
7:15 AM	21	6	7	0	0	34	2	14	28	0	0	44	7	66	1	0	0	74	5	38	17	0	0	60	212
7:30 AM	14	8	12	0	0	34	1	12	19	0	0	32	12	75	3	0	0	90	7	39	15	0	0	61	217
Total	61	22	33	0	1	116	6	42	109	0	0	157	45	293	9	0	0	347	25	151	71	0	0	247	867
Approach %	52.6	19.0	28.4	0.0	-	-	3.8	26.8	69.4	0.0	-	-	13.0	84.4	2.6	0.0	-	-	10.1	61.1	28.7	0.0	-	-	-
Total %	7.0	2.5	3.8	0.0	-	13.4	0.7	4.8	12.6	0.0	-	18.1	5.2	33.8	1.0	0.0	-	40.0	2.9	17.4	8.2	0.0	-	28.5	-
PHF	0.726	0.688	0.688	0.000	-	0.853	0.500	0.750	0.801	0.000	-	0.892	0.804	0.939	0.750	0.000	-	0.913	0.781	0.899	0.807	0.000	-	0.858	0.959
Lights	32	21	26	0	-	79	6	39	105	0	-	150	38	271	9	0	-	318	17	129	42	0	-	188	735
% Lights	52.5	95.5	78.8	-	-	68.1	100.0	92.9	96.3	-	-	95.5	84.4	92.5	100.0	-	-	91.6	68.0	85.4	59.2	-	-	76.1	84.8
Buses	0	0	1	0	-	1	0	2	2	0	-	4	0	1	0	0	-	1	7	15	1	0	-	23	29
% Buses	0.0	0.0	3.0	-	-	0.9	0.0	4.8	1.8	-	-	2.5	0.0	0.3	0.0	-	-	0.3	28.0	9.9	1.4	-	-	9.3	3.3
Trucks	29	1	6	0	-	36	0	1	2	0	-	3	7	21	0	0	-	28	1	7	28	0	-	36	103
% Trucks	47.5	4.5	18.2	-	-	31.0	0.0	2.4	1.8	-	-	1.9	15.6	7.2	0.0	-	-	8.1	4.0	4.6	39.4	-	-	14.6	11.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Cloverleaf Rd &
Harrisburg Ave (3/29)
Site Code:
Start Date: 03/29/2022
Page No: 5

Mt. Joy, PA
Cloverleaf Rd & Harrisburg Ave
Tuesday, March 29, 2022
Location: 40.128779, -
76.564958

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Harrisburg Ave Eastbound						Harrisburg Ave Westbound						Cloverleaf Rd Northbound						Cloverleaf Rd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:15 PM	23	23	21	0	0	67	1	9	14	0	0	24	13	61	2	0	0	76	13	74	9	0	0	96	263
4:30 PM	12	18	16	0	0	46	0	12	14	0	0	26	6	63	1	0	0	70	21	79	9	0	0	109	251
4:45 PM	19	19	22	0	0	60	0	17	16	0	0	33	6	66	1	0	0	73	23	62	15	0	0	100	266
5:00 PM	22	20	16	0	0	58	3	12	10	0	0	25	7	51	2	0	0	60	26	81	13	0	0	120	263
Total	76	80	75	0	0	231	4	50	54	0	0	108	32	241	6	0	0	279	83	296	46	0	0	425	1043
Approach %	32.9	34.6	32.5	0.0	-	-	3.7	46.3	50.0	0.0	-	-	11.5	86.4	2.2	0.0	-	-	19.5	69.6	10.8	0.0	-	-	-
Total %	7.3	7.7	7.2	0.0	-	22.1	0.4	4.8	5.2	0.0	-	10.4	3.1	23.1	0.6	0.0	-	26.7	8.0	28.4	4.4	0.0	-	40.7	-
PHF	0.826	0.870	0.852	0.000	-	0.862	0.333	0.735	0.844	0.000	-	0.818	0.615	0.913	0.750	0.000	-	0.918	0.798	0.914	0.767	0.000	-	0.885	0.980
Lights	61	77	73	0	-	211	4	50	52	0	-	106	27	227	6	0	-	260	82	286	42	0	-	410	987
% Lights	80.3	96.3	97.3	-	-	91.3	100.0	100.0	96.3	-	-	98.1	84.4	94.2	100.0	-	-	93.2	98.8	96.6	91.3	-	-	96.5	94.6
Buses	1	0	0	0	-	1	0	0	2	0	-	2	0	8	0	0	-	8	0	0	0	0	-	0	11
% Buses	1.3	0.0	0.0	-	-	0.4	0.0	0.0	3.7	-	-	1.9	0.0	3.3	0.0	-	-	2.9	0.0	0.0	0.0	-	-	0.0	1.1
Trucks	14	3	2	0	-	19	0	0	0	0	-	0	5	6	0	0	-	11	1	10	4	0	-	15	45
% Trucks	18.4	3.8	2.7	-	-	8.2	0.0	0.0	0.0	-	-	0.0	15.6	2.5	0.0	-	-	3.9	1.2	3.4	8.7	-	-	3.5	4.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Mt. Joy, PA
Cloverleaf Rd & Harrisburg Ave
Saturday, March 26, 2022
Location: 40.128779, -
76.564958

Count Name: Cloverleaf Rd &
Harrisburg Ave (3/26)
Site Code:
Start Date: 03/26/2022
Page No: 1

Turning Movement Data

Start Time	Harrisburg Ave Eastbound						Harrisburg Ave Westbound						Cloverleaf Rd Northbound						Cloverleaf Rd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:00 AM	6	6	8	0	0	20	0	10	23	0	0	33	6	32	4	0	0	42	9	41	4	0	0	54	149
11:15 AM	7	12	12	1	0	32	4	5	5	0	0	14	6	34	1	0	0	41	14	41	8	0	0	63	150
11:30 AM	11	15	5	0	0	31	2	5	7	0	0	14	3	45	4	0	0	52	4	40	10	0	0	54	151
11:45 AM	8	11	8	0	0	27	3	9	16	0	0	28	8	41	1	0	0	50	8	46	8	0	0	62	167
Hourly Total	32	44	33	1	0	110	9	29	51	0	0	89	23	152	10	0	0	185	35	168	30	0	0	233	617
12:00 PM	12	14	9	0	0	35	7	9	12	0	0	28	5	43	0	0	0	48	2	42	7	0	0	51	162
12:15 PM	6	8	10	0	0	24	3	9	11	0	0	23	3	43	2	0	0	48	10	47	8	0	0	65	160
12:30 PM	8	9	9	0	0	26	3	9	8	0	0	20	4	35	3	0	1	42	11	46	3	0	0	60	148
12:45 PM	4	18	6	0	0	28	0	14	12	0	0	26	6	40	2	0	0	48	7	35	9	0	0	51	153
Hourly Total	30	49	34	0	0	113	13	41	43	0	0	97	18	161	7	0	1	186	30	170	27	0	0	227	623
1:00 PM	8	11	10	0	0	29	1	4	13	0	0	18	1	38	1	0	0	40	7	39	6	0	0	52	139
1:15 PM	7	13	16	0	0	36	3	3	13	0	0	19	5	38	2	0	0	45	13	59	4	0	0	76	176
1:30 PM	12	10	6	0	0	28	0	9	12	0	0	21	4	54	1	0	0	59	4	42	3	0	0	49	157
1:45 PM	3	11	8	0	0	22	4	7	10	0	0	21	2	40	1	0	0	43	8	37	7	0	0	52	138
Hourly Total	30	45	40	0	0	115	8	23	48	0	0	79	12	170	5	0	0	187	32	177	20	0	0	229	610
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Grand Total	92	138	107	1	0	338	30	93	142	0	0	265	53	484	22	0	1	559	97	515	77	0	0	689	1851
Approach %	27.2	40.8	31.7	0.3	-	-	11.3	35.1	53.6	0.0	-	-	9.5	86.6	3.9	0.0	-	-	14.1	74.7	11.2	0.0	-	-	-
Total %	5.0	7.5	5.8	0.1	-	18.3	1.6	5.0	7.7	0.0	-	14.3	2.9	26.1	1.2	0.0	-	30.2	5.2	27.8	4.2	0.0	-	37.2	-
Lights	86	135	104	1	-	326	30	91	141	0	-	262	48	473	22	0	-	543	96	503	71	0	-	670	1801
% Lights	93.5	97.8	97.2	100.0	-	96.4	100.0	97.8	99.3	-	-	98.9	90.6	97.7	100.0	-	-	97.1	99.0	97.7	92.2	-	-	97.2	97.3
Buses	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	1.1	0.0	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	5	3	3	0	-	11	0	2	1	0	-	3	5	11	0	0	-	16	1	12	6	0	-	19	49
% Trucks	5.4	2.2	2.8	0.0	-	3.3	0.0	2.2	0.7	-	-	1.1	9.4	2.3	0.0	-	-	2.9	1.0	2.3	7.8	-	-	2.8	2.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Tri-State Traffic Data, Inc.

610-466-1469

TSTData.com

Road: Rt. 230
 Location: 535 ft W of Ridge Run Rd
 Counter: 36066 & 35314

Site Code: 2
 Station ID:

Latitude: 40' 12751.0000 North
 Longitude: 76' 55287.0000 West

Start Time	Friday, March 25, 2022		Saturday, March 26, 2022		Sunday, March 27, 2022		Monday, March 28, 2022		Tuesday, March 29, 2022		Wednesday, March 30, 2022		Thursday, March 31, 2022		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	28	25	39	34	21	11	32	13	23	17	22	11	28	18
01:00	*	*	26	23	10	19	14	20	16	16	10	11	15	15	15	17
02:00	*	*	25	16	15	16	16	10	17	16	25	19	20	19	20	16
03:00	*	*	6	17	8	19	11	13	21	18	7	23	18	23	12	19
04:00	*	*	20	29	9	14	39	59	39	57	29	64	35	63	28	48
05:00	*	*	41	71	24	37	70	145	69	145	76	147	62	157	57	117
06:00	*	*	57	67	53	55	163	240	159	253	159	238	167	230	126	180
07:00	*	*	106	141	82	76	238	341	255	361	235	355	261	357	196	272
08:00	*	*	232	215	170	133	267	273	262	278	260	285	245	304	239	248
09:00	*	*	309	291	181	191	282	288	300	349	255	266	269	340	266	288
10:00	*	*	393	389	216	258	268	285	304	335	285	303	323	319	298	315
11:00	*	*	374	396	231	276	286	318	335	362	305	323	334	325	311	333
12:00 PM	*	*	378	402	275	298	329	350	309	330	297	298	361	358	325	339
01:00	*	*	354	381	258	279	285	339	296	346	260	333	332	337	298	336
02:00	*	*	337	330	259	271	330	323	344	339	350	328	352	349	329	323
03:00	381	386	284	294	253	226	367	346	385	383	361	382	440	389	353	344
04:00	496	384	289	267	199	220	444	355	462	389	462	337	481	379	405	333
05:00	425	379	284	304	212	221	397	347	419	383	427	381	408	365	367	340
06:00	316	313	252	248	174	158	272	224	302	278	291	256	297	258	272	248
07:00	195	258	191	201	151	152	186	168	191	238	211	194	206	194	190	201
08:00	159	151	143	138	116	122	123	124	158	173	151	168	140	153	141	147
09:00	112	110	119	124	76	64	70	82	121	74	99	98	107	104	101	94
10:00	91	63	83	70	43	32	54	44	47	44	50	51	63	48	62	50
11:00	65	29	46	41	33	9	40	33	42	24	54	23	38	19	45	25
Total	2240	2073	4377	4480	3087	3180	4572	4738	4885	5204	4682	4900	4996	5116	4484	4651
Day	4313		8857		6267		9310		10089		9582		10112		9135	
AM Peak	-	-	10:00	11:00	11:00	11:00	11:00	07:00	11:00	11:00	11:00	07:00	11:00	07:00	11:00	11:00
Vol.	-	-	393	396	231	276	286	341	335	362	305	355	334	357	311	333
PM Peak	16:00	15:00	12:00	12:00	12:00	12:00	16:00	16:00	16:00	16:00	16:00	15:00	16:00	15:00	16:00	15:00
Vol.	496	386	378	402	275	298	444	355	462	389	462	382	481	389	405	344

Tri-State Traffic Data, Inc.

610-466-1469

TSTData.com

Road: Cloverleaf Rd
 Location: 545 ft N of Rt. 230
 Counter: 35892

Site Code: 1
 Station ID:
 A to B NB
 Latitude: 40' 13263.0000 North
 Longitude: 76' 56316.0000 West

Start Time	Friday, March 25, 2022		Saturday, March 26, 2022		Sunday, March 27, 2022		Monday, March 28, 2022		Tuesday, March 29, 2022		Wednesday, March 30, 2022		Thursday, March 31, 2022		Week Average	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	37	61	66	83	28	40	21	42	33	44	37	51	37	54
01:00	*	*	28	40	26	42	31	26	40	23	18	38	31	32	29	34
02:00	*	*	25	33	20	36	24	15	31	19	35	23	27	32	27	26
03:00	*	*	33	26	28	21	37	21	55	38	52	20	65	33	45	26
04:00	*	*	57	35	27	20	134	63	114	71	120	63	112	63	94	52
05:00	*	*	76	89	45	55	261	170	265	179	260	190	286	166	199	142
06:00	*	*	169	114	114	84	550	347	599	330	618	366	563	354	436	266
07:00	*	*	300	191	152	111	736	418	732	466	750	503	749	510	570	366
08:00	*	*	386	300	255	246	536	449	585	474	541	489	580	435	480	399
09:00	*	*	427	377	293	248	428	417	455	449	401	397	465	418	412	384
10:00	*	*	486	442	383	299	371	367	421	382	436	427	407	447	417	394
11:00	*	*	473	479	387	363	383	444	387	435	395	416	406	475	405	435
12:00 PM	*	*	473	492	466	484	411	475	442	465	411	442	440	427	440	464
01:00	*	*	480	498	394	443	387	429	440	450	427	421	437	485	428	454
02:00	*	*	442	481	359	417	469	459	488	508	506	518	477	450	457	472
03:00	*	*	427	431	343	401	495	619	542	661	489	675	519	675	469	577
04:00	553	749	406	458	332	405	500	810	535	765	534	773	509	720	481	669
05:00	589	665	371	471	297	399	470	728	498	781	519	799	507	731	464	653
06:00	430	497	384	406	273	329	372	447	428	512	417	504	404	506	387	457
07:00	304	368	297	302	267	310	254	305	298	374	272	407	260	343	279	344
08:00	196	315	230	296	187	221	149	252	223	297	255	321	172	266	202	281
09:00	186	287	211	246	130	168	122	190	121	211	164	249	170	198	158	221
10:00	124	186	157	201	120	106	117	111	98	120	120	120	125	123	123	138
11:00	112	149	85	123	46	60	57	64	64	75	68	63	57	74	70	87
Total	2494	3216	6460	6592	5010	5351	7322	7666	7882	8127	7841	8268	7805	8014	7109	7395
Day	5710		13052		10361		14988		16009		16109		15819		14504	
AM Peak	-	-	10:00	11:00	11:00	11:00	07:00	08:00	07:00	08:00	07:00	07:00	07:00	07:00	07:00	11:00
Vol.	-	-	486	479	387	363	736	449	732	474	750	503	749	510	570	435
PM Peak	17:00	16:00	13:00	13:00	12:00	12:00	16:00	16:00	15:00	17:00	16:00	17:00	15:00	17:00	16:00	16:00
Vol.	589	749	480	498	466	484	500	810	542	781	534	799	519	731	481	669

Tri-State Traffic Data, Inc.

610-466-1469

TSTData.com

Road: Ridge Run Rd
 Location: 710 ft N of Rt. 230
 Counter: 35902

Site Code: 3
 Station ID:
 A to B NB
 Latitude: 40' 12870.0000 North
 Longitude: 76' 55180.0000 West

Start Time	Friday, March 25, 2022		Saturday, March 26, 2022		Sunday, March 27, 2022		Monday, March 28, 2022		Tuesday, March 29, 2022		Wednesday, March 30, 2022		Thursday, March 31, 2022		Week Average	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	2	3	5	0	3	0	2	2	0	1	2	0	2	1
01:00	*	*	1	3	0	1	0	0	1	1	0	2	1	1	0	1
02:00	*	*	1	0	1	1	1	0	1	2	1	0	0	0	1	0
03:00	*	*	1	2	2	2	0	0	1	0	0	0	1	0	1	1
04:00	*	*	1	1	0	0	2	3	3	3	2	1	1	2	2	2
05:00	*	*	2	3	0	3	4	7	3	7	1	4	6	6	3	5
06:00	*	*	1	3	3	3	9	15	12	14	14	13	10	11	8	10
07:00	*	*	10	14	4	9	19	20	25	26	26	23	24	28	18	20
08:00	*	*	9	17	10	23	23	27	15	20	23	26	20	33	17	24
09:00	*	*	17	30	15	18	18	19	21	17	20	22	25	27	19	22
10:00	*	*	22	25	24	19	18	24	19	20	15	13	22	28	20	22
11:00	*	*	30	24	28	12	21	20	22	33	14	14	29	32	24	22
12:00 PM	*	*	41	29	22	22	18	13	29	25	20	27	30	31	27	24
01:00	*	*	22	23	20	17	17	18	30	29	26	26	28	12	24	21
02:00	*	*	36	24	19	28	21	23	29	18	35	27	27	22	28	24
03:00	*	*	20	21	25	18	37	25	35	33	31	41	38	0	31	23
04:00	48	39	33	22	16	11	37	23	47	42	48	32	42	4	39	25
05:00	36	42	26	10	21	11	47	31	46	40	48	59	33	11	37	29
06:00	29	16	20	19	12	12	17	15	27	14	34	29	17	20	22	18
07:00	17	19	15	8	10	13	14	17	25	10	13	15	16	14	16	14
08:00	15	11	9	5	6	8	9	5	11	6	21	6	12	8	12	7
09:00	12	11	6	5	6	6	8	4	3	1	7	3	4	4	7	5
10:00	7	3	7	3	2	5	4	2	3	0	3	2	4	2	4	2
11:00	5	4	0	1	1	0	2	1	2	0	2	0	2	1	2	1
Total	169	145	332	295	252	242	349	312	412	363	404	386	394	297	364	323
Day	314		627		494		661		775		790		691		687	
AM Peak	-	-	11:00	09:00	11:00	08:00	08:00	08:00	07:00	11:00	07:00	08:00	11:00	08:00	11:00	08:00
Vol.	-	-	30	30	28	23	23	27	25	33	26	26	29	33	24	24
PM Peak	16:00	17:00	12:00	12:00	15:00	14:00	17:00	17:00	16:00	16:00	16:00	17:00	16:00	12:00	16:00	17:00
Vol.	48	42	41	29	25	28	47	31	47	42	48	59	42	31	39	29

APPENDIX I

GROWTH RATE INFORMATION

Growth Factors for August 2022 to July 2023				
County	Urban Interstate	Rural Interstate	Urban Non-Interstate	Rural Non-Interstate
ADAMS	*	*	0.50	0.60
ALLEGHENY	0.98	*	0.00	0.43
ARMSTRONG	0.80	*	0.00	0.37
BEAVER	0.64	2.05	0.00	0.30
BEDFORD	*	2.20	0.00	0.39
BERKS	1.34	2.53	0.32	0.58
BLAIR	0.86	2.34	0.00	0.40
BRADFORD	1.06	*	0.00	0.48
BUCKS	1.35	2.63	0.22	0.58
BUTLER	1.66	2.88	0.29	0.71
CAMBRIA	0.35	*	0.00	0.19
CAMERON	*	*	*	0.12
CARBON	1.42	2.68	0.28	0.60
CENTRE	1.79	2.75	0.72	0.74
CHESTER	1.77	2.92	0.54	0.77
CLARION	0.79	2.23	0.00	0.37
CLEARFIELD	0.61	1.94	0.00	0.31
CLINTON	1.10	2.36	0.02	0.48
COLUMBIA	1.10	2.32	0.06	0.48
CRAWFORD	0.74	2.12	0.00	0.36
CUMBERLAND	1.63	2.79	0.59	0.69
DAUPHIN	1.54	*	0.35	0.66
DELAWARE	1.27	*	0.00	*
ELK	*	*	0.00	0.30
ERIE	0.96	2.31	0.00	0.43
FAYETTE	0.86	*	0.00	0.39
FOREST	*	*	*	0.96
FRANKLIN	1.71	2.81	0.73	0.72
FULTON	*	2.33	*	0.50
GREENE	0.73	2.28	0.00	0.36
HUNTINGDON	*	2.49	0.00	0.49
INDIANA	0.94	*	0.00	0.44
JEFFERSON	*	2.32	0.00	0.46
JUNIATA	*	*	*	0.53
LACKAWANNA	0.99	2.36	0.00	0.44
LANCASTER	1.66	2.84	0.60	0.70
LAWRENCE	0.69	2.18	0.00	0.33
LEBANON	*	2.55	0.48	0.62
LEHIGH	1.75	3.09	0.53	0.75
LUZERNE	1.04	2.41	0.00	0.47
LYCOMING	0.99	2.37	0.00	0.44
MCKEAN	0.60	*	0.00	0.30
MERCER	0.92	2.52	0.00	0.43
MIFFLIN	1.17	*	0.00	0.51
MONROE	1.77	2.88	0.79	0.75
MONTGOMERY	1.29	*	0.27	0.55
MONTOUR	1.30	2.68	0.00	0.57
NORTHAMPTON	1.80	3.16	0.47	0.78
NORTHUMBERLAND	1.00	2.28	0.00	0.43
PERRY	*	*	0.24	0.54
PHILADELPHIA	1.18	*	0.05	*
PIKE	1.72	2.72	0.86	0.73
POTTER	*	*	*	0.35
SCHUYLKILL	1.00	2.45	0.00	0.45
SNYDER	1.23	*	0.21	0.54
SOMERSET	0.60	2.06	0.00	0.34
SULLIVAN	*	*	*	0.37
SUSQUEHANNA	1.09	2.43	0.00	0.47
TIOGA	*	*	*	0.42
UNION	1.54	2.68	0.44	0.63
VENANGO	*	1.91	0.00	0.27
WARREN	*	*	0.00	0.35
WASHINGTON	1.22	2.74	0.00	0.55
WAYNE	*	2.53	0.31	0.58
WESTMORELAND	0.89	2.18	0.00	0.40
WYOMING	*	*	0.00	0.44
YORK	1.57	2.89	0.47	0.69

* = Functional Class Doesn't Exist in County

Questions? Please contact Andrew O'Neill at the Bureau of Planning and Research, 717-346-3250 or andoneill@pa.gov

NOTE: The projected growth factors are derived using historical VMT (Vehicle Miles Traveled) data (1994 to 2021), as well as Woods and Poole demographic and economic data. The factors should be compounded when calculating future values. The factors should not be used to project traffic beyond a 20-year period. Please be aware that these factors are estimates, and unforeseen events (opening of shopping centers, fast food franchises, gas stations, etc) could cause growth to change over time.

APPENDIX J

TRIP GENERATION CALCULATION WORKSHEETS

MEMORANDUM

PASS-BY TRIP INFORMATION

Pass-by trip percentages for the Convenience Store/Gas Station: 9-20 VFP Land Use (945) were utilized as follows:

Weekday AM Peak Hour - 76 percent (ITE)

Weekday PM Peak Hour - 75 percent (ITE)

Saturday Peak Hour - 65 percent (assume 10 percent less than PM peak hour)

Pass-by trip percentages for the Shopping Center between 40,000 and 150,000 square feet Land Use (821) were utilized as follows:

Weekday PM Peak Hour - 40 percent (ITE)

Saturday Peak Hour - 31 percent (ITE)

Vehicle Pass-By Rates by Land Use

Source: ITE Trip Generation Manual, 11th Edition

Land Use Code	945									
Land Use	Convenience Store/Gas Station									
Setting	General Urban/Suburban									
Time Period	Weekday AM Peak Period									
# Data Sites	16 Sites with between 2 and 8 VFP					28 Sites with between 9 and 20 VFP				
Average Pass-By Rate	60% for Sites with between 2 and 8 VFP					76% for Sites with between 9 and 20 VFP				
Pass-By Characteristics for Individual Sites										
GFA (000)	VFP	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Non-Pass-By Trips			Adj Street Peak Hour Volume	Source
						Primary (%)	Diverted (%)	Total (%)		
2	8	Maryland	1992	46	87	13	0	13	2235	25
2.1	6	Maryland	1992	26	58	23	19	42	2080	25
2.1	6	Maryland	1992	26	58	23	19	42	2080	25
2.2	8	Maryland	1992	31	47	34	19	53	1785	25
2.2	< 8	Indiana	1993	79	56	6	38	44	635	2
2.2	8	Maryland	1992	35	78	9	13	22	7080	25
2.3	6	Maryland	1992	37	32	41	27	68	2080	25
2.3	< 8	Kentucky	1993	58	64	5	31	36	1255	2
2.3	6	Maryland	1992	37	32	41	27	68	2080	25
2.4	< 8	Kentucky	1993	—	48	17	35	52	1210	2
2.6	< 8	Kentucky	1993	—	72	15	13	28	940	2
2.8	< 8	Kentucky	1993	—	54	11	35	46	1240	2
3	< 8	Indiana	1993	62	74	10	16	26	790	2
3.6	< 8	Kentucky	1993	49	67	4	29	33	1985	2
3.7	< 8	Kentucky	1993	49	66	16	18	34	990	2
4.694	12	Maryland	2000	—	72	—	—	28	2440	30
4.694	12	Maryland	2000	—	78	—	—	22	1561	30
4.694	12	Maryland	2000	—	79	—	—	21	2764	30
4.848	12	Virginia	2000	—	55	—	—	45	1398	30
5.06	12	Pennsylvania	2000	—	84	—	—	16	3219	30
5.242	12	Virginia	2000	—	74	—	—	26	1160	30
5.242	12	Virginia	2000	—	71	—	—	29	548	30
5.488	12	Delaware	2000	—	80	—	—	20	—	30
5.5	12	Pennsylvania	2000	—	85	—	—	15	2975	30
4.2	< 8	Kentucky	1993	47	62	19	19	38	1705	2
4.694	16	Maryland	2000	—	90	—	—	10	2278	30
4.694	16	Delaware	2000	—	74	—	—	26	2185	30
4.694	16	Delaware	2000	—	58	—	—	42	962	30
4.694	16	Delaware	2000	—	84	—	—	16	2956	30
4.694	16	New Jersey	2000	—	79	—	—	21	1859	30
4.694	20	Delaware	2000	—	84	—	—	16	3864	30
4.848	16	Virginia	2000	—	68	—	—	32	2106	30
4.848	16	Virginia	2000	—	85	—	—	15	2676	30
4.848	16	Virginia	2000	—	75	—	—	25	3244	30
4.848	16	Virginia	2000	—	71	—	—	29	1663	30
4.993	16	Pennsylvania	2000	—	75	—	—	25	1991	30
5.094	16	New Jersey	2000	—	86	—	—	14	1260	30
5.5	16	Pennsylvania	2000	—	82	—	—	18	1570	30
5.543	16	Pennsylvania	2000	—	84	—	—	16	1933	30
5.565	16	Pennsylvania	2000	—	77	—	—	23	2262	30
5.565	16	Pennsylvania	2000	—	68	—	—	32	2854	30
5.565	16	New Jersey	2000	—	58	—	—	42	1253	30
5.565	16	New Jersey	2000	—	79	—	—	21	1928	30
5.565	16	New Jersey	2000	---	84	---	---	16	1953	30

Vehicle Pass-By Rates by Land Use

Source: ITE Trip Generation Manual, 11th Edition

Land Use Code	945									
Land Use	Convenience Store/Gas Station									
Setting	General Urban/Suburban									
Time Period	Weekday PM Peak Period									
# Data Sites	12 Sites with between 2 and 8 VFP					28 Sites with between 9 and 20 VFP				
Average Pass-By Rate	56% for Sites with between 2 and 8 VFP					75% for Sites with between 9 and 20 VFP				
Pass-By Characteristics for Individual Sites										
GFA (000)	VFP	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Non-Pass-By Trips			Adj Street Peak Hour Volume	Source
						Primary (%)	Diverted (%)	Total (%)		
2.1	8	Maryland	1992	31	52	13	35	48	1785	25
2.1	6	Maryland	1992	30	53	20	27	47	1060	25
2.2	< 8	Indiana	1993	115	48	16	36	52	820	2
2.3	< 8	Kentucky	1993	67	57	16	27	43	1954	2
2.3	6	Maryland	1992	55	40	11	49	60	2760	25
2.4	< 8	Kentucky	1993	—	58	13	29	42	2655	2
2.6	< 8	Kentucky	1993	68	67	15	18	33	950	2
2.8	< 8	Kentucky	1993	—	62	11	27	38	2875	2
3	< 8	Indiana	1993	80	65	15	20	35	1165	2
3.6	< 8	Kentucky	1993	60	56	17	27	44	2505	2
3.7	< 8	Kentucky	1993	70	61	16	23	39	2175	2
4.2	< 8	Kentucky	1993	61	58	26	16	42	2300	2
4.694	12	Maryland	2000	—	78	—	—	22	3549	30
4.694	12	Maryland	2000	—	67	—	—	33	2272	30
4.694	12	Maryland	2000	—	66	—	—	34	3514	30
4.848	12	Virginia	2000	—	71	—	—	29	2350	30
5.06	12	Pennsylvania	2000	—	91	—	—	9	4181	30
5.242	12	Virginia	2000	—	70	—	—	30	2445	30
5.242	12	Virginia	2000	—	56	—	—	44	950	30
5.488	12	Delaware	2000	—	73	—	—	27	—	30
5.5	12	Pennsylvania	2000	—	84	—	—	16	4025	30
4.694	16	Maryland	2000	—	89	—	—	11	2755	30
4.694	16	Delaware	2000	—	73	—	—	27	1858	30
4.694	16	Delaware	2000	—	59	—	—	41	1344	30
4.694	16	Delaware	2000	—	72	—	—	28	3434	30
4.694	16	New Jersey	2000	—	81	—	—	19	1734	30
4.694	20	Delaware	2000	—	76	—	—	24	1616	30
4.848	16	Virginia	2000	—	67	—	—	33	2.954	30
4.848	16	Virginia	2000	—	78	—	—	22	3086	30
4.848	16	Virginia	2000	—	83	—	—	17	4143	30
4.848	16	Virginia	2000	—	73	—	—	27	2534	30
4.993	16	Pennsylvania	2000	—	72	—	—	28	2917	30
5.094	16	New Jersey	2000	—	86	—	—	14	1730	30
5.5	16	Pennsylvania	2000	—	90	—	—	10	2616	30
5.543	16	Pennsylvania	2000	—	87	—	—	13	2363	30
5.565	16	Pennsylvania	2000	—	81	—	—	19	2770	30
5.565	16	Pennsylvania	2000	—	76	—	—	24	3362	30
5.565	16	New Jersey	2000	—	61	—	—	39	1713	30
5.565	16	New Jersey	2000	—	86	—	—	14	1721	30
5.565	16	New Jersey	2000	---	81	---	---	19	2227	30

Vehicle Pass-By Rates by Land Use

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

Land Use Code	821
Land Use	Shopping Plaza (40 - 150k)
Setting	General Urban/Suburban
Time Period	Weekday PM Peak Period
# Data Sites	15
Average Pass-By Rate	40%

Pass-By Characteristics for Individual Sites

GLA (000)	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Non-Pass-By Trips			Adj Street Peak Hour Volume	Source
					Primary (%)	Diverted (%)	Total (%)		
45	Florida	1992	844	56	24	20	44	30	
50	Florida	1992	555	41	41	18	59	30	
52	Florida	1995	665	42	33	25	58	30	
53	Florida	1993	162	59	—	—	41	30	
57.23	Kentucky	1993	247	31	53	16	69	34	
60	Florida	1995	1583	40	38	22	60	30	
69.4	Kentucky	1993	109	25	42	33	75	34	
77	Florida	1992	365	46	—	—	54	30	
78	Florida	1991	702	55	23	22	45	30	
82	Florida	1992	336	34	—	—	66	30	
92.857	Kentucky	1993	133	22	50	28	78	34	
100.888	Kentucky	1993	281	28	50	22	72	34	
121.54	Kentucky	1993	210	53	30	17	47	34	
144	New Jersey	1990	176	32	44	24	68	24	
146.8	Kentucky	1993	—	36	39	25	64	34	

Vehicle Pass-By Rates by Land Use

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

Land Use Code	821
Land Use	Shopping Plaza (40 - 150k)
Setting	General Urban/Suburban
Time Period	Saturday Midday
# Data Sites	1
Average Pass-By Rate	31%

Pass-By Characteristics for Individual Sites

GLA (000)	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Non-Pass-By Trips			Adjacent Street Daily Volume	Source
					Primary (%)	Diverted (%)	Total (%)		
144	New Jersey	1990	264	31	47	22	69	63362	24

Convenience Store/Gas Station - GFA (5.5-10k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Weekday

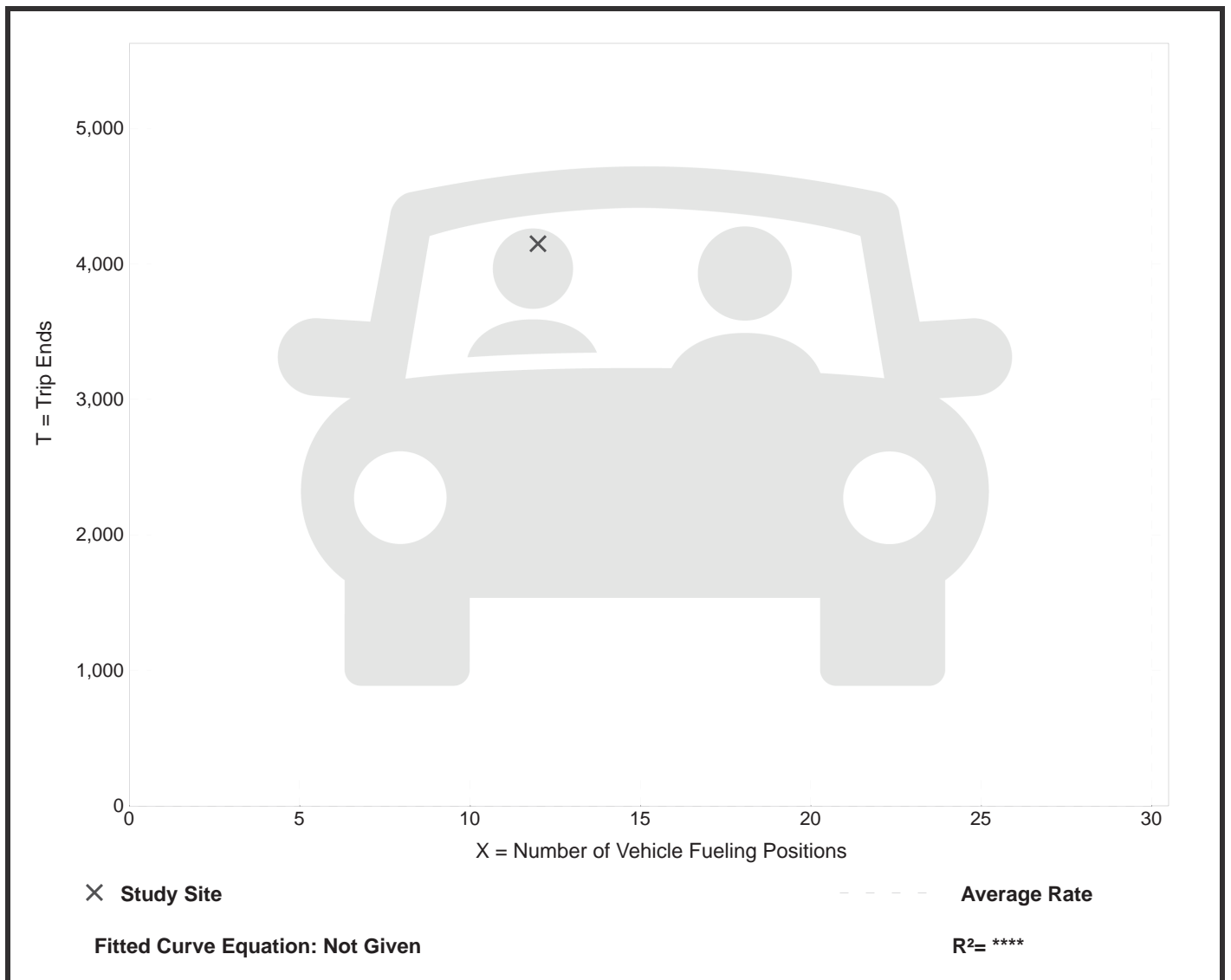
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Vehicle Fueling Positions: 12
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
345.75	345.75 - 345.75	*

Data Plot and Equation

Caution – Small Sample Size



Convenience Store/Gas Station - VFP (9-15) (945)

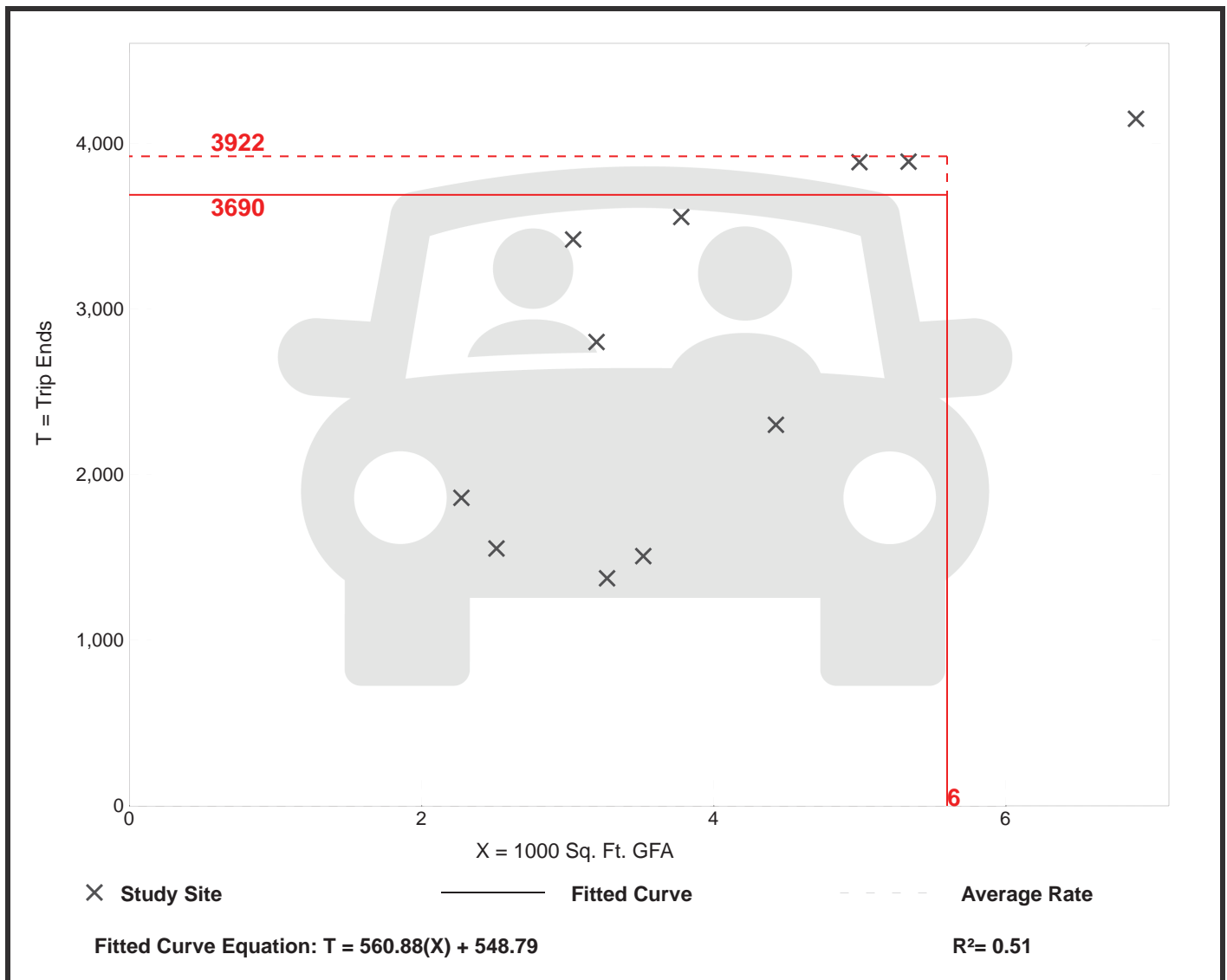
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
700.43	419.93 - 1125.00	206.44

Data Plot and Equation



Convenience Store/Gas Station - GFA (5.5-10k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 29

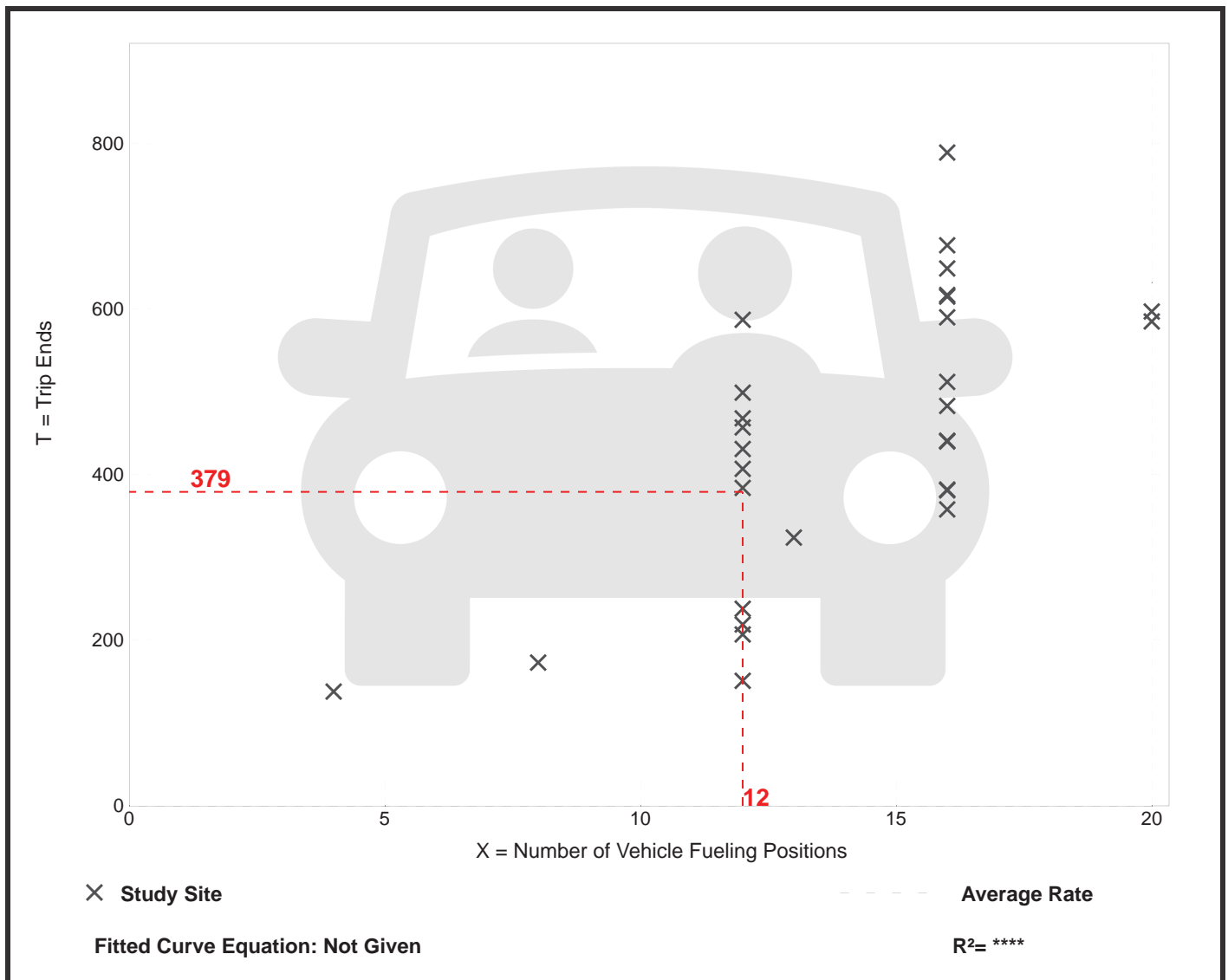
Avg. Num. of Vehicle Fueling Positions: 14

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
31.60	12.58 - 49.31	9.10

Data Plot and Equation



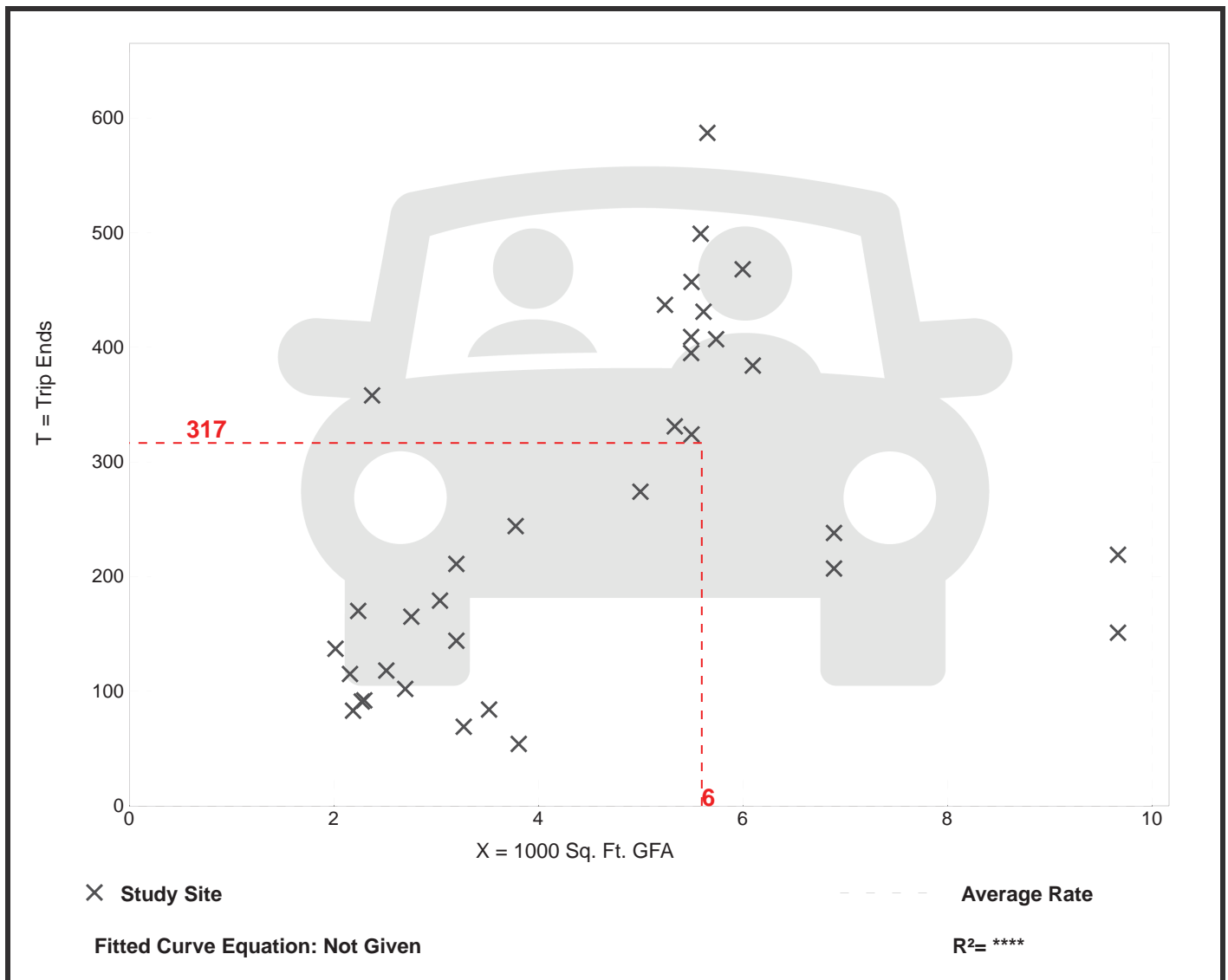
Convenience Store/Gas Station - VFP (9-15) (945)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 34
 Avg. 1000 Sq. Ft. GFA: 4
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
56.52	14.17 - 150.67	27.56

Data Plot and Equation



Convenience Store/Gas Station - GFA (5.5-10k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 29

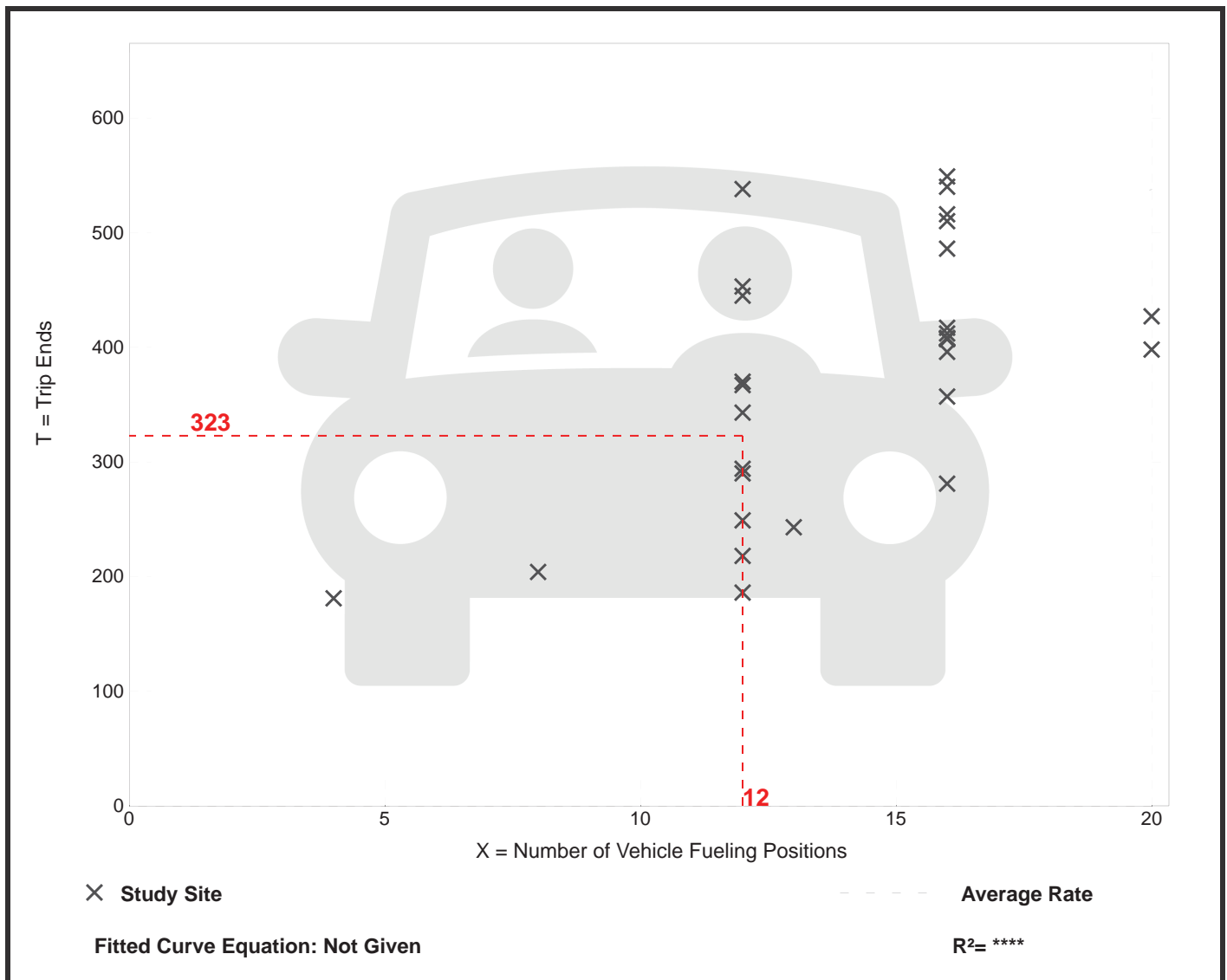
Avg. Num. of Vehicle Fueling Positions: 14

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
26.90	15.50 - 45.25	6.87

Data Plot and Equation



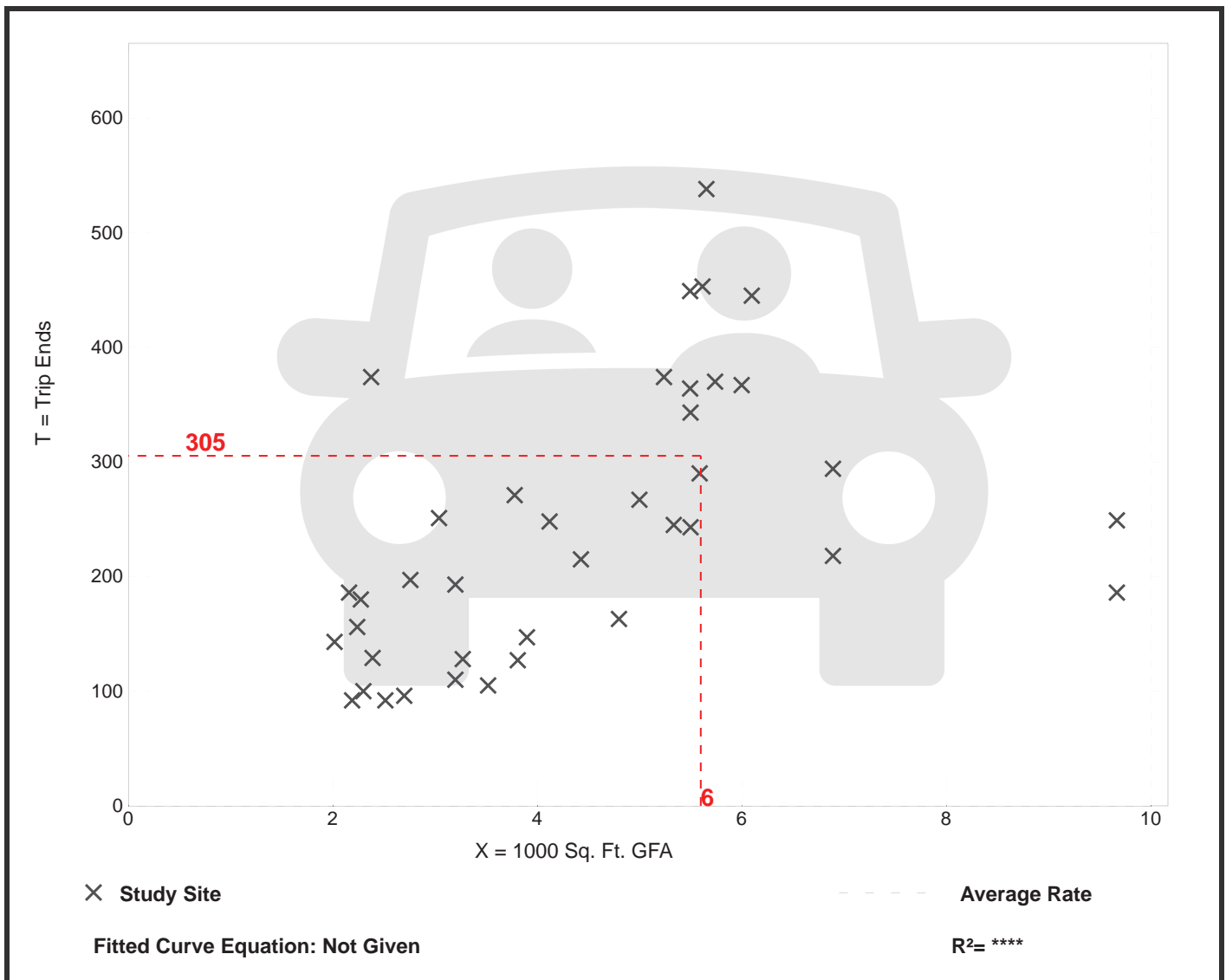
Convenience Store/Gas Station - VFP (9-15) (945)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 39
 Avg. 1000 Sq. Ft. GFA: 4
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
54.52	19.23 - 157.41	23.69

Data Plot and Equation



Convenience Store/Gas Station - GFA (5.5-10k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Saturday, Peak Hour of Generator

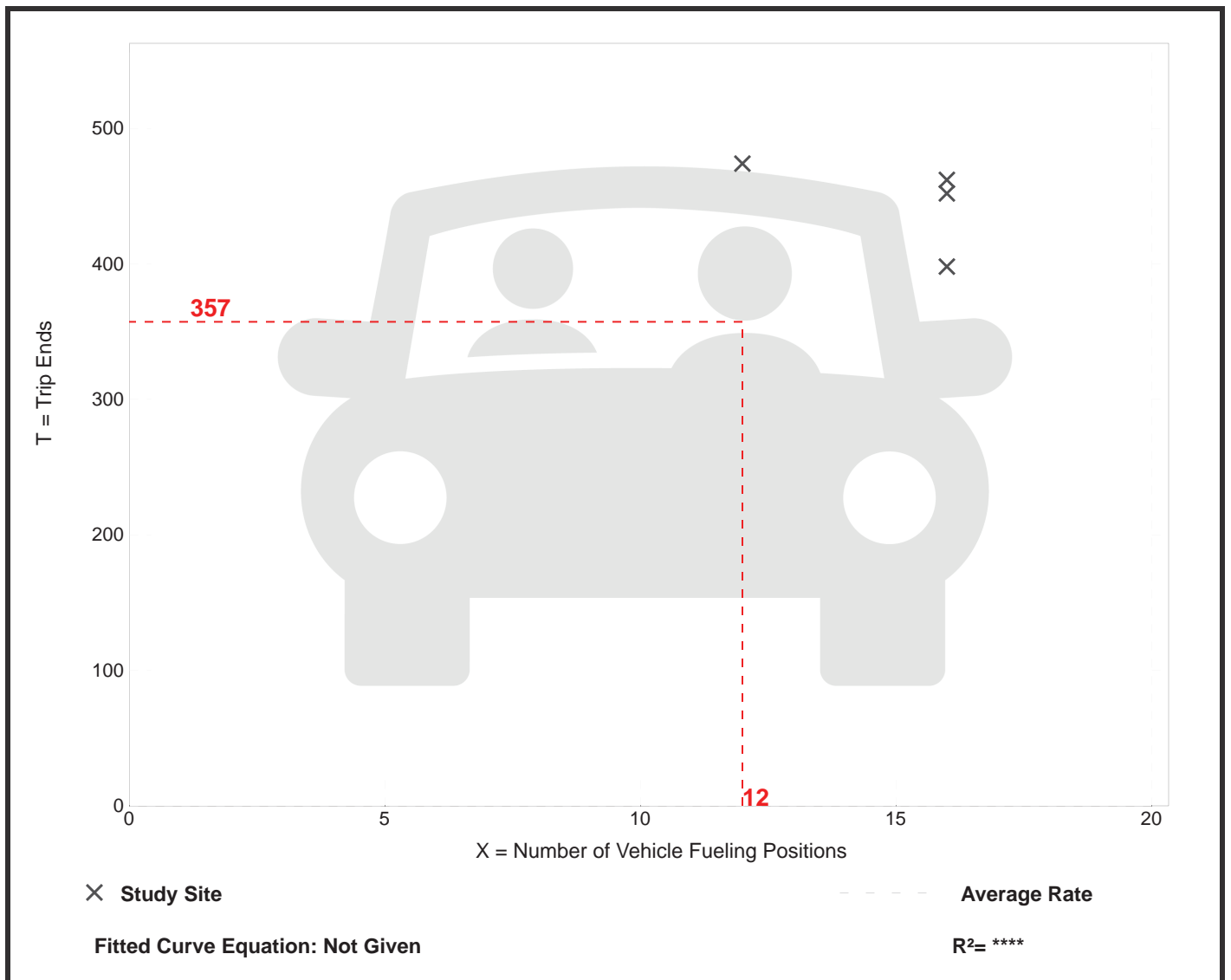
Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. Num. of Vehicle Fueling Positions: 15
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
29.77	24.88 - 39.50	5.91

Data Plot and Equation

Caution – Small Sample Size



Convenience Store/Gas Station - VFP (9-15) (945)

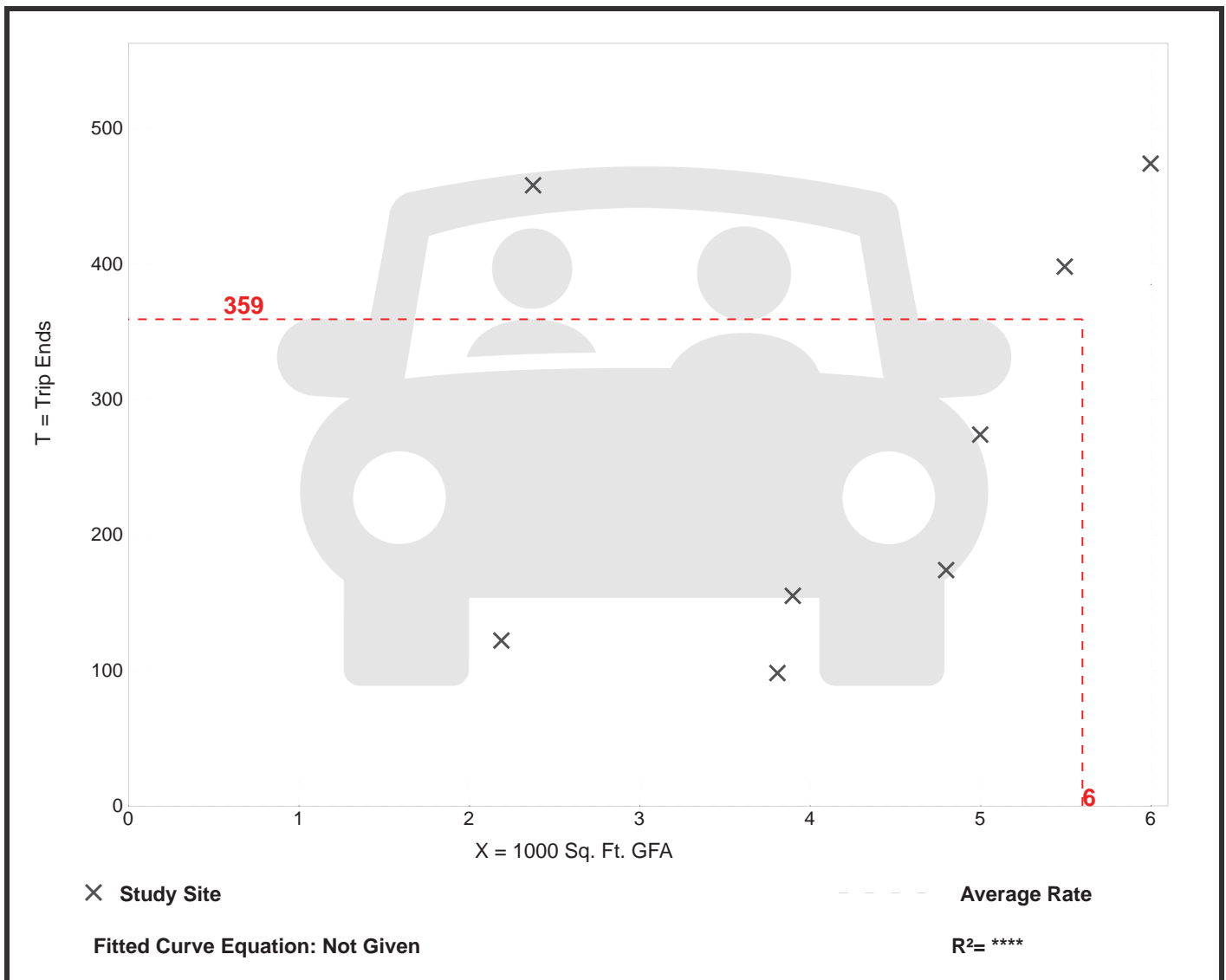
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 8
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
64.13	25.72 - 192.76	42.59

Data Plot and Equation



Shopping Plaza (40-150k) - Supermarket - Yes (821)

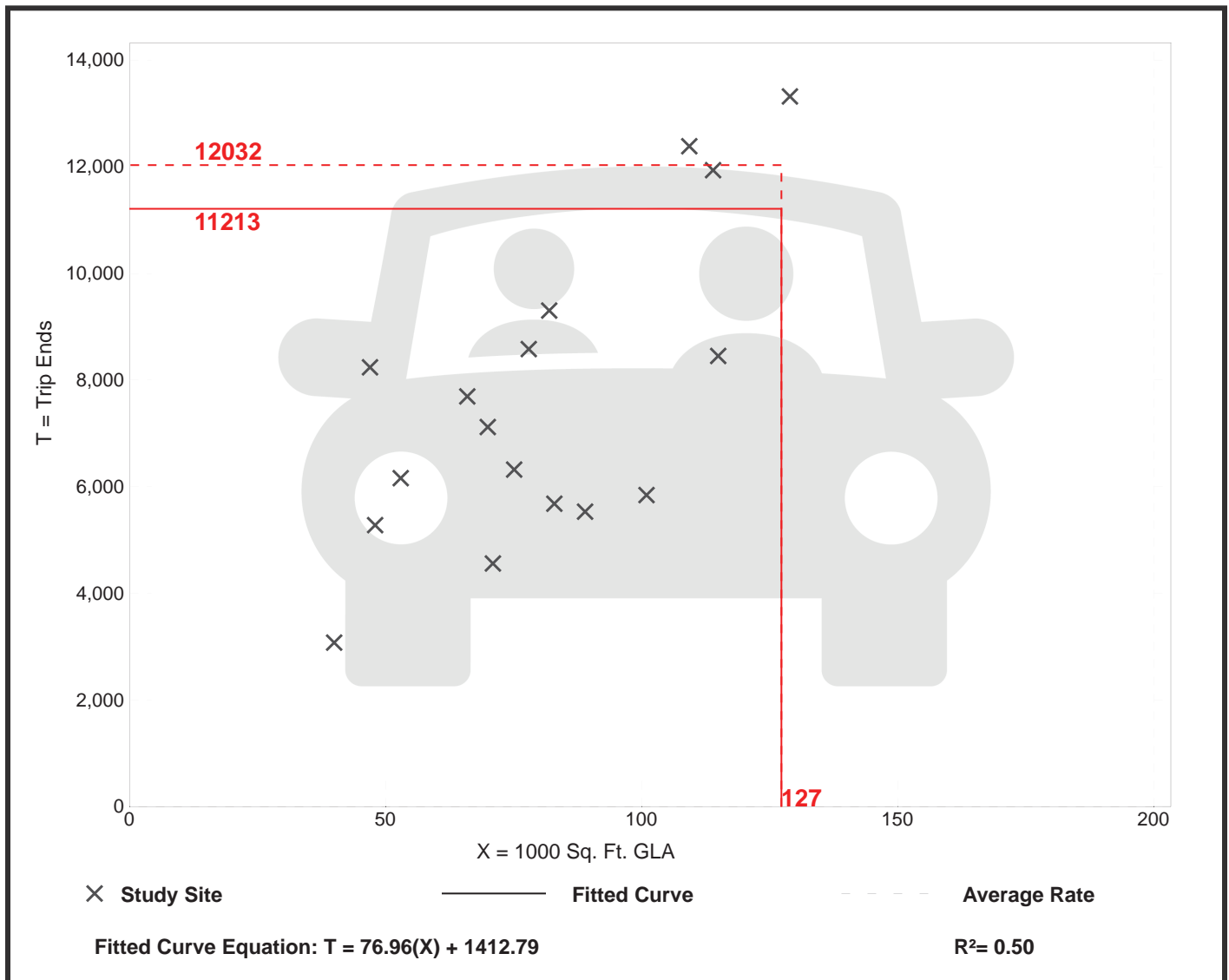
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 17
Avg. 1000 Sq. Ft. GLA: 81
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
94.49	57.86 - 175.32	26.55

Data Plot and Equation



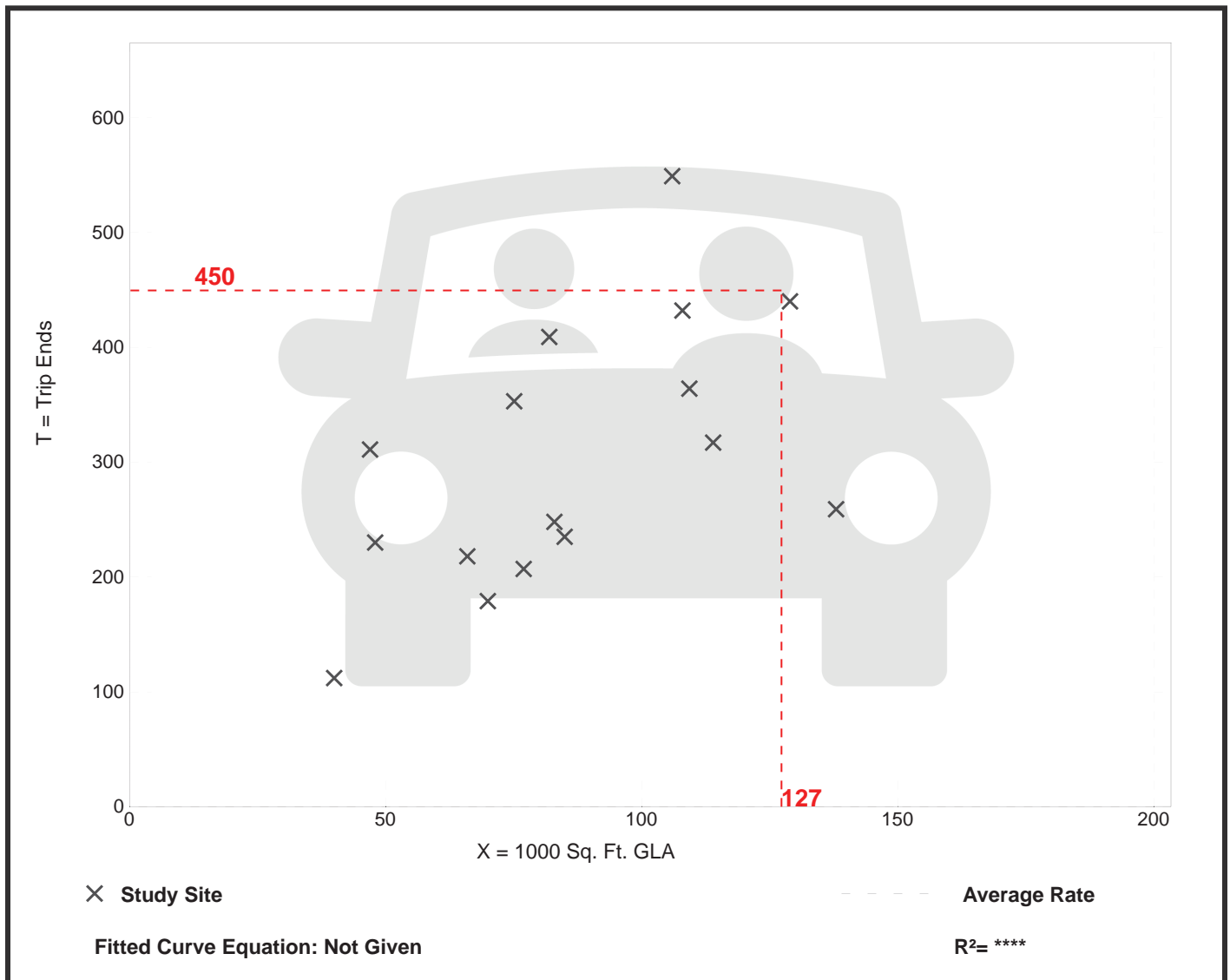
Shopping Plaza (40-150k) - Supermarket - Yes (821)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 16
 Avg. 1000 Sq. Ft. GLA: 86
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.53	1.88 - 6.62	1.17

Data Plot and Equation



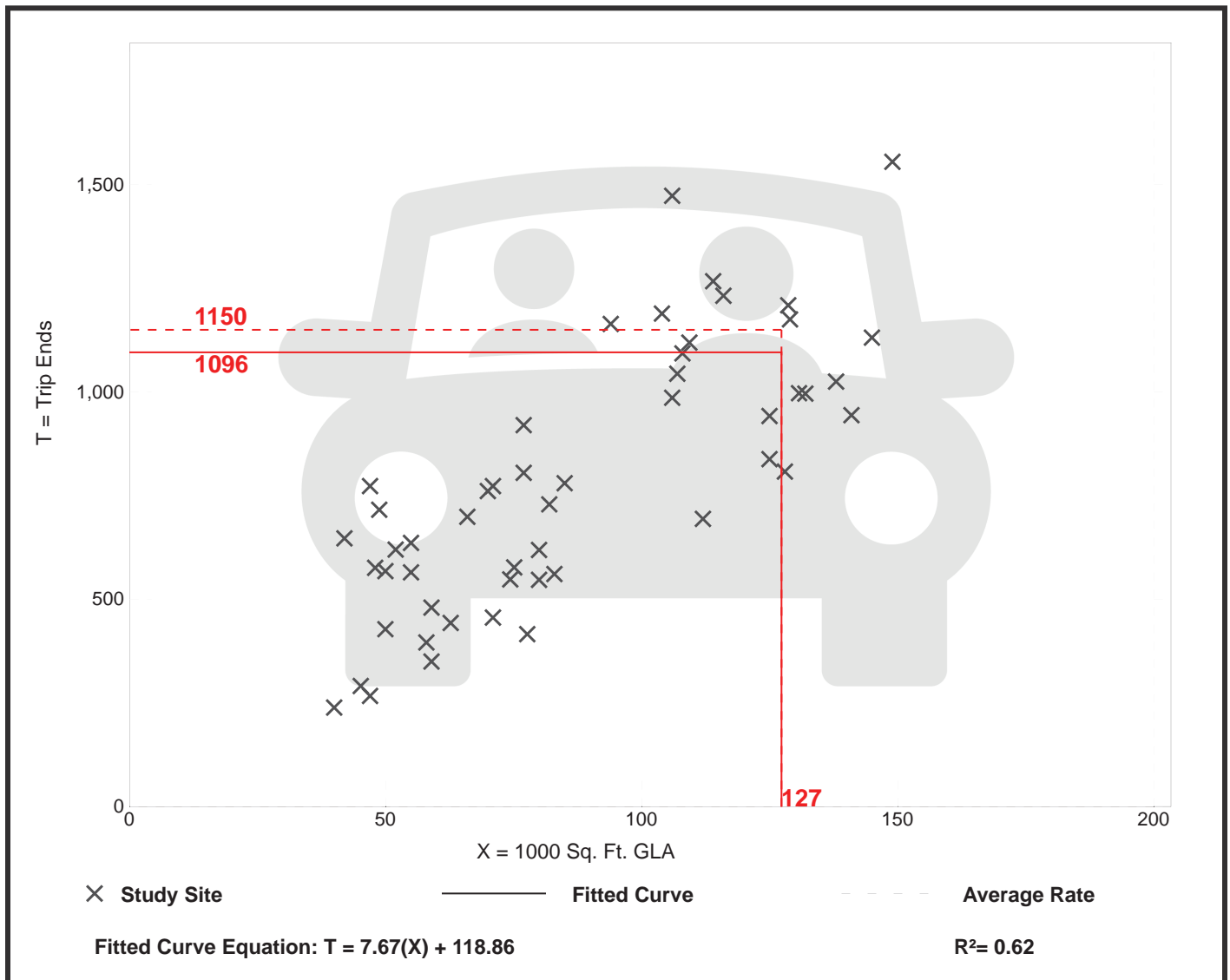
Shopping Plaza (40-150k) - Supermarket - Yes (821)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 51
 Avg. 1000 Sq. Ft. GLA: 87
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
9.03	5.35 - 16.45	2.37

Data Plot and Equation



Shopping Plaza (40-150k) - Supermarket - Yes (821)

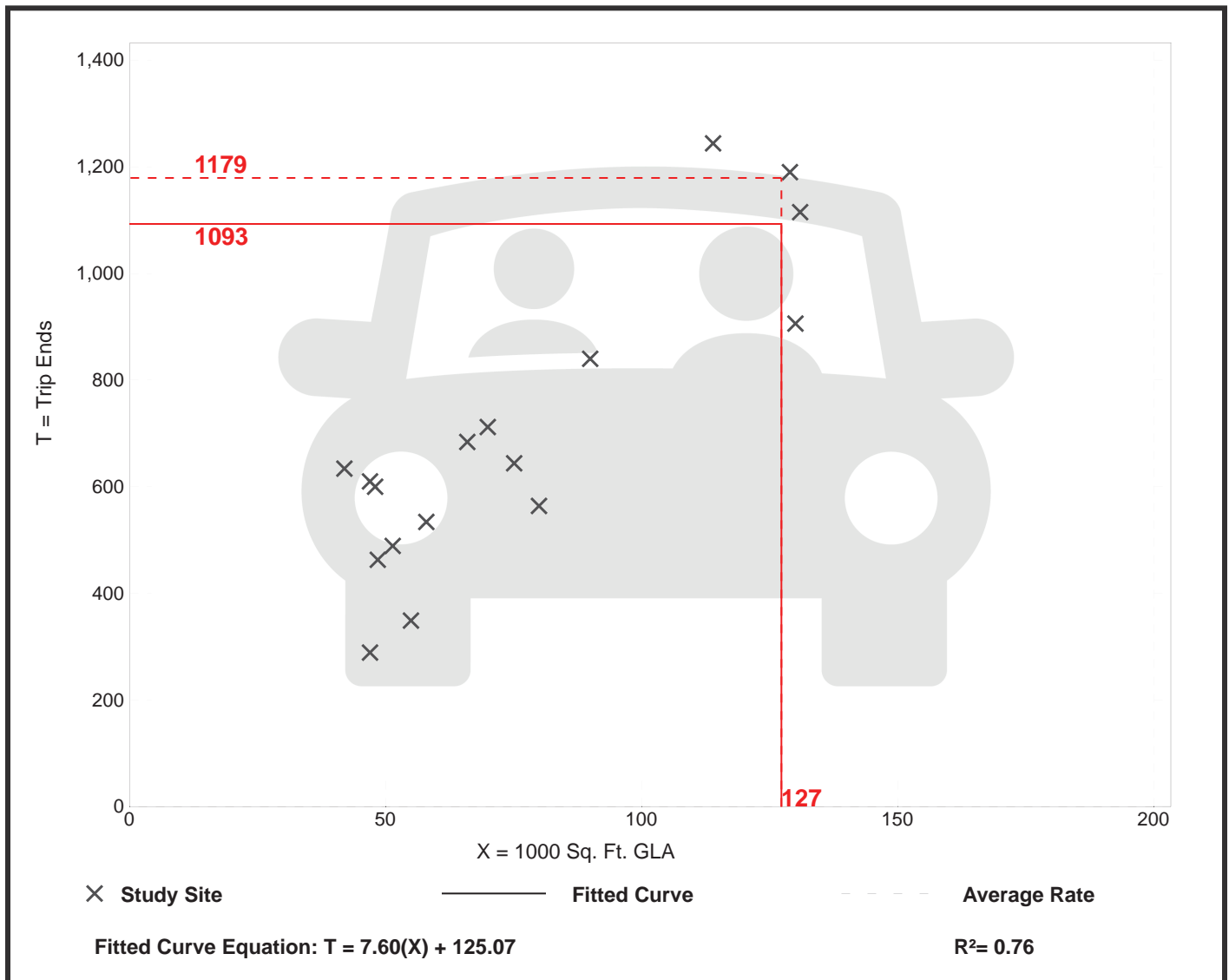
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 17
Avg. 1000 Sq. Ft. GLA: 75
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

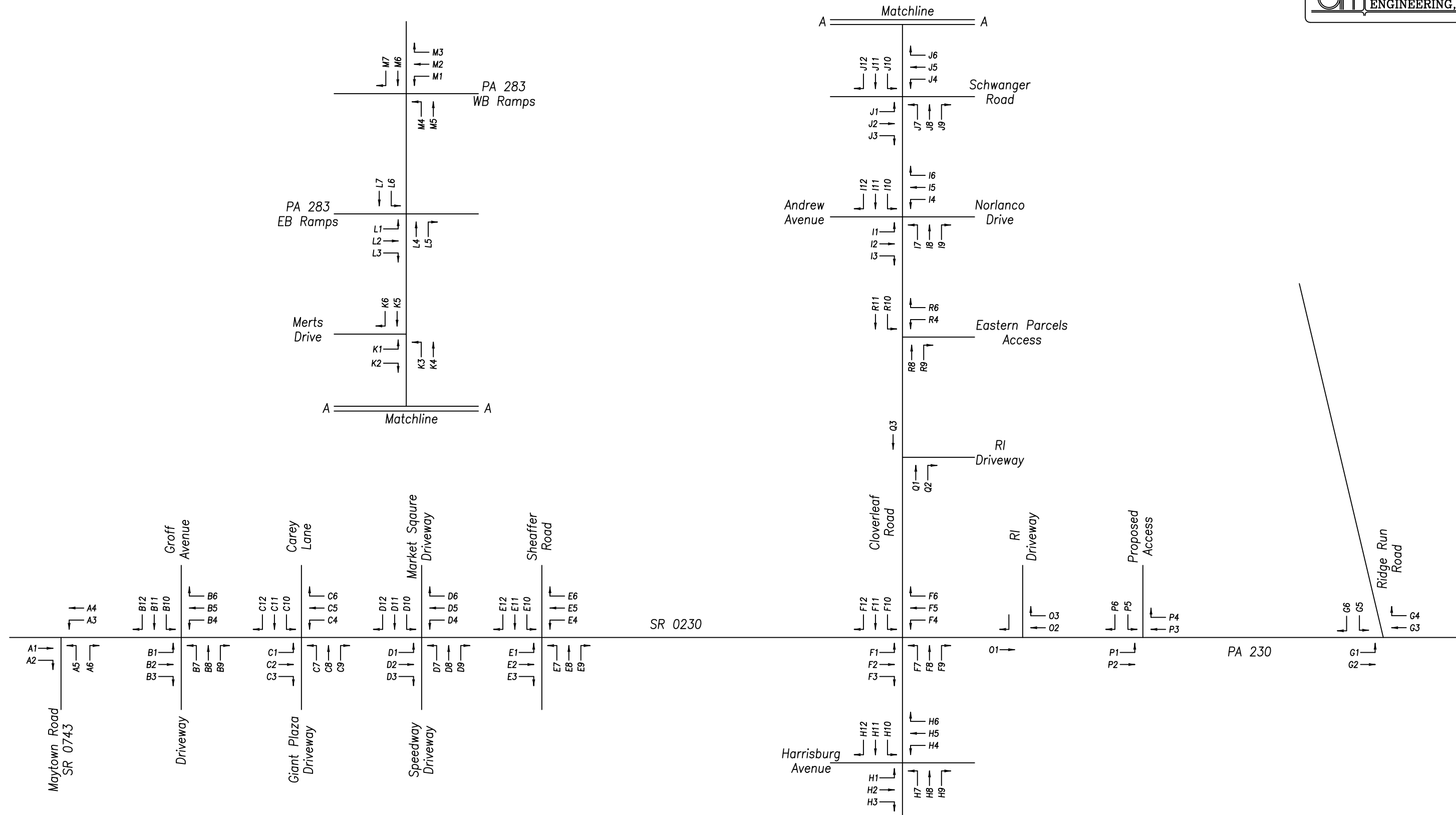
Average Rate	Range of Rates	Standard Deviation
9.26	6.15 - 15.10	2.07

Data Plot and Equation



APPENDIX K

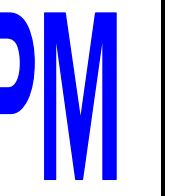
TRAFFIC VOLUME SPREADSHEETS



Transportation Impact Study
PENNMAR
PROPERTY
 Mount Joy Township, Lancaster Co.

INTERSECTION MOVEMENT KEY

EVENT	YEAR	GROWTH FACTOR
COUNT YEAR	2022	0.60%
PHASE 1 OPENING	2024	0.60%
PHASE 1 HORIZON	2029	0.60%
PHASE 2 OPENING	2026	0.60%
PHASE 2 HORIZON	2031	0.60%
PHASE 3 OPENING	2028	0.60%
PHASE 3 HORIZON	2033	0.60%



PM PEAK HR

MMVT	PHASE 1 TRIP DIST.												PHASE 2 TRIP DIST.												PHASE 3 TRIP DIST.												MMVT	PHF	% HV
	NEW TRIP VOLUMES				PASS-BY VOLUMES				NEW TRIP VOLUMES				PASS-BY VOLUMES				NEW TRIP VOLUMES				PASS-BY VOLUMES																		
	ENTER = 383	EXIT = 349	ENTER = 658	EXIT = 278	ENTER = 129	EXIT = 90	ENTER = 658	EXIT = 278	ENTER = 129	EXIT = 90	ENTER = 658	EXIT = 278	ENTER = 129	EXIT = 90	ENTER = 658	EXIT = 278	ENTER = 129	EXIT = 90																					
A-1	621	628	648	636	655	644	663	663	A-1	51	51	51	51	51	A-1	621	650	670	658	677	711	730	A-1	701	721	751	770	770	841	A-1	0.91	3							

Greg Creasy

From: Noles, Dean T <dnoles@pa.gov>
Sent: Friday, May 13, 2022 10:53 AM
To: Greg Creasy
Cc: Kinard, Eric W; PD, District 8-0 Signals
Subject: RE: Pennmark Property - Mount Joy Township, Lancaster County

Greg,

The revised trip distribution is acceptable. You may proceed with the TIS.

Thank you,

Dean Noles | Traffic Control Specialist
PA Department of Transportation | PennDOT Engineering District 8-0
2140 Herr Street | Harrisburg PA 17103-1699
Phone: 717.772.0976 | Fax: 717.705.0375
www.PennDOT.pa.gov

From: Greg Creasy <gcreasy@grovemiller.com>
Sent: Monday, May 2, 2022 2:03 PM
To: PD, District 8-0 Signals <RA-pdDist80Signals@pa.gov>
Cc: Kinard, Eric W <ekinard@pa.gov>; Noles, Dean T <dnoles@pa.gov>
Subject: [External] Pennmark Property - Mount Joy Township, Lancaster County

ATTENTION: *This email message is from an external sender. Do not open links or attachments from unknown sources. To report suspicious email, forward the message as an attachment to CWOPA_SPAM@pa.gov.*

Attached is the revised Trip Distribution Documentation Submission for the referenced project. Also attached is a response letter for the comments received regarding the initial submission. Please review the attached documentation.

Please call with any questions.

Thank you.

Gregory E. Creasy, P.E.
President
Senior Traffic Engineer
Grove Miller Engineering, Inc.
4800 Linglestown Road, Suite 307
Harrisburg, PA 17112
Phone: (717) 545-3636
www.grovemiller.com

GREGORY E. CREASY, P.E., Principal Traffic Engineer
JAY E. STATES, P.E., Principal Traffic Engineer

4800 Linglestown Road, Suite 307
Harrisburg, PA 17112
Telephone: (717) 545-3636
www.grovemiller.com

April 29, 2022

Mr. Eric W. Kinard
Signal and Congestion Management Supervisor
PennDOT District 8-0
2140 Herr Street
Harrisburg, PA 17103-1699

Re: Trip Distribution Documentaiona Submission Comment Response
Penmark Property
Mount Joy Township, Lancaster County

Dear Mr. Kinard:

We have received the Department's comments on the Trip Distribution Documentation Submission for the referenced development. We are providing this letter and Revised TIS Scoping Application to respond to the comments.

Our responses to the comments, provided point-by-point, are as follows.

Trip Distribution Documentation Submission

Comment: Provide additional information regarding the trip distribution percentages shown for roadways not considered in the retail gravity model, such as Maytown Road (SR 0743), the PA-283 ramps, Groff Avenue, Harrisburg Avenue, and Schwanger Road.

Response: Additional discussion was added to the Non-Residential Land Use Distribution/ Assignment Methodology Section of the Trip Distribution Memo to detail how the gravity model trip distributions were further broken down to these intersection roadways.

Comment: Clarify which intersection counts are being utilized in the analysis of existing traffic patterns as shown on the trip distribution methodology documentation figure. Additionally, clarify the source of the volumes used for pass-by trip distribution along Cloverleaf Road as they do not seem consistent with the count data.

Response: The traffic volumes used in the analysis of existing traffic patterns in the Trip Distribution Methodology Documentation figure are the thru volumes on the particular roadway at the location where the volumes are depicted on the figure.

The source of displayed traffic volumes used for the pass-by trip distribution along Cloverleaf Road are the southbound thru volumes on Cloverleaf Road leaving the intersection of Cloverleaf Road/Andrew Avenue/Norlanco Drive and the northbound thru volumes on Cloverleaf Road arriving at the intersection of Cloverleaf Road/Andrew/Avenue/Norlanco Drive.

Comment: Provide trip distribution percentages for each site driveway, and to clarify the trip distribution must be provided consistent with the final driveway configuration proposed (i.e., RI only or eliminated secondary access to SR 0230).

Response: Figures depicting the trip distribution percentages at each site driveway for each of the new and pass-by trip distributions are provided in the revised submission.

We respectfully request the Department's approval of the Revised Trip Distribution Documentation Submission. Please call our office if you have any questions or need additional information.

Sincerely,



Gregory E. Creasy, P.E.
Senior Traffic Engineer

Attachment


GEC/me
G:\804_02\corres\penndot trip dist comment response.wpd

GREGORY E. CREASY, P.E., Principal Traffic Engineer
JAY E. STATES, P.E., Principal Traffic Engineer

4800 Linglestown Road, Suite 307
Harrisburg, PA 17112
Telephone: (717) 545-3636
www.grovemiller.com

TRIP DISTRIBUTION MEMO

TO: Eric Kinard, PennDOT District 8-0 Traffic Unit

FROM: Gregory E. Creasy, P.E. 

DATE: Revised April 29, 2022

RE: Penmark Property
Trip Distribution Documentation Submission
Mount Joy Township, Lancaster County

As indicated during the TIS Scoping Application process, trip distribution calculations and trip distribution assignments are being provided for the subject development now that the extensive trip generation calculations are approved. Please review the attached documentation and back-up data.

Phase 2 Residential Land Use Distribution/Assignment Methodology

The apartment units proposed as part of Phase 2 of the development project will be located to the east of the Norlanco Drive extension to the north and east of the Phase 2 commercial lots along SR 0230. A gravity model, based upon place of employment data for the residence zip code, was developed to assign trips to the local roadway network. Since there are multiple access locations for the subject development, the assignment percentages were developed taking into account relative travel times, most logical travel paths given the site layout, and surrounding roadway volumes/conditions. Documentation for the gravity model and trip assignments is provided in the attachments.

Non-Residential Land Use Distribution/Assignment Methodology

The new trip distribution/assignment methodology for the non-residential land uses in Phases 1, 2, and 3 was developed in a multi-step process. First, a gravity model was developed based upon the population of surrounding municipalities. Given that this project will consist of smaller land uses and lots and is not projected to have a major anchor land use, it will not be a major regional shopping drawing trips from long distances. There are also several major retail centers to the east in the Lancaster area to serve customers in the larger population centers farther from this development site. For these reasons, the gravity model was developed using projected travel times to/from the site of 15 minutes or less.

The second step in the process was to analyze existing traffic volumes on SR 0230 and Cloverleaf Road adjacent to the site. The directional distributions of traffic volumes entering and exiting the access locations for the proposed development were calculated to determine local travel patterns.

For the third step in the process, the directional distribution of local traffic was compared and contrasted to the trip distribution percentages calculated using the gravity model. The trip distribution percentages used for the trip assignment were developed using a balance of the two methodologies.

The final step in the process was to distribute traffic onto roadways not specifically addressed with the gravity model (e.g. Maytown Road, PA 283 Ramps, Groff Avenue, Harrisburg Avenue, etc). Trips were distributed onto these roadways based upon the existing turning movement counts at their intersections with SR 0230 or Cloverleaf Road. In the cases where there were a small number (less than 10) of trips going through the intersection on SR 0230 it was assumed that all the traffic would be thru movements on SR 0230.

Documentation of the new trip distribution methodologies and assignments is provided in the attachments.

The pass-by trip distributions and assignments were calculated using the directional distribution of existing traffic volumes on SR 0230 and Cloverleaf Road along the site frontages. Documentation of the pass-by trip assignment methodology and assignments is provided in the attachments.

GEO/me
FILE: G:\804_02\analyses\Trip Distribution Submission\Revised April 2022\cover memo.wpd

Lancaster County, Pennsylvania (County)

533,110
196,171

Overview

Population

County Subdivision Map

Tract Map

Block Group Map

By Place

By County Subdivision

In Pennsylvania

In the United States

Definitions

More Maps

Age and Sex

Race and Ethnicity

Household Types

Marital Status

National Origin

Ancestry

Languages

Household Income

Employment Status

Food Stamps

Occupations

Industries

Sectors

Educational Attainment

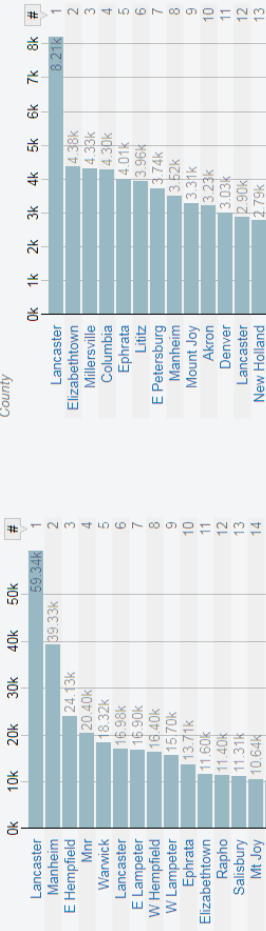
School Enrollment

Population by County Subdivision in Lancaster County

There are 60 county subdivisions in Lancaster County. This section compares the 50 most populous of those to each other. The least populous of the compared county subdivisions has a population of 3,249.

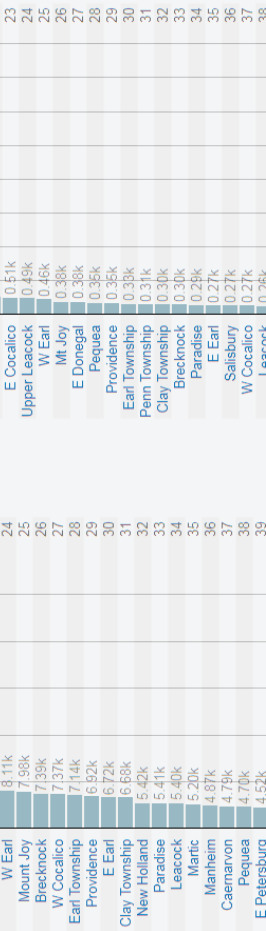
Total Population by County Subdivision

Scope: population of selected county subdivisions in Lancaster County



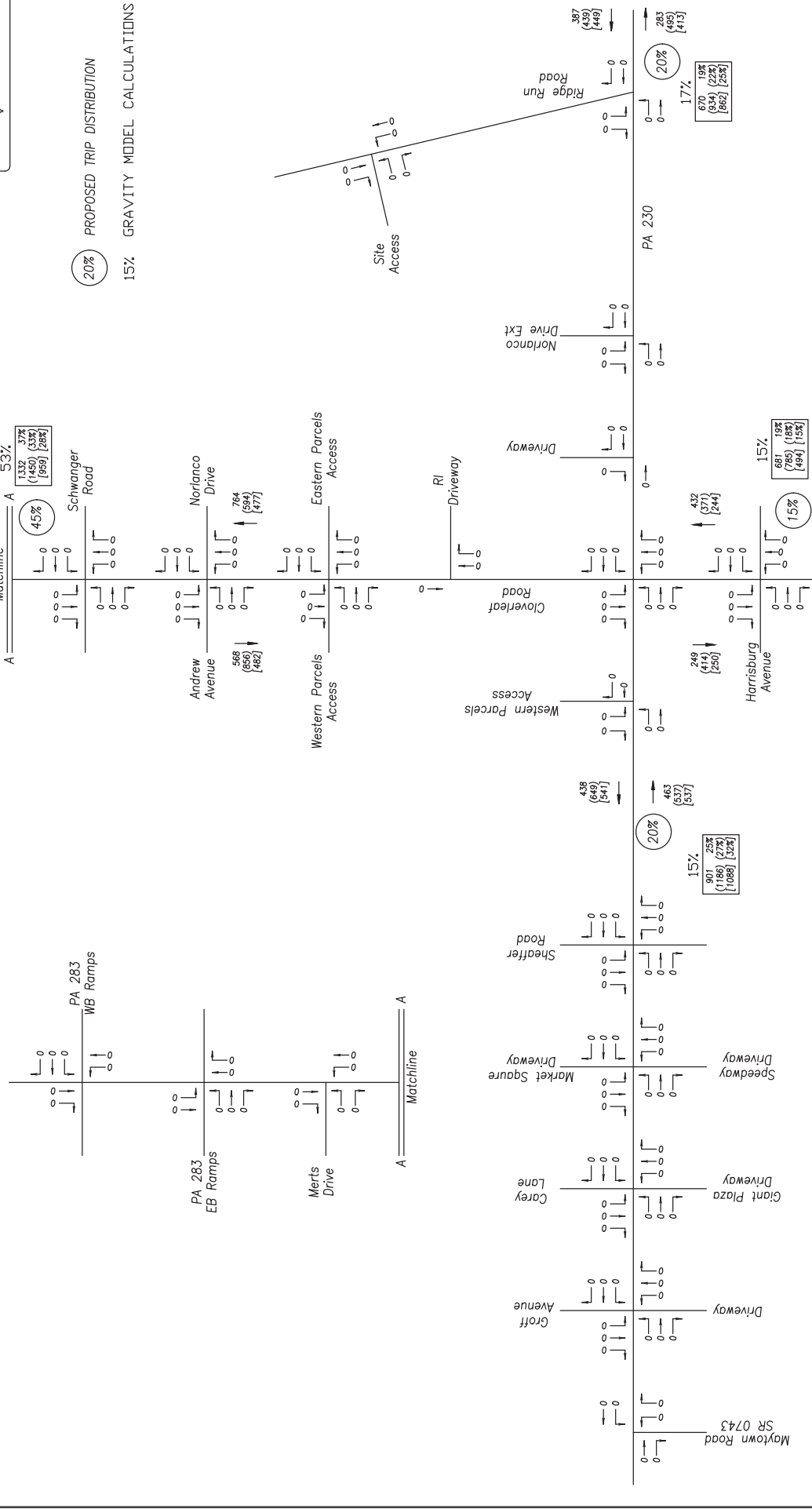
Population Density by County Subdivision

Scope: population of selected county subdivisions in Lancaster County



r

Municipality	POPULATION	TRAVEL TIME (min)	POP * TT	PROPORTION AS %		LIKELY TO/FROM ROUTE			TRIP DISTRIBUTION				
				PROPORTION	AS %	RT 230 W	RT 230 E	Cloverleaf N	Colebrook S	RT 230 W	RT 230 E	Cloverleaf N	Colebrook S
E. Hempfield Township	24130	13	313690	0.375	37.5	0.0	0.2	0.8	0.0	7.51	30.02	0.00	0.00
Elizabethtown Borough	11600	8	92800	0.111	11.1	0.8	0.0	0.2	0.0	8.88	2.22	0.00	0.00
Rapho Township	11400	15	171000	0.205	20.5	0.0	0.0	1.0	0.0	0.00	20.46	0.00	0.00
Mt. Joy Township	10640	1	10640	0.013	1.3	0.3	0.2	0.5	0.0	0.38	0.64	0.00	0.00
W. Donegal Township	8600	11	94600	0.113	11.3	0.5	0.0	0.0	0.5	5.66	0.00	0.00	5.66
E. Donegal Township	8150	9	73350	0.088	8.8	0.0	0.0	0.0	1.0	0.00	0.00	0.00	8.78
Mount Joy Borough	7980	10	79800	0.095	9.5	0.0	1.0	0.0	0.0	0.00	9.55	0.00	0.00
Total	82500		835880	1.00					SUM (100)	14.92	17.31	53.34	14.44



20% PROPOSED TRIP DISTRIBUTION
15% GRAVITY MODEL CALCULATIONS

APPENDIX L

CAPACITY AND QUEUE ANALYSIS WORKSHEETS

Headway Adjustment Calculations

Project #: 804.02
 Municipality: Mt. Joy Township
 County: Lancaster

Date: 4/19/2022
 Conducted By: GEC
 Company Name: GME

Intersection: SR 0230/Groff Ave
 Major Street: SR 0230 (EB/WB)
 Minor Street: Groff Avenue (SB)/driveway (NB)

Critical Headway:

$$t_{c,x} = t_{c,base} + t_{c,HV} P_{HV} + t_{c,G} - t_{c,L,T}$$

$t_{c,x}$ = critical headway for movement x(s)

$t_{c,base}$ = base critical headway (provided by FH/NNDOT)

$t_{c,HV}$ = heavy vehicle adjustment factor; 1.0 if major street has one (1) lane, 2.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

$t_{c,G}$ = grade adjustment (0.1 for minor street right turns, otherwise 0)

G = percent grade integer (e.g., -2 for 2% down grade)

$t_{c,L,T}$ = geometric adjustment (0.7 for minor street left turn movements at three-leg intersections, 0.0 otherwise)

Follow-Up Headway:

$$t_{f,x} = t_{f,base} + t_{f,HV} P_{HV}$$

$t_{f,x}$ = critical headway for movement x(s)

$t_{f,base}$ = base critical headway (provided by FH/NNDOT)

$t_{f,HV}$ = heavy vehicle adjustment factor; 0.9 if major street has one (1) lane, 1.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

AM PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB $t_{c,base}$ 4.3	Major Street Left WB $t_{c,base}$ 4.3	Minor Street Left NB $t_{c,base}$ 7.1	Minor Street Thru NB $t_{c,base}$ 6.5	Minor Street Right NB $t_{c,base}$ 6.2	Minor Street Left SB $t_{c,base}$ 7.1	Minor Street Thru SB $t_{c,base}$ 6.5	Minor Street Right SB $t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0.08	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.5	P_{HV} 0	P_{HV} 0	P_{HV} 0.18
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -3	G 6	G -2	G -2	G -2	G -3	G -3	G -3
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
3.8	5.5	6.7	6.1	6.5	6.5	5.9	6.1

FOLLOW-UP HEADWAY

Major Street Left EB $t_{f,base}$ 3.0	Major Street Left WB $t_{f,base}$ 3.0	Minor Street Left NB $t_{f,base}$ 3.0	Minor Street Thru NB $t_{f,base}$ 4.0	Minor Street Right NB $t_{f,base}$ 3.1	Minor Street Left SB $t_{f,base}$ 3.0	Minor Street Thru SB $t_{f,base}$ 4.0	Minor Street Right SB $t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0.08	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.5	P_{HV} 0	P_{HV} 0	P_{HV} 0.18
3.1	3.0	3.0	4.0	3.6	3.0	4.0	3.3

PM PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB $t_{c,base}$ 4.3	Major Street Left WB $t_{c,base}$ 4.3	Minor Street Left NB $t_{c,base}$ 7.1	Minor Street Thru NB $t_{c,base}$ 6.5	Minor Street Right NB $t_{c,base}$ 6.2	Minor Street Left SB $t_{c,base}$ 7.1	Minor Street Thru SB $t_{c,base}$ 6.5	Minor Street Right SB $t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.04
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -3	G 6	G -2	G -2	G -2	G -3	G -3	G -3
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
3.7	5.5	6.7	6.1	6.0	6.5	5.9	5.9

FOLLOW-UP HEADWAY

Major Street Left EB $t_{f,base}$ 3.0	Major Street Left WB $t_{f,base}$ 3.0	Minor Street Left NB $t_{f,base}$ 3.0	Minor Street Thru NB $t_{f,base}$ 4.0	Minor Street Right NB $t_{f,base}$ 3.1	Minor Street Left SB $t_{f,base}$ 3.0	Minor Street Thru SB $t_{f,base}$ 4.0	Minor Street Right SB $t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.04
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

SAT PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB $t_{c,base}$ 4.3	Major Street Left WB $t_{c,base}$ 4.3	Minor Street Left NB $t_{c,base}$ 7.1	Minor Street Thru NB $t_{c,base}$ 6.5	Minor Street Right NB $t_{c,base}$ 6.2	Minor Street Left SB $t_{c,base}$ 7.1	Minor Street Thru SB $t_{c,base}$ 6.5	Minor Street Right SB $t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -3	G 6	G -2	G -2	G -2	G -3	G -3	G -3
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
3.7	5.5	6.7	6.1	6.0	6.5	5.9	5.9

FOLLOW-UP HEADWAY

Major Street Left EB $t_{f,base}$ 3.0	Major Street Left WB $t_{f,base}$ 3.0	Minor Street Left NB $t_{f,base}$ 3.0	Minor Street Thru NB $t_{f,base}$ 4.0	Minor Street Right NB $t_{f,base}$ 3.1	Minor Street Left SB $t_{f,base}$ 3.0	Minor Street Thru SB $t_{f,base}$ 4.0	Minor Street Right SB $t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

Headway Adjustment Calculations

Project #: 804.02
 Municipality: Mt. Joy Township
 County: Lancaster

Date: 4/19/2022
 Conducted By: GEC
 Company Name: GME

Intersection: SR 0230/Ridge Run Road
 Major Street: SR 0230 (EB/WB)
 Minor Street: Ridge Run Road (SB)

Critical Headway:

$$t_{c,x} = t_{c,base} + t_{c,HV} P_{HV} + t_{c,G} - t_{c,L,T}$$

$t_{c,x}$ = critical headway for movement x(s)

$t_{c,base}$ = base critical headway (provided by FH/NNDOT)

$t_{c,HV}$ = heavy vehicle adjustment factor; 1.0 if major street has one (1) lane, 2.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

$t_{c,G}$ = grade adjustment (0.1 for minor street right turns, otherwise 0)

G = percent grade integer (e.g., -2 for 2% down grade)

$t_{c,L,T}$ = geometric adjustment (0.7 for minor street left turn movements at three-leg intersections, 0.0 otherwise)

Follow-Up Headway:

$$t_{f,x} = t_{f,base} + t_{f,HV} P_{HV}$$

$t_{f,x}$ = critical headway for movement x(s)

$t_{f,base}$ = base critical headway (provided by FH/NNDOT)

$t_{f,HV}$ = heavy vehicle adjustment factor; 0.9 if major street has one (1) lane, 1.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

AM PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0.33	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.04	P_{HV} 0	P_{HV} 0.33
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -1	G 0	G 0	G 0	G 0	G 2	G 2	G 2
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.4	4.3	7.1	6.5	6.2	6.8	6.9	6.7

FOLLOW-UP HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0.33	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.04	P_{HV} 0	P_{HV} 0.33
3.3	3.0	3.0	4.0	3.1	3.0	4.0	3.4

PM PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -1	G 0	G 0	G 0	G 0	G 2	G 2	G 2
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.1	4.3	7.1	6.5	6.2	6.8	6.9	6.4

FOLLOW-UP HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

SAT PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -1	G 0	G 0	G 0	G 0	G 2	G 2	G 2
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.1	4.3	7.1	6.5	6.2	6.8	6.9	6.4

FOLLOW-UP HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

Headway Adjustment Calculations

Project #: 804.02
 Municipality: Mt. Joy Township
 County: Lancaster

Date: 4/19/2022
 Conducted By: GEC
 Company Name: GME

Intersection: Cloverleaf Road/Merts Drive
 Major Street: Cloverleaf Road (NB/SB)
 Minor Street: Merts Drive (EB)

Critical Headway:

$$t_{c,x} = t_{c,base} + t_{c,HV} P_{HV} + t_{c,G} G - t_{c,L,T}$$

$t_{c,x}$ = critical headway for movement x(s)

$t_{c,base}$ = base critical headway (provided by FH/NNDOT)

$t_{c,HV}$ = heavy vehicle adjustment factor; 1.0 if major street has one (1) lane, 2.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

$t_{c,G}$ = grade adjustment (0.1 for minor street right turns, otherwise 0)

G = percent grade integer (e.g., -2 for 2% down grade)

$t_{c,L,T}$ = geometric adjustment (0.7 for minor street left turn movements at three-leg intersections, 0.0 otherwise)

Follow-Up Headway:

$$t_{f,x} = t_{f,base} + t_{f,HV} P_{HV}$$

$t_{f,x}$ = critical headway for movement x(s)

$t_{f,base}$ = base critical headway (provided by FH/NNDOT)

$t_{f,HV}$ = heavy vehicle adjustment factor; 0.9 if major street has one (1) lane, 1.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

AM PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -2	G 0	G 0	G 0	G 0	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
3.9	4.3	6.4	6.5	6.2	7.1	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

PM PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -2	G 0	G 0	G 0	G 0	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
3.9	4.3	6.4	6.5	6.2	7.1	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

SAT PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0.17	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G -2	G 0	G 0	G 0	G 0	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
3.9	4.3	6.6	6.5	6.2	7.1	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0.17	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.0	3.2	4.0	3.1	3.0	4.0	3.1

Headway Adjustment Calculations

Project #: 804.02

Date: 4/19/2022

Municipality: Mt. Joy Township

Conducted By: GEC

County: Lancaster

Company Name: GME

Intersection: Cloverleaf Road/PA 283 EB Ramps

Major Street: Cloverleaf Road (NB/SB)

Minor Street: PA Route 283 EB Ramps (EB)

Critical Headway:

Follow-Up Headway:

$$t_{c,x} = t_{c,base} + t_{c,HV} P_{HV} + t_{c,G} - t_{c,L,T}$$

$$t_{f,u,x} = t_{f,u,base} + t_{f,u,HV} P_{HV}$$

$t_{c,x}$ = critical headway for movement x(s)

$t_{f,u,x}$ = critical headway for movement x(s)

$t_{c,base}$ = base critical headway (provided by FH/NNDOT)

$t_{f,u,base}$ = base critical headway (provided by FH/NNDOT)

$t_{c,HV}$ = heavy vehicle adjustment factor; 1.0 if major street has one (1) lane, 2.0 if major street has two (2) or more lane

$t_{f,u,HV}$ = heavy vehicle adjustment factor; 0.9 if major street has one (1) lane, 1.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

P_{HV} = proportion of heavy vehicles (%/100)

$t_{c,G}$ = grade adjustment (0.1 for minor street right turns, otherwise 0)

G = percent grade integer (e.g., -2 for 2% down grade)

$t_{c,L,T}$ = geometric adjustment (0.7 for minor street left turn movements at three-leg intersections, 0.0 otherwise)

AM PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0.11	P_{HV} 0.16	P_{HV} 0	P_{HV} 0.09	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 0	G -2	G -3	G -3	G -3	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.3	4.0	6.7	5.9	6.0	7.1	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 4.0	$t_{f,u,base}$ 3.1	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 4.0	$t_{f,u,base}$ 3.1
$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9
P_{HV} 0	P_{HV} 0.11	P_{HV} 0.16	P_{HV} 0	P_{HV} 0.09	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.1	3.1	4.0	3.2	3.0	4.0	3.1

PM PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0.06	P_{HV} 0.19	P_{HV} 0	P_{HV} 0.01	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 0	G -2	G -3	G -3	G -3	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.3	4.0	6.7	5.9	5.9	7.1	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 4.0	$t_{f,u,base}$ 3.1	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 4.0	$t_{f,u,base}$ 3.1
$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9
P_{HV} 0	P_{HV} 0.06	P_{HV} 0.19	P_{HV} 0	P_{HV} 0.01	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.1	3.2	4.0	3.1	3.0	4.0	3.1

SAT PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0	P_{HV} 0.13	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 0	G -2	G -3	G -3	G -3	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.3	3.9	6.6	5.9	5.9	7.1	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 4.0	$t_{f,u,base}$ 3.1	$t_{f,u,base}$ 3.0	$t_{f,u,base}$ 4.0	$t_{f,u,base}$ 3.1
$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9	$t_{f,u,HV}$ 0.9
P_{HV} 0	P_{HV} 0	P_{HV} 0.13	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0
3.0	3.0	3.1	4.0	3.1	3.0	4.0	3.1

Headway Adjustment Calculations

Project #: 804.02
 Municipality: Mt. Joy Township
 County: Lancaster

Date: 4/19/2022
 Conducted By: GEC
 Company Name: GME

Intersection: SR 0230/Norlanco Drive Extension
 Major Street: SR 0230 (EB/WB)
 Minor Street: Norlanco Drive Extension (SB)

Critical Headway:

$$t_{c,x} = t_{c,base} + t_{c,HV} P_{HV} + t_{c,G} - t_{c,L,T}$$

$t_{c,x}$ = critical headway for movement x(s)

$t_{c,base}$ = base critical headway (provided by FH/NNDOT)

$t_{c,HV}$ = heavy vehicle adjustment factor; 1.0 if major street has one (1) lane, 2.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

$t_{c,G}$ = grade adjustment (0.1 for minor street right turns, otherwise 0)

G = percent grade integer (e.g., -2 for 2% down grade)

$t_{c,L,T}$ = geometric adjustment (0.7 for minor street left turn movements at three-leg intersections, 0.0 otherwise)

Follow-Up Headway:

$$t_{f,x} = t_{f,base} + t_{f,HV} P_{HV}$$

$t_{f,x}$ = critical headway for movement x(s)

$t_{f,base}$ = base critical headway (provided by FH/NNDOT)

$t_{f,HV}$ = heavy vehicle adjustment factor; 0.9 if major street has one (1) lane, 1.0 if major street has two (2) or more lane

P_{HV} = proportion of heavy vehicles (%/100)

AM PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0.02	P_{HV} 0.02
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 1	G 0	G 0	G 0	G 0	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.5	4.3	7.1	6.5	6.2	6.4	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0.02	P_{HV} 0.02
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

PM PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0.02	P_{HV} 0.02
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 1	G 0	G 0	G 0	G 0	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.5	4.3	7.1	6.5	6.2	6.4	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0.02	P_{HV} 0.02
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

SAT PEAK HOUR

CRITICAL HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0.02	P_{HV} 0.02
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 1	G 0	G 0	G 0	G 0	G 0	G 0	G 0
$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.7	$t_{c,L,T}$ 0.0	$t_{c,L,T}$ 0.0
4.5	4.3	7.1	6.5	6.2	6.4	6.5	6.2

FOLLOW-UP HEADWAY

Major Street Left EB	Major Street Left WB	Minor Street Left NB	Minor Street Thru NB	Minor Street Right NB	Minor Street Left SB	Minor Street Thru SB	Minor Street Right SB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0.02	P_{HV} 0.02
3.0	3.0	3.0	4.0	3.1	3.0	4.0	3.1

Headway Adjustment Calculations

Project #: 804.02
 Municipality: Mt. Joy Township
 County: Lancaster

Date: 4/19/2022
 Conducted By: GEC
 Company Name: GME

Intersection: Cloverleaf Road/Eastern Parcels Access
 Major Street: Cloverleaf Road (NB/SB)
 Minor Street: Eastern Parcels Access (WB)

Critical Headway:

$$t_{c,x} = t_{c,base} + t_{c,HV}P_{HV} + t_{c,G}G - t_{3,LT}$$

$t_{c,x}$ = critical headway for movement x(s)

$t_{c,base}$ = base critical headway (provided by PENNDOT)

$t_{c,HV}$ = heavy vehicle adjustment factor; 1.0 if major street has one (1) lane, 2.0 if major street has two (2) or more lanes

P_{HV} = proportion of heavy vehicles (%/100)

$t_{c,G}$ = grade adjustment (0.1 for minor street right turns, otherwise 0.2)

G = percent grade integer (e.g., -2 for 2% down grade)

$t_{3,LT}$ = geometric adjustment (0.7 for minor street left turn movements at three-leg intersections, 0.0 otherwise)

Follow-Up Headway:

$$t_{f,x} = t_{f,base} + t_{f,HV}P_{HV}$$

$t_{f,x}$ = critical headway for movement x(s)

$t_{f,base}$ = base critical headway (provided by PENNDOT)

$t_{f,HV}$ = heavy vehicle adjustment factor; 0.9 if major street has one (1) lane, 1.0 if major street has two (2) or more lanes

P_{HV} = proportion of heavy vehicles (%/100)

AM PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0.02
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 0	G -2	G 0	G 0	G 0	G 0	G 0	G 0
$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.7	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0
$t_{c,x}$ 4.3	$t_{c,x}$ 3.9	$t_{c,x}$ 7.1	$t_{c,x}$ 6.5	$t_{c,x}$ 6.2	$t_{c,x}$ 6.4	$t_{c,x}$ 6.5	$t_{c,x}$ 6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0.02
$t_{f,x}$ 3.0	$t_{f,x}$ 3.0	$t_{f,x}$ 3.0	$t_{f,x}$ 4.0	$t_{f,x}$ 3.1	$t_{f,x}$ 3.0	$t_{f,x}$ 4.0	$t_{f,x}$ 3.1

PM PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0.02
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 0	G -2	G 0	G 0	G 0	G 0	G 0	G 0
$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.7	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0
$t_{c,x}$ 4.3	$t_{c,x}$ 3.9	$t_{c,x}$ 7.1	$t_{c,x}$ 6.5	$t_{c,x}$ 6.2	$t_{c,x}$ 6.4	$t_{c,x}$ 6.5	$t_{c,x}$ 6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0.02
$t_{f,x}$ 3.0	$t_{f,x}$ 3.0	$t_{f,x}$ 3.0	$t_{f,x}$ 4.0	$t_{f,x}$ 3.1	$t_{f,x}$ 3.0	$t_{f,x}$ 4.0	$t_{f,x}$ 3.1

SAT PEAK HOUR

CRITICAL HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{c,base}$ 4.3	$t_{c,base}$ 4.3	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2	$t_{c,base}$ 7.1	$t_{c,base}$ 6.5	$t_{c,base}$ 6.2
$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0	$t_{c,HV}$ 1.0
P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0.02
$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1	$t_{c,G}$ 0.2	$t_{c,G}$ 0.2	$t_{c,G}$ 0.1
G 0	G -2	G 0	G 0	G 0	G 0	G 0	G 0
$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.7	$t_{3,LT}$ 0.0	$t_{3,LT}$ 0.0
$t_{c,x}$ 4.3	$t_{c,x}$ 3.9	$t_{c,x}$ 7.1	$t_{c,x}$ 6.5	$t_{c,x}$ 6.2	$t_{c,x}$ 6.4	$t_{c,x}$ 6.5	$t_{c,x}$ 6.2

FOLLOW-UP HEADWAY

Major Street Left NB	Major Street Left SB	Minor Street Left EB	Minor Street Thru EB	Minor Street Right EB	Minor Street Left WB	Minor Street Thru WB	Minor Street Right WB
$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1	$t_{f,base}$ 3.0	$t_{f,base}$ 4.0	$t_{f,base}$ 3.1
$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9	$t_{f,HV}$ 0.9
P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0	P_{HV} 0	P_{HV} 0.02	P_{HV} 0	P_{HV} 0.02
$t_{f,x}$ 3.0	$t_{f,x}$ 3.0	$t_{f,x}$ 3.0	$t_{f,x}$ 4.0	$t_{f,x}$ 3.1	$t_{f,x}$ 3.0	$t_{f,x}$ 4.0	$t_{f,x}$ 3.1

APPENDIX L1

EXISTING CONDITIONS ANALYSES

Lanes and Geometrics
3: Maytown Rd & SR 0230

2022 Existing
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	386	77	79	331	140	136
Future Volume (vph)	386	77	79	331	140	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1679	0	1662	1766	1535	0
Flt Permitted			0.276		0.975	
Satd. Flow (perm)	1679	0	483	1766	1535	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	18					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	12%	6%	12%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	515	0	88	368	307	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	34.0		12.0	46.0	24.0	
Total Split (%)	48.6%		17.1%	65.7%	34.3%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effect Green (s)	31.8		42.5	41.3	18.3	
Actuated g/C Ratio	0.45		0.61	0.59	0.26	
v/c Ratio	0.67		0.21	0.35	0.77	
Control Delay	21.3		5.2	6.3	38.4	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	21.3		5.2	6.3	38.4	

Lanes and Geometrics
3: Maytown Rd & SR 0230

2022 Existing
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
LOS	C		A	A	D	
Approach Delay	21.3			6.1	38.4	
Approach LOS	C			A	D	
Queue Length 50th (ft)	174		12	52	120	
Queue Length 95th (ft)	#292		m22	76	#236	
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	771		427	1041	412	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.67		0.21	0.35	0.75	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 61 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 20.0
 Intersection LOS: B
 Intersection Capacity Utilization 60.1%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
3: Maytown Rd & SR 0230

2022 Existing
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	386	77	79	331	140	136
Future Volume (veh/h)	386	77	79	331	140	136
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1648	1542	1938	1927	1818	1846
Adj Flow Rate, veh/h	429	80	88	368	156	151
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	9	12	6	12	4	2
Cap, veh/h	659	123	467	1190	193	187
Arrive On Green	0.49	0.47	0.15	1.00	0.23	0.22
Sat Flow, veh/h	1351	252	1846	1927	825	798
Grp Volume(v), veh/h	0	509	88	368	308	0
Grp Sat Flow(s),veh/h/ln	0	1602	1846	1927	1628	0
Q Serve(g_s), s	0.0	16.7	1.4	0.0	12.5	0.0
Cycle Q Clear(g_c), s	0.0	16.7	1.4	0.0	12.5	0.0
Prop In Lane		0.16	1.00		0.51	0.49
Lane Grp Cap(c), veh/h	0	781	467	1190	381	0
V/C Ratio(X)	0.00	0.65	0.19	0.31	0.81	0.00
Avail Cap(c_a), veh/h	0	781	543	1190	437	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	13.5	8.2	0.0	25.6	0.0
Incr Delay (d2), s/veh	0.0	4.2	0.2	0.7	14.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	10.1	0.8	0.4	10.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	17.7	8.4	0.7	40.5	0.0
LnGrp LOS	A	B	A	A	D	A
Approach Vol, veh/h	509			456	308	
Approach Delay, s/veh	17.7			2.2	40.5	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.1	39.3		21.6		48.4
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	27.8		17.8		39.8
Max Q Clear Time (g_c+I1), s	3.4	18.7		14.5		2.0
Green Ext Time (p_c), s	0.1	5.2		0.9		9.3

Intersection Summary

HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes and Geometrics
5: SR 0230 & Groff Ave

2022 Existing
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	550	1	0	502	40	0	0	2	40	0	34
Future Volume (vph)	25	550	1	0	502	40	0	0	2	40	0	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1		1	1		1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	8%	7%	0%	0%	9%	10%	0%	0%	50%	0%	0%	18%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	619	0	0	609	0	0	2	0	45	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.7%
Analysis Period (min)	15
	ICU Level of Service A

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↷		↶	↷	
Traffic Vol, veh/h	25	550	1	0	502	40	0	0	2	40	0	34
Future Vol, veh/h	25	550	1	0	502	40	0	0	2	40	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	8	7	0	0	9	10	0	0	50	0	0	18
Mvmt Flow	28	618	1	0	564	45	0	0	2	45	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	609	0	0	619	0	0	1282	1284	620	1264	1262	588
Stage 1	-	-	-	-	-	-	675	675	-	587	587	-
Stage 2	-	-	-	-	-	-	607	609	-	677	675	-
Critical Hdwy	3.9	-	-	5.5	-	-	6.7	6.1	6.5	6.5	5.9	6.1
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3.1	-	-	3	-	-	3	4	3.6	3	4	3.462
Pot Cap-1 Maneuver	771	-	-	597	-	-	180	192	438	198	212	503
Stage 1	-	-	-	-	-	-	539	492	-	619	551	-
Stage 2	-	-	-	-	-	-	585	523	-	558	510	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	771	-	-	597	-	-	162	185	438	191	204	503
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	185	-	191	204	-
Stage 1	-	-	-	-	-	-	520	474	-	597	551	-
Stage 2	-	-	-	-	-	-	540	523	-	535	492	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	13.3	21.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	438	771	-	-	597	-	-	191	503
HCM Lane V/C Ratio	0.005	0.036	-	-	-	-	-	0.235	0.076
HCM Control Delay (s)	13.3	9.8	-	-	0	-	-	29.6	12.7
HCM Lane LOS	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.9	0.2

Lanes and Geometrics
7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↗	↖	↖	↗		↖	↗	
Traffic Volume (vph)	3	463	43	61	434	6	100	2	70	4	3	2
Future Volume (vph)	3	463	43	61	434	6	100	2	70	4	3	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1667	1552	1541	1558	1608	1645	1516	0	1761	1842	0
Flt Permitted	0.488			0.361			0.754			0.705		
Satd. Flow (perm)	849	1667	1552	586	1558	1608	1302	1516	0	1307	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			45		78			2	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)							1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	2%	2%	10%	0%	3%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	514	48	68	482	7	111	80	0	4	5	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	40.0	40.0	40.0	13.0	53.0	53.0	17.0	17.0		17.0	17.0	
Total Split (%)	57.1%	57.1%	57.1%	18.6%	75.7%	75.7%	24.3%	24.3%		24.3%	24.3%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	44.6	44.6	44.6	52.3	52.1	52.1	10.8	10.8		10.6	10.6	
Actuated g/C Ratio	0.64	0.64	0.64	0.75	0.74	0.74	0.15	0.15		0.15	0.15	
v/c Ratio	0.01	0.48	0.05	0.13	0.42	0.01	0.56	0.27		0.02	0.02	
Control Delay	6.7	7.8	0.1	1.5	2.7	0.0	38.1	9.8		24.5	21.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.7	7.8	0.1	1.5	2.7	0.0	38.1	9.8		24.5	21.0	

Lanes and Geometrics
 7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
 AM Peak Hour

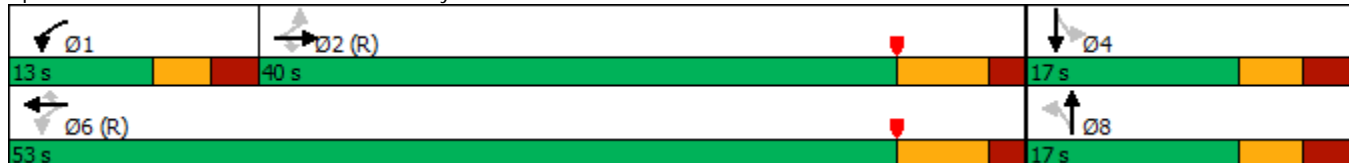


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A	A	A	A	D	A		C	C	
Approach Delay		7.1			2.6			26.3			22.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	79	0	6	53	0	44	1		1	1	
Queue Length 95th (ft)	m1	m113	m0	2	11	m0	91	34		9	10	
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	541	1063	1037	553	1160	1209	225	326		225	320	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.01	0.48	0.05	0.12	0.42	0.01	0.49	0.25		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 29 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 8.1
 Intersection LOS: A
 Intersection Capacity Utilization 62.9%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↗		↖	↗	
Traffic Volume (veh/h)	3	463	43	61	434	6	100	2	70	4	3	2
Future Volume (veh/h)	3	463	43	61	434	6	100	2	70	4	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	1947	2032	1722	1609	1820	1944	1986	1929	2024	2104	2024
Adj Flow Rate, veh/h	3	514	32	68	482	6	111	2	40	4	3	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	8	2	2	10	0	3	0	4	0	0	0
Cap, veh/h	716	1193	1055	671	1171	1122	278	10	192	256	141	94
Arrive On Green	1.00	1.00	1.00	0.10	1.00	1.00	0.12	0.12	0.11	0.12	0.12	0.11
Sat Flow, veh/h	1001	1947	1722	1640	1609	1542	1460	80	1608	1471	1175	784
Grp Volume(v), veh/h	3	514	32	68	482	6	111	0	42	4	0	5
Grp Sat Flow(s),veh/h/ln	1001	1947	1722	1640	1609	1542	1460	0	1688	1471	0	1959
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.0	5.1	0.0	1.6	0.2	0.0	0.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.9	0.0	0.0	5.1	0.0	1.6	1.3	0.0	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	1.00		0.40
Lane Grp Cap(c), veh/h	716	1193	1055	671	1171	1122	278	0	202	256	0	234
V/C Ratio(X)	0.00	0.43	0.03	0.10	0.41	0.01	0.40	0.00	0.21	0.02	0.00	0.02
Avail Cap(c_a), veh/h	716	1193	1055	787	1171	1122	355	0	292	334	0	339
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.2	0.0	0.0	29.4	0.0	28.3	28.2	0.0	27.4
Incr Delay (d2), s/veh	0.0	1.1	0.1	0.1	1.0	0.0	0.9	0.0	0.5	0.0	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.7	0.0	0.3	0.6	0.0	3.3	0.0	1.2	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.1	0.1	3.2	1.0	0.0	30.3	0.0	28.8	28.2	0.0	27.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		549			556			153				9
Approach Delay, s/veh		1.1			1.3			29.9				27.8
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.0	48.7		13.3		56.7		13.3				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	33.2		* 11		46.2		* 11				
Max Q Clear Time (g_c+I1), s	3.4	2.5		3.8		2.5		7.6				
Green Ext Time (p_c), s	0.0	0.6		0.0		0.6		0.1				

Intersection Summary

HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes and Geometrics
10: Driveway/Market Sq Dr & SR 0230

2022 Existing
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	391	13	5	469	12	9	0	14	6	0	8
Future Volume (vph)	25	391	13	5	469	12	9	0	14	6	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1659	0	1744	1654	1445	0	1729	0	1719	1501	0
Flt Permitted	0.412			0.510				0.866				
Satd. Flow (perm)	727	1659	0	936	1654	1415	0	1526	0	1809	1501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				126		139			435	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)	1					1	1					1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	0%	0%	11%	8%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	434	0	5	504	13	0	25	0	6	9	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	56.0		45.0	45.0	45.0	14.0	14.0		14.0	14.0	
Total Split (%)	15.7%	80.0%		64.3%	64.3%	64.3%	20.0%	20.0%		20.0%	20.0%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	60.6	62.9		58.5	58.5	58.5		7.0		7.1	7.1	
Actuated g/C Ratio	0.87	0.90		0.84	0.84	0.84		0.10		0.10	0.10	
v/c Ratio	0.04	0.29		0.01	0.36	0.01		0.09		0.03	0.02	
Control Delay	0.9	2.3		3.8	4.6	0.0		0.7		28.5	0.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	0.9	2.3		3.8	4.6	0.0		0.7		28.5	0.0	

Lanes and Geometrics
 10: Driveway/Market Sq Dr & SR 0230

2022 Existing
 AM Peak Hour

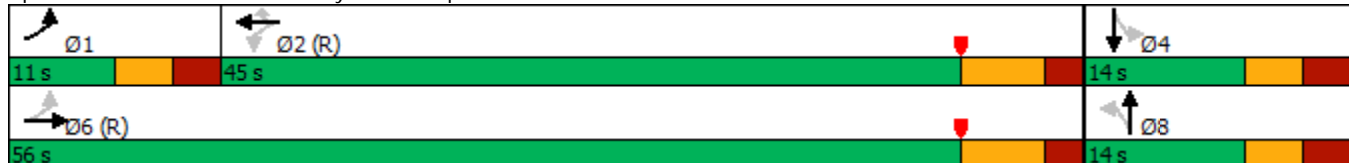


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A	A		A		C	A	
Approach Delay		2.2			4.5			0.7			11.4	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)	0	0		0	0	0		0		2	0	
Queue Length 95th (ft)	m2	63		m2	85	m0		0		13	0	
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	717	1492		783	1383	1204		325		242	578	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.04	0.29		0.01	0.36	0.01		0.08		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 7 (10%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.36
 Intersection Signal Delay: 3.5
 Intersection LOS: A
 Intersection Capacity Utilization 42.5%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2022 Existing
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↕		↖	↗	
Traffic Volume (veh/h)	25	391	13	5	469	12	9	0	14	6	0	8
Future Volume (veh/h)	25	391	13	5	469	12	9	0	14	6	0	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1626	1711	1949	1793	1835	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	27	420	14	5	504	13	10	0	14	6	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	6	0	0	11	8	0	0	0	0	0	0
Cap, veh/h	740	1283	43	823	1298	1125	89	0	22	159	68	0
Arrive On Green	0.06	1.00	1.00	1.00	1.00	1.00	0.02	0.00	0.02	0.04	0.00	0.00
Sat Flow, veh/h	1629	1565	52	994	1793	1554	426	0	596	1361	1837	0
Grp Volume(v), veh/h	27	0	434	5	504	13	24	0	0	6	0	0
Grp Sat Flow(s),veh/h/ln	1629	0	1617	994	1793	1554	1021	0	0	1361	1837	0
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		0.03	1.00		1.00	0.42		0.58	1.00		0.00
Lane Grp Cap(c), veh/h	740	0	1326	823	1298	1125	96	0	0	159	68	0
V/C Ratio(X)	0.04	0.00	0.33	0.01	0.39	0.01	0.25	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	839	0	1326	823	1298	1125	241	0	0	291	247	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.00	0.87	0.94	0.94	0.94	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	0.0	0.0	0.0	34.0	0.0	0.0	32.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	0.8	0.0	1.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.4	0.0	0.5	0.0	0.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.6	0.0	0.6	0.0	0.8	0.0	35.3	0.0	0.0	32.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	C	A	A
Approach Vol, veh/h		461			522			24				6
Approach Delay, s/veh		0.6			0.8			35.3				32.7
Approach LOS		A			A			D				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.7	56.1		7.2		62.8		7.2				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	38.6		8.4		49.6		8.4				
Max Q Clear Time (g_c+I1), s	2.7	2.5		2.7		2.5		3.6				
Green Ext Time (p_c), s	0.0	0.6		0.0		0.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	1.7
HCM 6th LOS	A

Lanes and Geometrics
13: Sheaffer Rd & SR 0230

2022 Existing
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	368	1	10	388	20	58	25	35	17	12	32
Future Volume (vph)	31	368	1	10	388	20	58	25	35	17	12	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%				-4%
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1684	1685	0	1246	1593	0	1248	1493	0	0	1794	0
Flt Permitted	0.493			0.520			0.884				0.893	
Satd. Flow (perm)	874	1685	0	682	1593	0	1161	1493	0	0	1624	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			38				34
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	100%	30%	6%	10%	26%	4%	9%	0%	0%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	397	0	11	439	0	62	65	0	0	65	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	45.0	45.0		45.0	45.0		25.0	25.0		25.0	25.0	
Total Split (%)	64.3%	64.3%		64.3%	64.3%		35.7%	35.7%		35.7%	35.7%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	52.2	52.2		52.2	52.2		11.2	11.2			11.2	
Actuated g/C Ratio	0.75	0.75		0.75	0.75		0.16	0.16			0.16	
v/c Ratio	0.05	0.32		0.02	0.37		0.34	0.24			0.23	
Control Delay	1.1	1.6		4.6	5.8		29.7	15.0			15.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	1.1	1.6		4.6	5.8		29.7	15.0			15.6	

Lanes and Geometrics
13: Sheaffer Rd & SR 0230

2022 Existing
AM Peak Hour

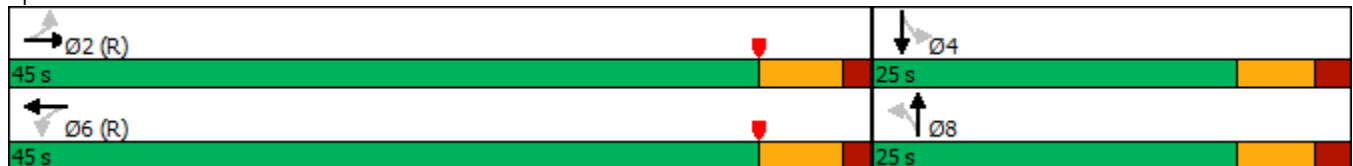


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A		C	B			B	
Approach Delay		1.5			5.8			22.1			15.6	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	1	7		1	62		24	10			12	
Queue Length 95th (ft)	3	16		7	139		53	38			39	
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	652	1257		508	1190		331	453			488	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.05	0.32		0.02	0.37		0.19	0.14			0.13	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.37
Intersection Signal Delay:	6.6
Intersection LOS:	A
Intersection Capacity Utilization	45.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2022 Existing
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	368	1	10	388	20	58	25	35	17	12	32
Future Volume (veh/h)	31	368	1	10	388	20	58	25	35	17	12	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1680	346	1485	1826	1770	1385	1694	1623	1949	2027	1864
Adj Flow Rate, veh/h	33	396	0	11	417	21	62	27	16	18	13	16
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	5	100	30	6	10	26	4	9	0	0	6
Cap, veh/h	717	1286	0	704	1320	66	206	93	55	112	62	53
Arrive On Green	1.00	1.00	0.00	0.77	0.77	0.75	0.09	0.09	0.08	0.08	0.09	0.08
Sat Flow, veh/h	890	1680	0	785	1724	87	1018	994	589	435	664	567
Grp Volume(v), veh/h	33	396	0	11	0	438	62	0	43	47	0	0
Grp Sat Flow(s),veh/h/ln	890	1680	0	785	0	1811	1018	0	1583	1666	0	0
Q Serve(g_s), s	0.3	0.0	0.0	0.2	0.0	5.3	1.6	0.0	1.8	0.1	0.0	0.0
Cycle Q Clear(g_c), s	5.5	0.0	0.0	0.2	0.0	5.3	3.5	0.0	1.8	1.9	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	1.00		0.37	0.38		0.34
Lane Grp Cap(c), veh/h	717	1286	0	704	0	1386	206	0	147	202	0	0
V/C Ratio(X)	0.05	0.31	0.00	0.02	0.00	0.32	0.30	0.00	0.29	0.23	0.00	0.00
Avail Cap(c_a), veh/h	717	1286	0	704	0	1386	402	0	452	525	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.0	0.0	2.0	0.0	2.5	30.3	0.0	29.8	29.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	0.0	0.0	0.0	0.6	0.8	0.0	1.1	0.6	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.4	0.0	0.0	0.0	1.7	1.8	0.0	1.2	1.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.4	0.6	0.0	2.0	0.0	3.1	31.1	0.0	30.9	30.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	A
Approach Vol, veh/h		429			449			105				47
Approach Delay, s/veh		0.6			3.1			31.0				30.5
Approach LOS		A			A			C				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.5		11.5		58.5		11.5				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 39		19.0		* 39		19.0				
Max Q Clear Time (g_c+I1), s		2.0		3.9		7.3		5.5				
Green Ext Time (p_c), s		11.4		0.1		12.3		0.3				

Intersection Summary

HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
 AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	306	0	86	488	125	0	0	170	55
Future Volume (vph)	0	0	0	306	0	86	488	125	0	0	170	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1546	1145	1544	1424	0	0	1528	1523
Flt Permitted					0.950		0.486					
Satd. Flow (perm)	0	0	0	0	1546	1145	790	1424	0	0	1528	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	8%	0%	26%	6%	21%	2%	2%	15%	15%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	319	90	508	130	0	0	177	57
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				21.0	21.0	21.0	17.0	39.0			22.0	22.0
Total Split (%)				35.0%	35.0%	35.0%	28.3%	65.0%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					15.3	15.3	32.2	32.2			15.2	15.2
Actuated g/C Ratio					0.27	0.27	0.56	0.56			0.27	0.27
v/c Ratio					0.77	0.21	0.84	0.16			0.44	0.11
Control Delay					34.5	1.8	24.9	6.9			21.6	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					34.5	1.8	24.9	6.9			21.6	0.4
LOS					C	A	C	A			C	A
Approach Delay					27.3			21.2			16.5	
Approach LOS					C			C			B	
Queue Length 50th (ft)					101	0	106	20			51	0
Queue Length 95th (ft)					#218	7	#256	42			101	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
 AM Peak Hour

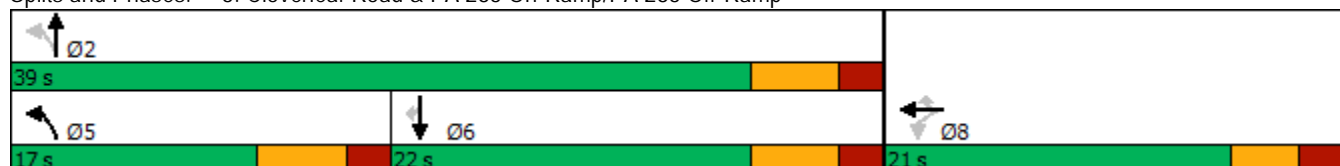


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					448	448	605	851			456	564
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.71	0.20	0.84	0.15			0.39	0.10

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	57.1
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	22.3
Intersection LOS:	C
Intersection Capacity Utilization:	81.9%
ICU Level of Service:	D
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (veh/h)	0	0	0	306	0	86	488	125	0	0	170	55
Future Volume (veh/h)	0	0	0	306	0	86	488	125	0	0	170	55
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1761	1875	1505	1693	1483	0	0	1661	1728
Adj Flow Rate, veh/h				319	0	0	508	130	0	0	177	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				8	0	26	6	21	0	0	15	15
Cap, veh/h				422	0		690	860	0	0	418	
Arrive On Green				0.22	0.00	0.00	0.23	0.58	0.00	0.00	0.25	0.00
Sat Flow, veh/h				1785	0	1275	1613	1483	0	0	1661	1464
Grp Volume(v), veh/h				319	0	0	508	130	0	0	177	0
Grp Sat Flow(s),veh/h/ln				1785	0	1275	1613	1483	0	0	1661	1464
Q Serve(g_s), s				8.7	0.0	0.0	11.4	2.1	0.0	0.0	4.6	0.0
Cycle Q Clear(g_c), s				8.7	0.0	0.0	11.4	2.1	0.0	0.0	4.6	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				422	0		690	860	0	0	418	
V/C Ratio(X)				0.76	0.00		0.74	0.15	0.00	0.00	0.42	
Avail Cap(c_a), veh/h				569	0		690	975	0	0	546	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				18.9	0.0	0.0	9.4	5.0	0.0	0.0	16.2	0.0
Incr Delay (d2), s/veh				4.0	0.0	0.0	4.1	0.3	0.0	0.0	2.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.8	0.0	0.0	3.4	0.5	0.0	0.0	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.8	0.0	0.0	13.5	5.3	0.0	0.0	18.7	0.0
LnGrp LOS				C	A		B	A	A	A	B	
Approach Vol, veh/h					319			638			177	
Approach Delay, s/veh					22.8			11.8			18.7	
Approach LOS					C			B			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		35.0			17.0	18.0		16.7				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		33.0			11.0	16.0		15.5				
Max Q Clear Time (g_c+I1), s		4.1			13.4	6.6		10.7				
Green Ext Time (p_c), s		2.8			0.0	1.9		0.7				

Intersection Summary


















HCM 6th Ctrl Delay	16.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2022 Existing
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	2	223	0	0	0	0	582	525	105	373	0
Future Volume (vph)	31	2	223	0	0	0	0	582	525	105	373	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1600	1454	0	0	0	0	1628	0	1588	1686	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1600	1454	0	0	0	0	1628	0	1588	1686	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	16%	0%	9%	2%	2%	2%	2%	9%	4%	11%	10%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	237	0	0	0	0	1178	0	112	397	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	81.9% ICU Level of Service D
Analysis Period (min)	15

HCM 6th TWSC
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2022 Existing
 AM Peak Hour

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	31	2	223	0	0	0	0	582	525	105	373	0
Future Vol, veh/h	31	2	223	0	0	0	0	582	525	105	373	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	16	0	9	2	2	2	2	9	4	11	10	2
Mvmt Flow	33	2	237	0	0	0	0	619	559	112	397	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1240	1240	397	-	0	0	619	0	0
Stage 1	621	621	-	-	-	-	-	-	-
Stage 2	619	619	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.99	-	-	-	4	-	-
Critical Hdwy Stg 1	4.96	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.96	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.2	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	188	217	690	0	-	-	753	-	0
Stage 1	637	535	-	0	-	-	-	-	0
Stage 2	639	536	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	160	0	690	-	-	-	753	-	-
Mov Cap-2 Maneuver	160	0	-	-	-	-	-	-	-
Stage 1	637	0	-	-	-	-	-	-	-
Stage 2	544	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	160	690	753	-
HCM Lane V/C Ratio	-	-	0.219	0.344	0.148	-
HCM Control Delay (s)	-	-	33.7	12.9	10.6	-
HCM Lane LOS	-	-	D	B	B	-
HCM 95th %tile Q(veh)	-	-	0.8	1.5	0.5	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2022 Existing
 AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	24	0	1090	588	5
Future Volume (vph)	6	24	0	1090	588	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1624	0	0	1734	1653	0
Flt Permitted	0.990					
Satd. Flow (perm)	1624	0	0	1734	1653	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	7%	10%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	1211	659	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	67.4% ICU Level of Service C
Analysis Period (min)	15

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2022 Existing
 AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	24	0	1090	588	5
Future Vol, veh/h	6	24	0	1090	588	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	7	10	0
Mvmt Flow	7	27	0	1211	653	6

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1867	656	659	0	-	0
Stage 1	656	-	-	-	-	-
Stage 2	1211	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	86	491	764	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	86	491	764	-	-	-
Mov Cap-2 Maneuver	86	-	-	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	310	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	764	-	253	-	-
HCM Lane V/C Ratio	-	-	0.132	-	-
HCM Control Delay (s)	0	-	21.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2022 Existing
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	19	75	8	12	73	26	730	8	10	485	129
Future Volume (vph)	287	19	75	8	12	73	26	730	8	10	485	129
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1604	1585	0	1391	1565	0	1500	1614	0	1628	1578	0
Flt Permitted	0.696			0.690			0.271			0.176		
Satd. Flow (perm)	1175	1585	0	1009	1565	0	428	1614	0	302	1578	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		83			81			1				31
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	5%	13%	8%	1%	8%	9%	25%	0%	10%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	319	104	0	9	94	0	29	820	0	11	682	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	25.0	25.0		25.0	25.0		45.0	45.0		45.0	45.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		64.3%	64.3%		64.3%	64.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	20.0	20.0		20.0	20.0		39.5	39.5		39.5	39.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.56	0.56		0.56	0.56	
v/c Ratio	0.95	0.20		0.03	0.19		0.12	0.90		0.06	0.76	
Control Delay	66.9	8.0		18.6	7.4		6.9	25.6		8.1	17.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.9	8.0		18.6	7.4		6.9	25.6		8.1	17.9	
LOS	E	A		B	A		A	C		A	B	
Approach Delay		52.4			8.4			24.9			17.7	
Approach LOS		D			A			C			B	
Queue Length 50th (ft)	134	7		3	4		6	290		2	193	
Queue Length 95th (ft)	#284	39		13	35		m7	#530		9	333	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2022 Existing
 AM Peak Hour

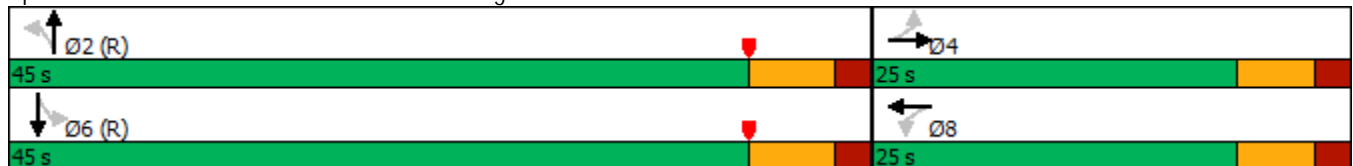


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		920			920			1160			2095	
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	335	512		288	505		241	911		170	903	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.95	0.20		0.03	0.19		0.12	0.90		0.06	0.76	

Intersection Summary





















Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 27.3 Intersection LOS: C
 Intersection Capacity Utilization 73.3% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd





















HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2022 Existing
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	19	75	8	12	73	26	730	8	10	485	129
Future Volume (veh/h)	287	19	75	8	12	73	26	730	8	10	485	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	1915	1567	1703	1736	1798	1784	1556	1949	1807	1878
Adj Flow Rate, veh/h	319	21	83	9	13	81	29	811	9	11	539	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	5	13	8	1	8	9	25	0	10	5
Cap, veh/h	424	104	411	363	58	362	309	994	11	495	776	206
Arrive On Green	0.29	0.29	0.27	0.29	0.29	0.27	1.00	1.00	1.00	0.56	0.56	0.55
Sat Flow, veh/h	1361	364	1439	1080	204	1268	729	1761	20	695	1376	365
Grp Volume(v), veh/h	319	0	104	9	0	94	29	0	820	11	0	682
Grp Sat Flow(s),veh/h/ln	1361	0	1804	1080	0	1472	729	0	1780	695	0	1741
Q Serve(g_s), s	16.4	0.0	3.1	0.4	0.0	3.5	1.5	0.0	0.0	0.5	0.0	19.7
Cycle Q Clear(g_c), s	19.8	0.0	3.1	3.5	0.0	3.5	21.2	0.0	0.0	0.5	0.0	19.7
Prop In Lane	1.00		0.80	1.00		0.86	1.00		0.01	1.00		0.21
Lane Grp Cap(c), veh/h	424	0	515	363	0	421	309	0	1005	495	0	982
V/C Ratio(X)	0.75	0.00	0.20	0.02	0.00	0.22	0.09	0.00	0.82	0.02	0.00	0.69
Avail Cap(c_a), veh/h	424	0	515	363	0	421	309	0	1005	495	0	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.80	0.00	0.80	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	19.3	20.3	0.0	19.4	5.3	0.0	0.0	6.8	0.0	11.0
Incr Delay (d2), s/veh	7.3	0.0	0.2	0.0	0.0	0.3	0.5	0.0	5.9	0.1	0.0	4.0
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	5.8	0.0	1.2	0.1	0.0	1.1	0.2	0.0	1.7	0.1	0.0	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	0.0	19.5	20.3	0.0	19.7	5.8	0.0	5.9	6.8	0.0	15.1
LnGrp LOS	C	A	B	C	A	B	A	A	A	A	A	B
Approach Vol, veh/h		423			103			849			693	
Approach Delay, s/veh		30.4			19.7			5.9			14.9	
Approach LOS		C			B			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		25.0		45.0		25.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		38.5		19.0		38.5		19.0				
Max Q Clear Time (g_c+I1), s		2.0		21.8		21.7		5.5				
Green Ext Time (p_c), s		26.6		0.0		12.3		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				14.6								
HCM 6th LOS				B								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	16	16	1	9	2	748	7	24	528	1
Future Volume (vph)	15	0	16	16	1	9	2	748	7	24	528	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1682	0	0	1561	0	0	1615	1648
Flt Permitted		0.952			0.799			0.999			0.958	
Satd. Flow (perm)	0	1656	1581	0	1387	0	0	1559	0	0	1550	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		9			1				39
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	50%	10%	29%	0%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	17	0	27	0	0	788	0	0	575	1
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		6			6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	17.0	17.0	17.0	17.0	17.0		53.0	53.0		53.0	53.0	53.0
Total Split (%)	24.3%	24.3%	24.3%	24.3%	24.3%		75.7%	75.7%		75.7%	75.7%	75.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		7.7	7.7		7.7			62.6			62.6	62.6
Actuated g/C Ratio		0.11	0.11		0.11			0.89			0.89	0.89
v/c Ratio		0.09	0.08		0.17			0.57			0.41	0.00
Control Delay		28.3	2.7		23.9			5.0			5.7	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		28.3	2.7		23.9			5.0			5.7	0.0
LOS		C	A		C			A			A	A
Approach Delay		15.1			23.9			5.0			5.7	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)		6	0		7			0			0	0
Queue Length 95th (ft)		22	5		28			260			m257	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		295	320		255			1394			1386	1478
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.05	0.05		0.11			0.57			0.41	0.00

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	63 (90%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	5.8
Intersection LOS:	A
Intersection Capacity Utilization	67.5%
ICU Level of Service	C
Analysis Period (min)	15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (veh/h)	15	0	16	16	1	9	2	748	7	24	528	1
Future Volume (veh/h)	15	0	16	16	1	9	2	748	7	24	528	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1076	1637	1371	1875	1747	1950
Adj Flow Rate, veh/h	16	0	17	17	1	9	2	779	7	25	550	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	50	10	29	0	9	0
Cap, veh/h	188	0	84	121	2	20	52	1314	12	79	1348	1341
Arrive On Green	0.04	0.00	0.05	0.04	0.05	0.04	0.80	0.81	0.80	1.00	1.00	1.00
Sat Flow, veh/h	1607	0	1586	709	42	375	1	1619	15	31	1661	1652
Grp Volume(v), veh/h	16	0	17	27	0	0	788	0	0	575	0	1
Grp Sat Flow(s),veh/h/ln	1607	0	1586	1126	0	0	1634	0	0	1693	0	1652
Q Serve(g_s), s	0.0	0.0	0.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	0.7	1.9	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.63		0.33	0.00		0.01	0.04		1.00
Lane Grp Cap(c), veh/h	165	0	84	127	0	0	1354	0	0	1403	0	1341
V/C Ratio(X)	0.10	0.00	0.20	0.21	0.00	0.00	0.58	0.00	0.00	0.41	0.00	0.00
Avail Cap(c_a), veh/h	335	0	283	312	0	0	1354	0	0	1403	0	1341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.59	0.00	0.59
Uniform Delay (d), s/veh	32.2	0.0	31.7	33.1	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.2	0.8	0.0	0.0	1.8	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.5	0.0	0.0	1.6	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.4	0.0	32.9	33.9	0.0	0.0	4.3	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		33			27			788			576	
Approach Delay, s/veh		32.7			33.9			4.3			0.5	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		61.8		8.2		61.8		8.2				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		47.0		11.5		47.0		11.5				
Max Q Clear Time (g_c+I1), s		14.5		2.7		2.0		3.9				
Green Ext Time (p_c), s		22.8		0.0		19.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.0									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	173	31	3	166	194	69	352	11	101	215	203
Future Volume (vph)	259	173	31	3	166	194	69	352	11	101	215	203
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1485	1660	1113	1194	1649	1561	1637	1716	0	1500	1509	1388
Flt Permitted	0.439			0.641			0.563			0.300		
Satd. Flow (perm)	686	1660	1088	804	1649	1561	970	1716	0	473	1509	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			239		2				232
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1026				640
Travel Time (s)		14.2			7.4			28.0				10.9
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	9%	29%	33%	5%	4%	6%	13%	18%	8%	13%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	276	184	33	3	177	206	73	386	0	107	229	216
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	15.0	38.5	38.5	23.5	23.5	23.5	14.0	27.5		14.0	27.5	27.5
Total Split (%)	18.8%	48.1%	48.1%	29.4%	29.4%	29.4%	17.5%	34.4%		17.5%	34.4%	34.4%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	29.7	29.7	29.7	14.4	14.4	14.4	25.8	19.8		26.0	19.9	19.9
Actuated g/C Ratio	0.41	0.41	0.41	0.20	0.20	0.20	0.36	0.28		0.36	0.28	0.28
v/c Ratio	0.71	0.27	0.06	0.02	0.54	0.41	0.17	0.81		0.38	0.55	0.39
Control Delay	29.7	17.1	0.2	25.3	34.3	5.3	13.3	40.9		16.7	29.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.7	17.1	0.2	25.3	34.3	5.3	13.3	40.9		16.7	29.1	5.3
LOS	C	B	A	C	C	A	B	D		B	C	A
Approach Delay		23.0			18.8			36.6			17.4	
Approach LOS		C			B			D			B	
Queue Length 50th (ft)	97	59	0	1	77	0	18	163		27	89	0
Queue Length 95th (ft)	#187	105	0	8	138	37	44	#331		61	170	43

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		860			410			946			560	
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	391	778	589	205	421	577	425	525		287	461	585
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.71	0.24	0.06	0.01	0.42	0.36	0.17	0.74		0.37	0.50	0.37

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	71.8
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	23.8
Intersection LOS:	C
Intersection Capacity Utilization	70.5%
ICU Level of Service	C
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230

Ø1	Ø2	Ø3	Ø4
15 s	23.5 s	14 s	27.5 s
Ø5	Ø7	Ø7	Ø8
38.5 s	14 s	14 s	27.5 s

HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	173	31	3	166	194	69	352	11	101	215	203
Future Volume (veh/h)	259	173	31	3	166	194	69	352	11	101	215	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1724	1709	1425	1331	1724	1808	2087	2067	1917	1598	1528	1598
Adj Flow Rate, veh/h	276	184	20	3	177	0	73	374	10	107	229	186
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	9	29	33	5	4	6	13	18	8	13	8
Cap, veh/h	449	709	500	268	333		376	471	13	303	403	356
Arrive On Green	0.14	0.41	0.41	0.19	0.19	0.00	0.06	0.24	0.22	0.09	0.26	0.26
Sat Flow, veh/h	1641	1709	1206	837	1724	1532	1988	2004	54	1522	1528	1352
Grp Volume(v), veh/h	276	184	20	3	177	0	73	0	384	107	229	186
Grp Sat Flow(s),veh/h/ln	1641	1709	1206	837	1724	1532	1988	0	2057	1522	1528	1352
Q Serve(g_s), s	8.6	4.8	0.7	0.2	6.2	0.0	1.8	0.0	11.9	3.4	8.8	7.9
Cycle Q Clear(g_c), s	8.6	4.8	0.7	0.2	6.2	0.0	1.8	0.0	11.9	3.4	8.8	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	449	709	500	268	333		376	0	484	303	403	356
V/C Ratio(X)	0.61	0.26	0.04	0.01	0.53		0.19	0.00	0.79	0.35	0.57	0.52
Avail Cap(c_a), veh/h	449	834	588	329	459		486	0	654	344	486	430
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	13.0	11.8	22.1	24.5	0.0	17.7	0.0	24.3	17.6	21.6	21.3
Incr Delay (d2), s/veh	2.5	0.1	0.0	0.0	0.5	0.0	0.2	0.0	4.8	0.7	1.3	1.2
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	3.0	1.5	0.2	0.0	2.3	0.0	0.8	0.0	6.2	1.1	3.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	13.0	11.8	22.1	25.0	0.0	17.9	0.0	29.2	18.3	22.8	22.5
LnGrp LOS	B	B	B	C	C		B	A	C	B	C	C
Approach Vol, veh/h		480			180			457			522	
Approach Delay, s/veh		16.6			25.0			27.4			21.8	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	18.6	12.2	21.9		33.6	10.3	23.8				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	8.5	17.0	7.0	20.5		32.0	7.0	20.5				
Max Q Clear Time (g_c+I1), s	11.1	8.7	5.9	13.9		7.3	4.3	11.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0		0.1	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
29: SR 0230 & Ridge Run Rd

2022 Existing
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	258	364	23	25	3
Future Volume (vph)	3	258	364	23	25	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1318	1693	1723	0	1550	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1318	1693	1723	0	1550	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2697	1003		1286	
Travel Time (s)		33.4	12.4		25.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	33%	9%	5%	9%	4%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	284	425	0	30	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.6% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	258	364	23	25	3
Future Vol, veh/h	3	258	364	23	25	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	9	5	9	4	33
Mvmt Flow	3	284	400	25	27	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	425	0	-	0	703
Stage 1	-	-	-	-	413
Stage 2	-	-	-	-	290
Critical Hdwy	4.4	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	3.3	-	-	-	3
Pot Cap-1 Maneuver	784	-	-	-	417
Stage 1	-	-	-	-	726
Stage 2	-	-	-	-	844
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	784	-	-	-	415
Mov Cap-2 Maneuver	-	-	-	-	542
Stage 1	-	-	-	-	723
Stage 2	-	-	-	-	844

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	784	-	-	-	547
HCM Lane V/C Ratio	0.004	-	-	-	0.056
HCM Control Delay (s)	9.6	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2022 Existing
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	61	22	33	6	42	109	45	293	9	25	151	71
Future Volume (vph)	61	22	33	6	42	109	45	293	9	25	151	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1308	0	0	1540	0	0	1664	0	0	1499	0
Flt Permitted		0.974			0.998			0.994			0.995	
Satd. Flow (perm)	0	1308	0	0	1540	0	0	1664	0	0	1499	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1157			1404			999			1026	
Travel Time (s)		22.5			27.4			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	0	164	0	0	361	0	0	257	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.2%
ICU Level of Service	A
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	61	22	33	6	42	109	45	293	9	25	151	71
Future Vol, veh/h	61	22	33	6	42	109	45	293	9	25	151	71
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	64	23	34	6	44	114	47	305	9	26	157	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.7	10.4	15.1	12.8
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	53%	4%	10%
Vol Thru, %	84%	19%	27%	61%
Vol Right, %	3%	28%	69%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	347	116	157	247
LT Vol	45	61	6	25
Through Vol	293	22	42	151
RT Vol	9	33	109	71
Lane Flow Rate	361	121	164	257
Geometry Grp	1	1	1	1
Degree of Util (X)	0.55	0.225	0.249	0.41
Departure Headway (Hd)	5.481	6.698	5.484	5.741
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	658	534	653	625
Service Time	3.525	4.757	3.539	3.789
HCM Lane V/C Ratio	0.549	0.227	0.251	0.411
HCM Control Delay	15.1	11.7	10.4	12.8
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	3.4	0.9	1	2

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2022 Existing
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	621	84	189	468	121	123
Future Volume (vph)	621	84	189	468	121	123
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1799	0	1744	1958	1583	0
Flt Permitted			0.137		0.976	
Satd. Flow (perm)	1799	0	251	1958	1583	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	12					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	0%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	774	0	208	514	268	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	46.0		12.0	58.0	22.0	
Total Split (%)	57.5%		15.0%	72.5%	27.5%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	40.8		54.0	52.8	16.8	
Actuated g/C Ratio	0.51		0.68	0.66	0.21	
v/c Ratio	0.84		0.65	0.40	0.81	
Control Delay	26.9		16.0	7.5	50.7	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	26.9		16.0	7.5	50.7	
LOS	C		B	A	D	
Approach Delay	26.9			10.0	50.7	
Approach LOS	C			A	D	
Queue Length 50th (ft)	308		32	115	128	
Queue Length 95th (ft)	#538		m56	m147	#251	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2022 Existing
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	923		318	1292	332	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.84		0.65	0.40	0.81	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 5 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 23.6
 Intersection LOS: C
 Intersection Capacity Utilization 78.0%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
3: Maytown Rd & SR 0230

2022 Existing
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	621	84	189	468	121	123
Future Volume (veh/h)	621	84	189	468	121	123
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1735	1711	2009	2090	1860	1860
Adj Flow Rate, veh/h	682	83	208	514	133	135
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	0	1	1	1	1
Cap, veh/h	822	100	374	1408	162	164
Arrive On Green	0.54	0.53	0.16	1.00	0.20	0.18
Sat Flow, veh/h	1517	185	1914	2090	825	837
Grp Volume(v), veh/h	0	765	208	514	269	0
Grp Sat Flow(s),veh/h/ln	0	1702	1914	2090	1668	0
Q Serve(g_s), s	0.0	30.0	3.6	0.0	12.4	0.0
Cycle Q Clear(g_c), s	0.0	30.0	3.6	0.0	12.4	0.0
Prop In Lane		0.11	1.00		0.49	0.50
Lane Grp Cap(c), veh/h	0	922	374	1408	327	0
V/C Ratio(X)	0.00	0.83	0.56	0.36	0.82	0.00
Avail Cap(c_a), veh/h	0	922	407	1408	350	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	15.3	12.8	0.0	31.1	0.0
Incr Delay (d2), s/veh	0.0	8.6	1.4	0.7	18.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	17.7	2.9	0.5	10.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	23.9	14.2	0.7	49.7	0.0
LnGrp LOS	A	C	B	A	D	A
Approach Vol, veh/h	765			722	269	
Approach Delay, s/veh	23.9			4.6	49.7	
Approach LOS	C			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.6	48.5		20.9		59.1
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	39.8		15.8		51.8
Max Q Clear Time (g_c+I1), s	5.6	32.0		14.4		2.0
Green Ext Time (p_c), s	0.1	6.3		0.3		15.6

Intersection Summary




















HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2022 Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	777	0	0	926	83	1	0	2	29	0	47
Future Volume (vph)	27	777	0	0	926	83	1	0	2	29	0	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Flt Permitted	0.950							0.984		0.950		
Satd. Flow (perm)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	8%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	835	0	0	1085	0	0	3	0	31	51	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.8%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	27	777	0	0	926	83	1	0	2	29	0	47
Future Vol, veh/h	27	777	0	0	926	83	1	0	2	29	0	47
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	2	0	0	1	0	0	0	0	0	0	4
Mvmt Flow	29	835	0	0	996	89	1	0	2	31	0	51

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1085	0	0	835	0	0	1960	1978	835	1935	1934	1042
Stage 1	-	-	-	-	-	-	893	893	-	1041	1041	-
Stage 2	-	-	-	-	-	-	1067	1085	-	894	893	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	598	-	-	465	-	-	63	78	405	73	92	319
Stage 1	-	-	-	-	-	-	414	401	-	366	368	-
Stage 2	-	-	-	-	-	-	334	333	-	434	421	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	598	-	-	465	-	-	51	74	405	70	88	319
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	74	-	70	88	-
Stage 1	-	-	-	-	-	-	394	382	-	348	368	-
Stage 2	-	-	-	-	-	-	281	333	-	411	401	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	35.3	46.7
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	122	598	-	-	465	-	-	70	319
HCM Lane V/C Ratio	0.026	0.049	-	-	-	-	-	0.445	0.158
HCM Control Delay (s)	35.3	11.3	-	-	0	-	-	92.5	18.4
HCM Lane LOS	E	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	1.8	0.6

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	583	36	149	727	17	264	3	114	23	8	16
Future Volume (vph)	14	583	36	149	727	17	264	3	114	23	8	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1766	1584	1572	1697	1608	1694	1576	0	1761	1747	0
Flt Permitted	0.352			0.229			0.741			0.679		
Satd. Flow (perm)	612	1766	1550	379	1697	1608	1316	1576	0	1259	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			40		119			17	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)			1				2					2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	607	38	155	757	18	275	122	0	24	25	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	43.0	43.0	43.0	13.0	56.0	56.0	24.0	24.0		24.0	24.0	
Total Split (%)	53.8%	53.8%	53.8%	16.3%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	37.9	37.9	37.9	52.0	50.7	50.7	18.6	18.6		18.6	18.6	
Actuated g/C Ratio	0.47	0.47	0.47	0.65	0.63	0.63	0.23	0.23		0.23	0.23	
v/c Ratio	0.05	0.73	0.05	0.42	0.70	0.02	0.90	0.27		0.08	0.06	
Control Delay	11.2	15.5	0.2	5.5	6.1	0.1	63.0	7.2		24.7	14.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.2	15.5	0.2	5.5	6.1	0.1	63.0	7.2		24.7	14.4	
LOS	B	B	A	A	A	A	E	A		C	B	
Approach Delay		14.5			5.9			45.8			19.4	
Approach LOS		B			A			D			B	
Queue Length 50th (ft)	2	104	0	4	25	0	132	1		9	3	
Queue Length 95th (ft)	m5	m179	m0	m15	52	m0	#269	41		28	22	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
PM Peak Hour

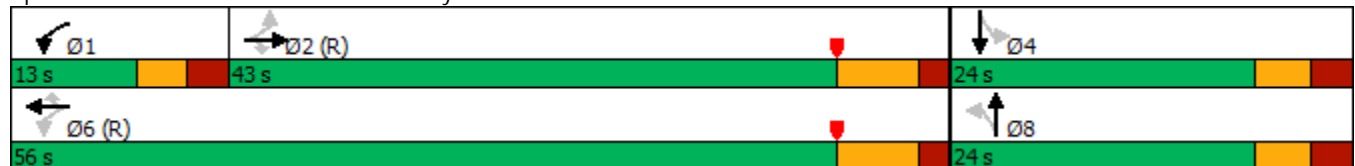


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	289	836	794	372	1074	1032	314	466		300	430	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.05	0.73	0.05	0.42	0.70	0.02	0.88	0.26		0.08	0.06	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 33 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 16.8
 Intersection LOS: B
 Intersection Capacity Utilization 88.7%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	14	583	36	149	727	17	264	3	114	23	8	16
Future Volume (veh/h)	14	583	36	149	727	17	264	3	114	23	8	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2032	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	15	607	23	155	757	15	275	3	79	24	8	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	475	1017	873	600	1109	985	420	14	369	365	156	272
Arrive On Green	1.00	1.00	1.00	0.16	1.00	1.00	0.23	0.23	0.21	0.23	0.23	0.21
Sat Flow, veh/h	769	2032	1745	1666	1736	1542	1470	62	1623	1419	684	1198
Grp Volume(v), veh/h	15	607	23	155	757	15	275	0	82	24	0	22
Grp Sat Flow(s),veh/h/ln	769	2032	1745	1666	1736	1542	1470	0	1685	1419	0	1882
Q Serve(g_s), s	0.0	0.0	0.0	3.2	0.0	0.0	14.3	0.0	3.2	1.1	0.0	0.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.2	0.0	0.0	14.5	0.0	3.2	3.8	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.64
Lane Grp Cap(c), veh/h	475	1017	873	600	1109	985	420	0	383	365	0	428
V/C Ratio(X)	0.03	0.60	0.03	0.26	0.68	0.02	0.66	0.00	0.21	0.07	0.00	0.05
Avail Cap(c_a), veh/h	475	1017	873	640	1109	985	436	0	402	381	0	449
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.0	0.0	0.0	29.6	0.0	25.5	26.5	0.0	24.4
Incr Delay (d2), s/veh	0.1	2.6	0.1	0.2	2.6	0.0	3.4	0.0	0.3	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	1.3	0.0	1.5	1.4	0.0	9.1	0.0	2.3	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.1	2.6	0.1	6.2	2.6	0.0	33.0	0.0	25.8	26.5	0.0	24.5
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		645			927			357				46
Approach Delay, s/veh		2.4			3.1			31.3				25.5
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.1	45.8		23.1		56.9		23.1				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	36.2		* 18		49.2		* 18				
Max Q Clear Time (g_c+I1), s	5.7	2.5		6.3		2.5		17.0				
Green Ext Time (p_c), s	0.1	0.7		0.1		0.9		0.2				

Intersection Summary

HCM 6th Ctrl Delay	8.5
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2022 Existing
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	414	1	10	732	72	9	2	1	41	3	110
Future Volume (vph)	83	414	1	10	732	72	9	2	1	41	3	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1729	0	1586	1818	1561	0	1831	0	1719	1506	0
Flt Permitted	0.241			0.509				0.723		0.750		
Satd. Flow (perm)	425	1729	0	850	1818	1561	0	1368	0	1357	1506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						110		1				116
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1340			610			200				300
Travel Time (s)		22.8			10.4			5.5				8.2
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	10%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	437	0	11	771	76	0	12	0	43	119	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8				4
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	62.0		51.0	51.0	51.0	18.0	18.0		18.0	18.0	
Total Split (%)	13.8%	77.5%		63.8%	63.8%	63.8%	22.5%	22.5%		22.5%	22.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	64.0	64.2		55.4	55.4	55.4		9.2		9.2	9.2	
Actuated g/C Ratio	0.80	0.80		0.69	0.69	0.69		0.12		0.12	0.12	
v/c Ratio	0.20	0.32		0.02	0.61	0.07		0.08		0.28	0.43	
Control Delay	3.5	5.5		4.7	11.2	0.6		30.1		36.1	12.3	
Queue Delay	0.0	0.0		0.0	0.1	0.0		0.0		0.0	0.0	
Total Delay	3.5	5.5		4.7	11.2	0.6		30.1		36.1	12.3	
LOS	A	A		A	B	A		C		D	B	
Approach Delay		5.1			10.2			30.1			18.6	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	10	104		1	278	0		5		20	1	
Queue Length 95th (ft)	m17	188		m3	425	m1		20		48	46	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2022 Existing
 PM Peak Hour

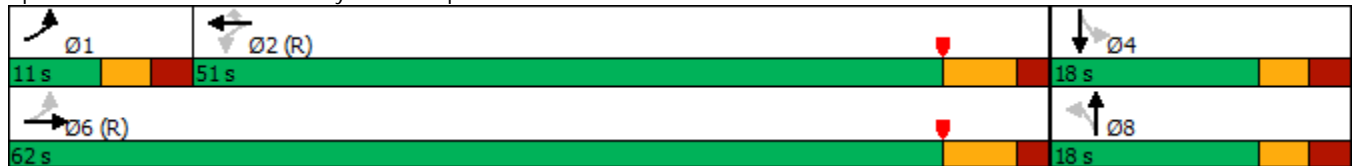


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	441	1386		588	1258	1114		229		227	348	
Starvation Cap Reductn	0	0		0	39	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.20	0.32		0.02	0.63	0.07		0.05		0.19	0.34	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 11 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 9.5
 Intersection LOS: A
 Intersection Capacity Utilization 65.2%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230





















2022 Existing
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	414	1	10	732	72	9	2	1	41	3	110
Future Volume (veh/h)	83	414	1	10	732	72	9	2	1	41	3	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1683	1711	1807	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	87	436	1	11	771	67	9	2	0	43	3	60
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	10	1	0	0	0	0	0	0	0
Cap, veh/h	589	1344	3	728	1343	1147	112	19	0	204	5	109
Arrive On Green	0.10	1.00	1.00	1.00	1.00	1.00	0.06	0.07	0.00	0.07	0.07	0.06
Sat Flow, veh/h	1629	1678	4	919	1935	1652	410	257	0	1375	74	1470
Grp Volume(v), veh/h	87	0	437	11	771	67	11	0	0	43	0	63
Grp Sat Flow(s),veh/h/ln	1629	0	1682	919	1935	1652	667	0	0	1375	0	1544
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	1.9	0.0	3.2
Prop In Lane	1.00		0.00	1.00		1.00	0.82		0.00	1.00		0.95
Lane Grp Cap(c), veh/h	589	0	1347	728	1343	1147	123	0	0	204	0	114
V/C Ratio(X)	0.15	0.00	0.32	0.02	0.57	0.06	0.09	0.00	0.00	0.21	0.00	0.55
Avail Cap(c_a), veh/h	639	0	1347	728	1343	1147	254	0	0	332	0	259
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.00	0.65	0.79	0.79	0.79	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.1	0.0	0.0	0.0	0.0	0.0	35.0	0.0	0.0	35.2	0.0	36.2
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	1.4	0.1	0.3	0.0	0.0	0.5	0.0	4.1
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.3	0.0	1.0	0.0	0.4	0.0	0.0	1.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.1	0.0	0.4	0.0	1.4	0.1	35.3	0.0	0.0	35.7	0.0	40.3
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		524			849			11				106
Approach Delay, s/veh		0.7			1.3			35.3				38.4
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.5	60.9		10.5		69.5		10.5				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	44.6		12.4		55.6		12.4				
Max Q Clear Time (g_c+I1), s	3.5	2.5		5.2		2.5		5.2				
Green Ext Time (p_c), s	0.0	1.1		0.2		0.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.0									
HCM 6th LOS			A									

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2022 Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	378	21	40	632	20	90	32	29	26	41	82
Future Volume (vph)	46	378	21	40	632	20	90	32	29	26	41	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1708	0	1573	1680	0	1572	1597	0	0	1802	0
Flt Permitted	0.337			0.497			0.563				0.933	
Satd. Flow (perm)	586	1708	0	822	1680	0	931	1597	0	0	1696	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			3			31				83
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	3%	0%	3%	1%	0%	0%	3%	3%	0%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	420	0	42	686	0	95	65	0	0	156	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0		48.0	48.0		32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	56.7	56.7		56.7	56.7		13.4	13.4				13.4
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.17	0.17				0.17
v/c Ratio	0.12	0.35		0.07	0.58		0.61	0.22				0.44
Control Delay	1.2	1.4		5.1	9.1		46.5	17.9				17.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	1.2	1.4		5.1	9.1		46.5	17.9				17.9
LOS	A	A		A	A		D	B				B
Approach Delay		1.4			8.9			34.9				17.9
Approach LOS		A			A			C				B
Queue Length 50th (ft)	1	7		5	139		45	15				32
Queue Length 95th (ft)	2	9		19	298		86	44				78

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2022 Existing
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	415	1212		582	1191		314	559			627	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	12		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.12	0.35		0.07	0.58		0.30	0.12			0.25	

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	10.2
Intersection LOS:	B
Intersection Capacity Utilization	67.2%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2022 Existing
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Volume (veh/h)	46	378	21	40	632	20	90	32	29	26	41	82
Future Volume (veh/h)	46	378	21	40	632	20	90	32	29	26	41	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1708	1750	1869	1898	1912	1750	1708	1708	1949	1997	1921
Adj Flow Rate, veh/h	48	398	21	42	665	19	95	34	13	27	43	65
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	0	3	1	0	0	3	3	0	2	2
Cap, veh/h	519	1213	64	819	1385	40	232	143	55	83	82	103
Arrive On Green	1.00	1.00	1.00	0.75	0.75	0.74	0.12	0.12	0.11	0.11	0.12	0.11
Sat Flow, veh/h	697	1608	85	967	1836	52	1200	1175	449	237	670	843
Grp Volume(v), veh/h	48	0	419	42	0	684	95	0	47	135	0	0
Grp Sat Flow(s),veh/h/ln	697	0	1692	967	0	1888	1200	0	1624	1750	0	0
Q Serve(g_s), s	1.1	0.0	0.0	0.9	0.0	11.2	0.5	0.0	2.1	3.2	0.0	0.0
Cycle Q Clear(g_c), s	12.3	0.0	0.0	0.9	0.0	11.2	6.3	0.0	2.1	5.9	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.03	1.00		0.28	0.20		0.48
Lane Grp Cap(c), veh/h	519	0	1277	819	0	1425	232	0	198	245	0	0
V/C Ratio(X)	0.09	0.00	0.33	0.05	0.00	0.48	0.41	0.00	0.24	0.55	0.00	0.00
Avail Cap(c_a), veh/h	519	0	1277	819	0	1425	491	0	548	615	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.1	0.0	0.0	2.5	0.0	3.8	33.6	0.0	31.9	33.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.7	0.1	0.0	1.2	1.2	0.0	0.6	1.9	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.4	0.2	0.0	4.9	3.2	0.0	1.5	4.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.5	0.0	0.7	2.6	0.0	4.9	34.8	0.0	32.5	35.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	D	A	A
Approach Vol, veh/h		467			726			142			135	
Approach Delay, s/veh		0.7			4.8			34.0			35.6	
Approach LOS		A			A			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		65.3		14.7		65.3		14.7				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 42		26.0		* 42		26.0				
Max Q Clear Time (g_c+I1), s		2.0		7.9		13.2		8.3				
Green Ext Time (p_c), s		12.4		0.4		18.5		0.4				

Intersection Summary

HCM 6th Ctrl Delay	9.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (vph)	0	0	0	524	0	120	254	133	0	0	211	46
Future Volume (vph)	0	0	0	524	0	120	254	133	0	0	211	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1653	1414	1589	1511	0	0	1658	1637
Flt Permitted					0.950		0.426					
Satd. Flow (perm)	0	0	0	0	1653	1414	712	1511	0	0	1658	1637
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						151						143
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	1%	0%	2%	3%	14%	2%	2%	6%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	552	126	267	140	0	0	222	48
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				30.0	30.0	30.0	13.0	35.0			22.0	22.0
Total Split (%)				46.2%	46.2%	46.2%	20.0%	53.8%			33.8%	33.8%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					24.0	24.0	28.9	28.9			15.8	15.8
Actuated g/C Ratio					0.38	0.38	0.46	0.46			0.25	0.25
v/c Ratio					0.87	0.20	0.60	0.20			0.53	0.09
Control Delay					35.0	2.8	18.1	11.4			25.8	0.3
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					35.0	2.8	18.1	11.4			25.8	0.3
LOS					D	A	B	B			C	A
Approach Delay					29.0			15.8			21.3	
Approach LOS					C			B			C	
Queue Length 50th (ft)					193	0	65	31			75	0
Queue Length 95th (ft)					#366	21	115	62			136	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
 PM Peak Hour

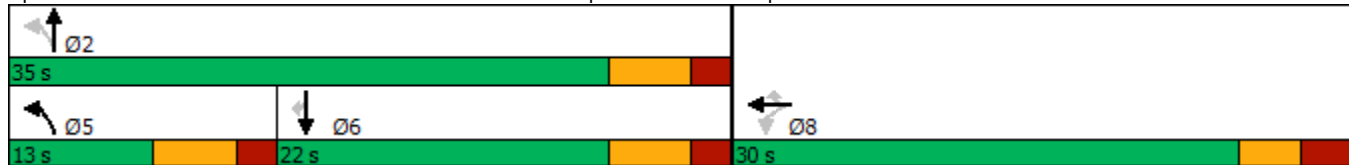


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					679	670	442	731			454	552
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.81	0.19	0.60	0.19			0.49	0.09

Intersection Summary

Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 62.4
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 23.5
 Intersection LOS: C
 Intersection Capacity Utilization 113.1%
 ICU Level of Service H
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary

3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	0	0	0	524	0	120	254	133	0	0	211	46
Future Volume (veh/h)	0	0	0	524	0	120	254	133	0	0	211	46
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1860	1875	1846	1736	1581	0	0	1789	1846
Adj Flow Rate, veh/h				552	0	0	267	140	0	0	222	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	0	2	3	14	0	0	6	7
Cap, veh/h				658	0		495	731	0	0	414	
Arrive On Green				0.35	0.00	0.00	0.14	0.46	0.00	0.00	0.23	0.00
Sat Flow, veh/h				1785	0	1564	1653	1581	0	0	1789	1564
Grp Volume(v), veh/h				552	0	0	267	140	0	0	222	0
Grp Sat Flow(s),veh/h/ln				1785	0	1564	1653	1581	0	0	1789	1564
Q Serve(g_s), s				16.0	0.0	0.0	6.4	2.9	0.0	0.0	6.1	0.0
Cycle Q Clear(g_c), s				16.0	0.0	0.0	6.4	2.9	0.0	0.0	6.1	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				658	0		495	731	0	0	414	
V/C Ratio(X)				0.84	0.00		0.54	0.19	0.00	0.00	0.54	
Avail Cap(c_a), veh/h				810	0		495	844	0	0	541	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.7	0.0	0.0	12.5	8.9	0.0	0.0	19.0	0.0
Incr Delay (d2), s/veh				6.6	0.0	0.0	1.2	0.5	0.0	0.0	3.9	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				11.5	0.0	0.0	3.7	1.6	0.0	0.0	4.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.3	0.0	0.0	13.7	9.4	0.0	0.0	22.8	0.0
LnGrp LOS				C	A		B	A	A	A	C	
Approach Vol, veh/h					552			407			222	
Approach Delay, s/veh					23.3			12.2			22.8	
Approach LOS					C			B			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.0			13.0	18.0		25.2				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		24.5				
Max Q Clear Time (g_c+I1), s		4.9			8.4	8.1		18.0				
Green Ext Time (p_c), s		2.7			0.0	2.1		1.7				

Intersection Summary


















HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2022 Existing
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	3	461	0	0	0	0	349	407	96	646	0
Future Volume (vph)	42	3	461	0	0	0	0	349	407	96	646	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1564	1569	0	0	0	0	1663	0	1663	1801	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1564	1569	0	0	0	0	1663	0	1663	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	19%	0%	1%	2%	2%	2%	2%	5%	2%	6%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	475	0	0	0	0	780	0	99	666	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	113.1%
ICU Level of Service	H
Analysis Period (min)	15

HCM 6th TWSC
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2022 Existing
 PM Peak Hour

Intersection												
Int Delay, s/veh	13.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	42	3	461	0	0	0	0	349	407	96	646	0
Future Vol, veh/h	42	3	461	0	0	0	0	349	407	96	646	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	19	0	1	2	2	2	2	5	2	6	3	2
Mvmt Flow	43	3	475	0	0	0	0	360	420	99	666	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1224	1224	666	-	0	0	360	0	0
Stage 1	864	864	-	-	-	-	-	-	-
Stage 2	360	360	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.91	-	-	-	4	-	-
Critical Hdwy Stg 1	4.99	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.99	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	189	222	511	0	-	-	905	-	0
Stage 1	487	432	-	0	-	-	-	-	0
Stage 2	798	669	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	168	0	511	-	-	-	905	-	-
Mov Cap-2 Maneuver	168	0	-	-	-	-	-	-	-
Stage 1	487	0	-	-	-	-	-	-	-
Stage 2	711	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	51.2	0	1.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	168	511	905	-
HCM Lane V/C Ratio	-	-	0.276	0.93	0.109	-
HCM Control Delay (s)	-	-	34.4	52.8	9.5	-
HCM Lane LOS	-	-	D	F	A	-
HCM 95th %tile Q(veh)	-	-	1.1	11.3	0.4	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2022 Existing
 PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	9	8	741	1081	10
Future Volume (vph)	3	9	8	741	1081	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1631	0	0	1800	1781	0
Flt Permitted	0.988			0.999		
Satd. Flow (perm)	1631	0	0	1800	1781	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	0	772	1124	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	67.5% ICU Level of Service C
Analysis Period (min)	15

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2022 Existing
 PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	9	8	741	1081	10
Future Vol, veh/h	3	9	8	741	1081	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	3	9	8	764	1114	10






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1899	1119	1124	0	-	0
Stage 1	1119	-	-	-	-	-
Stage 2	780	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	82	263	547	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	80	263	547	-	-	-
Mov Cap-2 Maneuver	80	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	507	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.3	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	547	-	167	-	-
HCM Lane V/C Ratio	0.015	-	0.074	-	-
HCM Control Delay (s)	11.7	0	28.3	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2022 Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	33	68	9	40	35	46	535	13	48	779	267
Future Volume (vph)	185	33	68	9	40	35	46	535	13	48	779	267
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1691	0	1416	1704	0	1620	1693	0	1628	1678	0
Flt Permitted	0.706			0.688			0.106			0.388		
Satd. Flow (perm)	1204	1691	0	1026	1704	0	181	1693	0	665	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		72			37			4				55
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	11%	0%	0%	0%	4%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	107	0	9	79	0	48	577	0	51	1101	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	17.0	17.0		17.0	17.0		43.0	43.0		43.0	43.0	
Total Split (%)	28.3%	28.3%		28.3%	28.3%		71.7%	71.7%		71.7%	71.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	11.8	11.8		11.8	11.8		37.7	37.7		37.7	37.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.63	0.63		0.63	0.63	
v/c Ratio	0.83	0.27		0.04	0.22		0.42	0.54		0.12	1.03	
Control Delay	54.1	11.3		20.2	14.3		23.0	13.2		5.5	48.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	54.1	11.3		20.2	14.3		23.0	13.2		5.5	48.4	
LOS	D	B		C	B		C	B		A	D	
Approach Delay		39.0			14.9			13.9			46.5	
Approach LOS		D			B			B			D	
Queue Length 50th (ft)	68	10		3	13		19	239		6	~381	
Queue Length 95th (ft)	#168	46		13	43		m44	286		18	#652	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2022 Existing
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	240	395		205	370		114	1065		417	1074	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.81	0.27		0.04	0.21		0.42	0.54		0.12	1.03	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 34.8 Intersection LOS: C
 Intersection Capacity Utilization 86.7% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd



















2022 Existing
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	185	33	68	9	40	35	46	535	13	48	779	267
Future Volume (veh/h)	185	33	68	9	40	35	46	535	13	48	779	267
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1595	1820	1750	1912	1855	1912	1949	1921	1935
Adj Flow Rate, veh/h	195	35	48	9	42	23	48	563	13	51	820	270
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	11	0	0	0	4	0	0	2	1
Cap, veh/h	357	158	216	302	221	121	161	1129	26	425	864	285
Arrive On Green	0.20	0.20	0.18	0.20	0.20	0.18	0.21	0.21	0.20	0.63	0.63	0.61
Sat Flow, veh/h	1409	789	1082	1122	1105	605	529	1806	42	872	1383	455
Grp Volume(v), veh/h	195	0	83	9	0	65	48	0	576	51	0	1090
Grp Sat Flow(s),veh/h/ln	1409	0	1871	1122	0	1711	529	0	1847	872	0	1839
Q Serve(g_s), s	8.0	0.0	2.3	0.4	0.0	1.9	4.7	0.0	16.6	2.4	0.0	32.8
Cycle Q Clear(g_c), s	9.9	0.0	2.3	2.7	0.0	1.9	37.5	0.0	16.6	19.0	0.0	32.8
Prop In Lane	1.00		0.58	1.00		0.35	1.00		0.02	1.00		0.25
Lane Grp Cap(c), veh/h	357	0	374	302	0	342	161	0	1155	425	0	1149
V/C Ratio(X)	0.55	0.00	0.22	0.03	0.00	0.19	0.30	0.00	0.50	0.12	0.00	0.95
Avail Cap(c_a), veh/h	357	0	374	302	0	342	161	0	1155	425	0	1149
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.86	0.00	0.86	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.1	0.0	20.3	21.2	0.0	20.1	40.5	0.0	15.5	13.5	0.0	10.5
Incr Delay (d2), s/veh	1.7	0.0	0.3	0.0	0.0	0.3	4.0	0.0	1.3	0.6	0.0	16.8
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	4.7	0.0	1.7	0.2	0.0	1.3	1.7	0.0	12.5	0.9	0.0	19.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	0.0	20.6	21.3	0.0	20.4	44.5	0.0	16.8	14.1	0.0	27.2
LnGrp LOS	C	A	C	C	A	C	D	A	B	B	A	C
Approach Vol, veh/h		278			74			624			1141	
Approach Delay, s/veh		24.3			20.5			19.0			26.6	
Approach LOS		C			C			B			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		17.0		43.0		17.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		36.5		11.0		36.5		11.0				
Max Q Clear Time (g_c+I1), s		18.6		11.9		34.8		4.7				
Green Ext Time (p_c), s		11.0		0.0		1.7		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				23.9								
HCM 6th LOS				C								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	17	60	0	38	16	553	5	10	831	14
Future Volume (vph)	4	0	17	60	0	38	16	553	5	10	831	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1672	0	0	1640	0	0	1722	1648
Flt Permitted		0.775			0.811			0.972			0.993	
Satd. Flow (perm)	0	1348	1581	0	1398	0	0	1596	0	0	1711	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			2				45
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	18	0	103	0	0	604	0	0	886	15
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	15.0	15.0	15.0	15.0	15.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	75.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.6	8.6		8.6			45.2			45.2	45.2
Actuated g/C Ratio		0.14	0.14		0.14			0.75			0.75	0.75
v/c Ratio		0.02	0.07		0.42			0.50			0.69	0.01
Control Delay		21.0	1.4		18.1			8.5			3.6	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		21.0	1.4		18.1			8.5			3.6	0.0
LOS		C	A		B			A			A	A
Approach Delay		4.9			18.1			8.5			3.5	
Approach LOS		A			B			A			A	
Queue Length 50th (ft)		1	0		16			209			19	0
Queue Length 95th (ft)		8	3		52			192			m28	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		235	322		290			1201			1287	1251
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.02	0.06		0.36			0.50			0.69	0.01

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	60
Offset:	25 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	6.3
Intersection LOS:	A
Intersection Capacity Utilization	71.3%
ICU Level of Service	C
Analysis Period (min)	15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (veh/h)	4	0	17	60	0	38	16	553	5	10	831	14
Future Volume (veh/h)	4	0	17	60	0	38	16	553	5	10	831	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1707	1778	1875	1846	1950
Adj Flow Rate, veh/h	4	0	10	63	0	25	17	582	5	11	875	14
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	5	0	0	2	0
Cap, veh/h	275	0	151	199	0	38	74	1225	10	65	1368	1233
Arrive On Green	0.08	0.00	0.10	0.08	0.00	0.08	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1632	0	1586	1013	0	402	17	1641	14	6	1832	1652
Grp Volume(v), veh/h	4	0	10	88	0	0	604	0	0	886	0	14
Grp Sat Flow(s),veh/h/ln	1632	0	1586	1415	0	0	1672	0	0	1838	0	1652
Q Serve(g_s), s	0.0	0.0	0.3	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.3	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.72		0.28	0.03		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	248	0	151	214	0	0	1282	0	0	1402	0	1233
V/C Ratio(X)	0.02	0.00	0.07	0.41	0.00	0.00	0.47	0.00	0.00	0.63	0.00	0.01
Avail Cap(c_a), veh/h	355	0	278	330	0	0	1282	0	0	1402	0	1233
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.00	0.09
Uniform Delay (d), s/veh	25.1	0.0	24.7	26.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	1.3	0.0	0.0	1.2	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.2	2.3	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	0.0	24.9	28.0	0.0	0.0	1.2	0.0	0.0	0.2	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		14			88			604			900	
Approach Delay, s/veh		25.0			28.0			1.2			0.2	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		49.8		10.2		49.8		10.2				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		39.0		9.5		39.0		9.5				
Max Q Clear Time (g_c+I1), s		2.0		2.3		2.0		5.7				
Green Ext Time (p_c), s		18.8		0.0		28.2		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			2.3									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	270	54	22	279	127	86	268	17	212	338	284
Future Volume (vph)	213	270	54	22	279	127	86	268	17	212	338	284
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1588	1791	1435	1512	1697	1577	1522	1810	0	1604	1640	1442
Flt Permitted	0.234			0.589			0.464			0.409		
Satd. Flow (perm)	391	1791	1435	938	1697	1577	744	1810	0	691	1640	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			159			2			293
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1028				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	5%	2%	3%	14%	7%	6%	1%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	220	278	56	23	288	131	89	294	0	219	348	293
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	23.0	68.0	68.0	45.0	45.0	45.0	15.0	32.0		20.0	37.0	37.0
Total Split (%)	19.2%	56.7%	56.7%	37.5%	37.5%	37.5%	12.5%	26.7%		16.7%	30.8%	30.8%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	46.9	46.9	46.9	24.8	24.8	24.8	50.9	42.3		60.3	47.0	47.0
Actuated g/C Ratio	0.39	0.39	0.39	0.21	0.21	0.21	0.42	0.35		0.50	0.39	0.39
v/c Ratio	0.69	0.40	0.09	0.12	0.82	0.29	0.24	0.46		0.49	0.54	0.39
Control Delay	36.4	27.0	0.8	37.0	63.8	4.5	19.6	35.1		17.4	27.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	36.4	27.0	0.8	37.0	63.8	4.5	19.6	35.1		17.4	27.4	6.7
LOS	D	C	A	D	E	A	B	D		B	C	A
Approach Delay		28.1				44.8		31.5			17.8	
Approach LOS		C				D		C			B	
Queue Length 50th (ft)	117	151	0	15	215	0	35	177		95	158	36
Queue Length 95th (ft)	160	197	4	35	290	30	75	293		155	317	76
Internal Link Dist (ft)		860			410			948			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	327	932	795	308	558	625	376	639		456	642	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.67	0.30	0.07	0.07	0.52	0.21	0.24	0.46		0.48	0.54	0.39

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	107 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	28.0
Intersection LOS:	C
Intersection Capacity Utilization	75.5%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	270	54	22	279	127	86	268	17	212	338	284
Future Volume (veh/h)	213	270	54	22	279	127	86	268	17	212	338	284
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1823	1823	1837	1724	1766	1822	1974	2156	2087	1697	1655	1655
Adj Flow Rate, veh/h	220	278	26	23	288	0	89	276	17	219	348	222
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	5	2	3	14	7	6	1	4	4
Cap, veh/h	312	658	562	246	332		444	776	48	521	725	615
Arrive On Green	0.13	0.36	0.36	0.19	0.19	0.00	0.05	0.39	0.38	0.14	0.58	0.58
Sat Flow, veh/h	1736	1823	1557	991	1766	1544	1880	2010	124	1616	1655	1402
Grp Volume(v), veh/h	220	278	26	23	288	0	89	0	293	219	348	222
Grp Sat Flow(s),veh/h/ln	1736	1823	1557	991	1766	1544	1880	0	2134	1616	1655	1402
Q Serve(g_s), s	11.6	13.8	1.3	2.3	19.0	0.0	3.3	0.0	11.7	9.3	14.6	10.0
Cycle Q Clear(g_c), s	11.6	13.8	1.3	2.3	19.0	0.0	3.3	0.0	11.7	9.3	14.6	10.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	312	658	562	246	332		444	0	823	521	725	615
V/C Ratio(X)	0.70	0.42	0.05	0.09	0.87		0.20	0.00	0.36	0.42	0.48	0.36
Avail Cap(c_a), veh/h	345	950	811	386	581		482	0	823	537	725	615
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.7	28.9	24.9	40.5	47.3	0.0	20.0	0.0	26.3	16.7	17.1	16.1
Incr Delay (d2), s/veh	5.7	0.2	0.0	0.1	2.7	0.0	0.2	0.0	1.2	0.5	2.3	1.6
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	8.9	9.8	0.9	1.0	13.1	0.0	2.7	0.0	10.5	5.7	8.9	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	29.1	24.9	40.6	50.0	0.0	20.2	0.0	27.5	17.3	19.4	17.8
LnGrp LOS	D	C	C	D	D		C	A	C	B	B	B
Approach Vol, veh/h		524			311			382			789	
Approach Delay, s/veh		32.8			49.3			25.8			18.3	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	20.8	28.1	18.9	52.3		48.8	12.6	58.6				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	16.5	38.5	13.0	25.0		61.5	8.0	30.0				
Max Q Clear Time (g_c+I1), s	14.1	21.5	11.8	13.7		16.3	5.8	17.1				
Green Ext Time (p_c), s	0.2	0.1	0.1	1.0		0.1	0.1	2.6				

Intersection Summary

HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 29: SR 0230 & Ridge Run Rd

2022 Existing
 PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	458	384	55	37	1
Future Volume (vph)	6	458	384	55	37	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1761	0	1670	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	1754	1828	1761	0	1670	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1319	
Travel Time (s)		33.5	12.4		25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	477	457	0	40	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.1% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	458	384	55	37	1
Future Vol, veh/h	6	458	384	55	37	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	2	0	0
Mvmt Flow	6	477	400	57	39	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	457	0	-	0	918
Stage 1	-	-	-	-	429
Stage 2	-	-	-	-	489
Critical Hdwy	4.1	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	857	-	-	-	303
Stage 1	-	-	-	-	715
Stage 2	-	-	-	-	665
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	857	-	-	-	301
Mov Cap-2 Maneuver	-	-	-	-	451
Stage 1	-	-	-	-	710
Stage 2	-	-	-	-	665

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	857	-	-	-	455
HCM Lane V/C Ratio	0.007	-	-	-	0.087
HCM Control Delay (s)	9.2	-	-	-	13.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2022 Existing
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	76	80	75	4	50	54	32	241	6	83	296	46
Future Volume (vph)	76	80	75	4	50	54	32	241	6	83	296	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1396	0	0	1575	0	0	1665	0	0	1568	0
Flt Permitted		0.984			0.998			0.994			0.990	
Satd. Flow (perm)	0	1396	0	0	1575	0	0	1665	0	0	1568	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1146			1234			997			1028	
Travel Time (s)		22.3			24.0			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	112	0	0	290	0	0	442	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	63.5%
	ICU Level of Service B
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	20.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	76	80	75	4	50	54	32	241	6	83	296	46
Future Vol, veh/h	76	80	75	4	50	54	32	241	6	83	296	46
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	79	83	78	4	52	56	33	251	6	86	308	48
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.7	11.5	16	28.2
HCM LOS	C	B	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	33%	4%	20%
Vol Thru, %	86%	35%	46%	70%
Vol Right, %	2%	32%	50%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	279	231	108	425
LT Vol	32	76	4	83
Through Vol	241	80	50	296
RT Vol	6	75	54	46
Lane Flow Rate	291	241	112	443
Geometry Grp	1	1	1	1
Degree of Util (X)	0.515	0.48	0.208	0.78
Departure Headway (Hd)	6.375	7.179	6.647	6.34
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	564	501	538	576
Service Time	4.426	5.236	4.716	4.34
HCM Lane V/C Ratio	0.516	0.481	0.208	0.769
HCM Control Delay	16	16.7	11.5	28.2
HCM Lane LOS	C	C	B	D
HCM 95th-tile Q	2.9	2.6	0.8	7.3

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2022 Existing
SAT Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	603	81	128	513	87	123
Future Volume (vph)	603	81	128	513	87	123
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1835	0	1761	1958	1577	0
Flt Permitted			0.252		0.980	
Satd. Flow (perm)	1835	0	467	1958	1577	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	10					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	691	0	129	518	212	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	69.0		12.0	81.0	29.0	
Total Split (%)	62.7%		10.9%	73.6%	26.4%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effect Green (s)	66.0		79.1	77.9	21.7	
Actuated g/C Ratio	0.60		0.72	0.71	0.20	
v/c Ratio	0.63		0.30	0.37	0.68	
Control Delay	17.5		5.5	6.7	52.4	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	17.5		5.5	6.7	52.4	
LOS	B		A	A	D	
Approach Delay	17.5			6.4	52.4	
Approach LOS	B			A	D	
Queue Length 50th (ft)	303		30	158	137	
Queue Length 95th (ft)	431		m29	m155	218	
Internal Link Dist (ft)	920			1120	920	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2022 Existing
 SAT Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)			150			
Base Capacity (vph)	1105		429	1386	341	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.63		0.30	0.37	0.62	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 97 (88%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 17.7
 Intersection LOS: B
 Intersection Capacity Utilization 71.2%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
3: Maytown Rd & SR 0230

2022 Existing
SAT Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→		↵	↑	↵	↶
Traffic Volume (veh/h)	603	81	128	513	87	123
Future Volume (veh/h)	603	81	128	513	87	123
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1765	1711	2024	2090	1875	1860
Adj Flow Rate, veh/h	609	80	129	518	88	124
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	0	0	1	0	1
Cap, veh/h	1001	132	517	1558	110	155
Arrive On Green	0.66	0.65	0.02	0.25	0.16	0.15
Sat Flow, veh/h	1528	201	1927	2090	688	970
Grp Volume(v), veh/h	0	689	129	518	213	0
Grp Sat Flow(s),veh/h/ln	0	1728	1927	2090	1666	0
Q Serve(g_s), s	0.0	25.2	2.1	22.4	13.6	0.0
Cycle Q Clear(g_c), s	0.0	25.2	2.1	22.4	13.6	0.0
Prop In Lane		0.12	1.00		0.41	0.58
Lane Grp Cap(c), veh/h	0	1133	517	1558	267	0
V/C Ratio(X)	0.00	0.61	0.25	0.33	0.80	0.00
Avail Cap(c_a), veh/h	0	1133	553	1558	360	0
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.9	8.7	19.0	44.8	0.0
Incr Delay (d2), s/veh	0.0	2.4	0.3	0.6	18.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	14.3	1.4	18.6	11.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	13.3	9.0	19.6	63.2	0.0
LnGrp LOS	A	B	A	B	E	A
Approach Vol, veh/h	689			647	213	
Approach Delay, s/veh	13.3			17.5	63.2	
Approach LOS	B			B	E	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.9	77.3		22.8		87.2
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	62.8		22.8		74.8
Max Q Clear Time (g_c+I1), s	4.1	27.2		15.6		24.4
Green Ext Time (p_c), s	0.1	19.5		1.1		15.8

Intersection Summary




















HCM 6th Ctrl Delay			21.9			
HCM 6th LOS			C			

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2022 Existing
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	784	0	1	802	99	0	0	1	47	0	35
Future Volume (vph)	16	784	0	1	802	99	0	0	1	47	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	817	0	1	938	0	0	1	0	49	36	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.2%
Analysis Period (min)	15
	ICU Level of Service C

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↷		↶	↷	
Traffic Vol, veh/h	16	784	0	1	802	99	0	0	1	47	0	35
Future Vol, veh/h	16	784	0	1	802	99	0	0	1	47	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	17	817	0	1	835	103	0	0	1	49	0	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	938	0	0	817	0	0	1758	1791	817	1741	1740	887
Stage 1	-	-	-	-	-	-	851	851	-	889	889	-
Stage 2	-	-	-	-	-	-	907	940	-	852	851	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	660	-	-	475	-	-	87	100	414	98	117	388
Stage 1	-	-	-	-	-	-	435	417	-	437	422	-
Stage 2	-	-	-	-	-	-	407	383	-	456	437	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	660	-	-	475	-	-	77	97	414	96	114	388
Mov Cap-2 Maneuver	-	-	-	-	-	-	77	97	-	96	114	-
Stage 1	-	-	-	-	-	-	424	406	-	426	421	-
Stage 2	-	-	-	-	-	-	368	382	-	443	426	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	13.7	50.2
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	414	660	-	-	475	-	-	96	388
HCM Lane V/C Ratio	0.003	0.025	-	-	0.002	-	-	0.51	0.094
HCM Control Delay (s)	13.7	10.6	-	-	12.6	-	-	76.3	15.2
HCM Lane LOS		B	B	-	B	-	-	F	C
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	2.3	0.3

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	553	48	150	644	15	251	3	157	34	4	14
Future Volume (vph)	21	553	48	150	644	15	251	3	157	34	4	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1783	1584	1572	1697	1608	1694	1574	0	1761	1744	0
Flt Permitted	0.403			0.286			0.745			0.549		
Satd. Flow (perm)	700	1783	1584	473	1697	1573	1329	1574	0	1018	1744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83			29			165			15
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1060			1340			300				300
Travel Time (s)		18.1			22.8			8.2				8.2
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	582	51	158	678	16	264	168	0	36	19	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	57.0	57.0	57.0	22.0	79.0	79.0	31.0	31.0		31.0	31.0	
Total Split (%)	51.8%	51.8%	51.8%	20.0%	71.8%	71.8%	28.2%	28.2%		28.2%	28.2%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	59.4	59.4	59.4	75.8	74.5	74.5	24.8	24.8		24.8	24.8	
Actuated g/C Ratio	0.54	0.54	0.54	0.69	0.68	0.68	0.23	0.23		0.23	0.23	
v/c Ratio	0.06	0.60	0.06	0.37	0.59	0.01	0.88	0.35		0.16	0.05	
Control Delay	11.3	15.1	0.2	7.1	8.6	0.4	70.8	7.8		35.4	17.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.3	15.1	0.2	7.1	8.6	0.4	70.8	7.8		35.4	17.4	
LOS	B	B	A	A	A	A	E	A		D	B	
Approach Delay		13.8			8.2			46.3			29.2	
Approach LOS		B			A			D			C	
Queue Length 50th (ft)	6	165	0	26	146	0	178	2		20	2	
Queue Length 95th (ft)	m11	213	m0	40	196	m0	#320	55		49	22	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	378	963	894	500	1149	1074	315	499		241	425	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.60	0.06	0.32	0.59	0.01	0.84	0.34		0.15	0.04	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 4 (4%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 18.9
 Intersection LOS: B
 Intersection Capacity Utilization 84.1%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary

7: Giant Plaza Dr/Carey Ln & SR 0230

2022 Existing
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	553	48	150	644	15	251	3	157	34	4	14
Future Volume (veh/h)	21	553	48	150	644	15	251	3	157	34	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2047	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	22	582	29	158	678	11	264	3	100	36	4	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	551	1197	1020	624	1206	1070	374	10	341	290	130	260
Arrive On Green	1.00	1.00	1.00	0.14	1.00	1.00	0.21	0.21	0.20	0.21	0.21	0.20
Sat Flow, veh/h	830	2047	1743	1666	1736	1540	1489	49	1642	1397	626	1253
Grp Volume(v), veh/h	22	582	29	158	678	11	264	0	103	36	0	12
Grp Sat Flow(s),veh/h/ln	830	2047	1743	1666	1736	1540	1489	0	1691	1397	0	1879
Q Serve(g_s), s	0.0	0.0	0.0	3.9	0.0	0.0	18.8	0.0	5.7	2.4	0.0	0.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.9	0.0	0.0	18.9	0.0	5.7	7.6	0.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.67
Lane Grp Cap(c), veh/h	551	1197	1020	624	1206	1070	374	0	351	290	0	390
V/C Ratio(X)	0.04	0.49	0.03	0.25	0.56	0.01	0.71	0.00	0.29	0.12	0.00	0.03
Avail Cap(c_a), veh/h	551	1197	1020	774	1206	1070	418	0	401	331	0	446
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.9	0.0	0.0	42.0	0.0	37.2	39.8	0.0	35.0
Incr Delay (d2), s/veh	0.1	1.4	0.1	0.2	1.6	0.0	4.7	0.0	0.5	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.8	0.0	1.9	1.0	0.0	11.9	0.0	4.4	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.1	1.4	0.1	6.1	1.6	0.0	46.7	0.0	37.6	40.0	0.0	35.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h		633			847			367				48
Approach Delay, s/veh		1.3			2.4			44.2				38.7
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.1	70.1		27.8		82.2		27.8				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	16.5	50.2		* 25		72.2		* 25				
Max Q Clear Time (g_c+I1), s	6.4	2.5		10.1		2.5		21.4				
Green Ext Time (p_c), s	0.3	0.7		0.1		0.8		0.5				

Intersection Summary

HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2022 Existing
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	501	12	4	627	65	9	3	10	60	38	125
Future Volume (vph)	105	501	12	4	627	65	9	3	10	60	38	125
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1740	0	1744	1818	1561	0	1765	0	1719	1574	0
Flt Permitted	0.308			0.458				0.607		0.742		
Satd. Flow (perm)	543	1740	0	841	1818	1561	0	1092	0	1342	1574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				80		11			134	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	552	0	4	674	70	0	24	0	65	175	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	14.0	82.0		68.0	68.0	68.0	28.0	28.0		28.0	28.0	
Total Split (%)	12.7%	74.5%		61.8%	61.8%	61.8%	25.5%	25.5%		25.5%	25.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	89.1	88.2		75.5	75.5	75.5		11.8		11.8	11.8	
Actuated g/C Ratio	0.81	0.80		0.69	0.69	0.69		0.11		0.11	0.11	
v/c Ratio	0.22	0.40		0.01	0.54	0.06		0.19		0.45	0.61	
Control Delay	3.7	4.5		6.5	12.5	1.8		32.1		54.8	22.3	
Queue Delay	0.0	0.0		0.0	0.2	0.0		0.0		0.0	0.0	
Total Delay	3.7	4.5		6.5	12.8	1.8		32.1		54.8	22.3	
LOS	A	A		A	B	A		C		D	C	
Approach Delay		4.4			11.7			32.1			31.1	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	12	70		1	268	2		8		44	27	
Queue Length 95th (ft)	m30	183		m3	434	9		33		85	92	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2022 Existing
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	537	1395		577	1248	1096		240		285	440	
Starvation Cap Reductn	0	0		0	137	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.21	0.40		0.01	0.61	0.06		0.10		0.23	0.40	

Intersection Summary	
Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	9 (8%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	11.9
Intersection LOS:	B
Intersection Capacity Utilization	64.3%
ICU Level of Service	C
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2022 Existing
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	501	12	4	627	65	9	3	10	60	38	125
Future Volume (veh/h)	105	501	12	4	627	65	9	3	10	60	38	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1711	1949	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	113	539	11	4	674	57	10	3	7	65	41	63
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	625	1353	28	717	1411	1204	67	27	24	188	60	92
Arrive On Green	0.09	1.00	1.00	1.00	1.00	1.00	0.08	0.09	0.08	0.09	0.09	0.08
Sat Flow, veh/h	1629	1657	34	894	1935	1652	191	297	263	1375	651	1000
Grp Volume(v), veh/h	113	0	550	4	674	57	20	0	0	65	0	104
Grp Sat Flow(s),veh/h/ln	1629	0	1691	894	1935	1652	750	0	0	1375	0	1650
Q Serve(g_s), s	1.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	6.7
Cycle Q Clear(g_c), s	1.7	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	5.2	0.0	6.7
Prop In Lane	1.00		0.02	1.00		1.00	0.50		0.35	1.00		0.61
Lane Grp Cap(c), veh/h	625	0	1381	717	1411	1204	111	0	0	188	0	152
V/C Ratio(X)	0.18	0.00	0.40	0.01	0.48	0.05	0.18	0.00	0.00	0.35	0.00	0.68
Avail Cap(c_a), veh/h	690	0	1381	717	1411	1204	286	0	0	354	0	351
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.00	0.79	0.90	0.90	0.90	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.3	0.0	0.0	0.0	0.0	0.0	46.4	0.0	0.0	47.7	0.0	48.7
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.0	0.1	0.8	0.0	0.0	1.1	0.0	5.3
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.5	0.0	0.7	0.0	1.0	0.0	0.0	3.2	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.4	0.0	0.7	0.0	1.0	0.1	47.1	0.0	0.0	48.8	0.0	54.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		663			735			20			169	
Approach Delay, s/veh		1.0			1.0			47.1			52.0	
Approach LOS		A			A			D			D	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.7	85.6		14.7		95.3		14.7				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	8.5	61.6		22.4		75.6		22.4				
Max Q Clear Time (g_c+I1), s	4.2	2.5		8.7		2.5		8.8				
Green Ext Time (p_c), s	0.1	0.9		0.4		0.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2022 Existing
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	479	23	20	512	13	65	23	17	15	20	73
Future Volume (vph)	53	479	23	20	512	13	65	23	17	15	20	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%				-4%
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1744	0	1620	1698	0	1541	1660	0	0	1823	0
Flt Permitted	0.429			0.443			0.540				0.951	
Satd. Flow (perm)	746	1744	0	755	1698	0	876	1660	0	0	1746	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			18				77
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	528	0	21	553	0	68	42	0	0	114	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4		4
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0		3.0
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0		13.0
Total Split (s)	64.0	64.0		64.0	64.0		46.0	46.0		46.0		46.0
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%		41.8%
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0		4.0
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0				-1.0
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0				5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None		None
Act Effect Green (s)	86.9	86.9		86.9	86.9		13.2	13.2				13.2
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.12	0.12				0.12
v/c Ratio	0.10	0.38		0.04	0.41		0.65	0.20				0.41
Control Delay	5.1	6.2		3.5	5.2		72.2	29.2				20.9
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0				0.0
Total Delay	5.1	6.3		3.5	5.2		72.2	29.2				20.9
LOS	A	A		A	A		E	C				C
Approach Delay		6.2			5.1			55.7				20.9
Approach LOS		A			A			E				C
Queue Length 50th (ft)	11	145		3	97		47	15				24
Queue Length 95th (ft)	25	188		10	189		91	46				73
Internal Link Dist (ft)		530			920			270				920

Lanes, Volumes, Timings
 13: Sheaffer Rd & SR 0230

2022 Existing
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	589	1377		596	1341		326	630				699
Starvation Cap Reductn	0	213		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.10	0.45		0.04	0.41		0.21	0.07				0.16

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization	67.5%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2022 Existing
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	479	23	20	512	13	65	23	17	15	20	73
Future Volume (veh/h)	53	479	23	20	512	13	65	23	17	15	20	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1736	1750	1912	1912	1912	1722	1750	1750	1949	2027	1949
Adj Flow Rate, veh/h	56	504	19	21	539	13	68	24	6	16	21	30
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	0	0	0	0	2	0	0	0	0	0
Cap, veh/h	673	1391	52	818	1556	38	169	98	25	62	50	58
Arrive On Green	1.00	1.00	1.00	0.84	0.84	0.83	0.07	0.07	0.06	0.06	0.07	0.06
Sat Flow, veh/h	788	1662	63	899	1859	45	1246	1351	338	294	689	797
Grp Volume(v), veh/h	56	0	523	21	0	552	68	0	30	67	0	0
Grp Sat Flow(s),veh/h/ln	788	0	1724	899	0	1904	1246	0	1689	1779	0	0
Q Serve(g_s), s	0.7	0.0	0.0	0.4	0.0	7.3	0.8	0.0	1.8	1.9	0.0	0.0
Cycle Q Clear(g_c), s	8.0	0.0	0.0	0.4	0.0	7.3	4.7	0.0	1.8	4.0	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.02	1.00		0.20	0.24		0.45
Lane Grp Cap(c), veh/h	673	0	1444	818	0	1594	169	0	123	154	0	0
V/C Ratio(X)	0.08	0.00	0.36	0.03	0.00	0.35	0.40	0.00	0.24	0.44	0.00	0.00
Avail Cap(c_a), veh/h	673	0	1444	818	0	1594	542	0	630	675	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.00	0.92	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.0	0.0	1.5	0.0	2.1	49.4	0.0	48.2	49.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.1	0.0	0.6	1.6	0.0	1.0	1.9	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.5	0.1	0.0	2.8	3.4	0.0	1.5	3.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.5	0.0	0.7	1.6	0.0	2.7	51.0	0.0	49.2	51.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		579			573			98				67
Approach Delay, s/veh		0.6			2.6			50.4				51.3
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		97.0		13.0		97.0		13.0				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 58		40.0		* 58		40.0				
Max Q Clear Time (g_c+I1), s		2.0		6.0		9.3		6.7				
Green Ext Time (p_c), s		18.8		0.2		19.9		0.3				

Intersection Summary

HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	332	1	58	202	111	0	0	125	27
Future Volume (vph)	0	0	0	332	1	58	202	111	0	0	125	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1642	1442	1574	1641	0	0	1740	1578
Flt Permitted					0.953		0.497					
Satd. Flow (perm)	0	0	0	0	1642	1442	823	1641	0	0	1740	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	4%	5%	2%	2%	1%	11%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	347	60	210	116	0	0	130	28
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2				6
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2				6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0				12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0				22.0
Total Split (s)				25.0	25.0	25.0	13.0	35.0				22.0
Total Split (%)				41.7%	41.7%	41.7%	21.7%	58.3%				36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0				4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0				2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0				-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0				5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					16.4	16.4	27.3	27.3			14.1	14.1
Actuated g/C Ratio					0.31	0.31	0.51	0.51			0.26	0.26
v/c Ratio					0.69	0.11	0.39	0.14			0.28	0.05
Control Delay					24.0	0.4	10.7	8.4			18.5	0.2
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					24.0	0.4	10.7	8.4			18.5	0.2
LOS					C	A	B	A			B	A
Approach Delay					20.5			9.9			15.3	
Approach LOS					C			A			B	
Queue Length 50th (ft)					90	0	35	18			33	0
Queue Length 95th (ft)					180	0	77	44			74	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					637	660	534	932			560	613
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.54	0.09	0.39	0.12			0.23	0.05

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	53.3
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	15.7
Intersection LOS:	B
Intersection Capacity Utilization	53.7%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary

3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2022 Existing
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	0	0	0	332	1	58	202	111	0	0	125	27
Future Volume (veh/h)	0	0	0	332	1	58	202	111	0	0	125	27
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1846	1875	1875	1722	1707	0	0	1860	1787
Adj Flow Rate, veh/h				346	1	0	210	116	0	0	130	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	0	4	5	0	0	1	11
Cap, veh/h				471	1		664	916	0	0	507	
Arrive On Green				0.24	0.26	0.00	0.16	0.54	0.00	0.00	0.27	0.00
Sat Flow, veh/h				1780	5	1589	1640	1707	0	0	1860	1514
Grp Volume(v), veh/h				347	0	0	210	116	0	0	130	0
Grp Sat Flow(s),veh/h/ln				1786	0	1589	1640	1707	0	0	1860	1514
Q Serve(g_s), s				8.5	0.0	0.0	3.7	1.6	0.0	0.0	2.6	0.0
Cycle Q Clear(g_c), s				8.5	0.0	0.0	3.7	1.6	0.0	0.0	2.6	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				472	0		664	916	0	0	507	
V/C Ratio(X)				0.74	0.00		0.32	0.13	0.00	0.00	0.26	
Avail Cap(c_a), veh/h				768	0		679	1075	0	0	664	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.5	0.0	0.0	7.8	5.5	0.0	0.0	13.6	0.0
Incr Delay (d2), s/veh				2.2	0.0	0.0	0.3	0.2	0.0	0.0	1.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				6.2	0.0	0.0	1.7	0.7	0.0	0.0	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				18.7	0.0	0.0	8.1	5.7	0.0	0.0	14.5	0.0
LnGrp LOS				B	A		A	A	A	A	B	
Approach Vol, veh/h					347			326			130	
Approach Delay, s/veh					18.7			7.3			14.5	
Approach LOS					B			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.6			12.6	18.0		17.1				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		19.5				
Max Q Clear Time (g_c+I1), s		3.6			5.7	4.6		10.5				
Green Ext Time (p_c), s		2.2			0.1	1.5		1.2				

Intersection Summary


















HCM 6th Ctrl Delay	13.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2022 Existing
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	205	0	0	0	0	282	340	85	374	0
Future Volume (vph)	23	0	205	0	0	0	0	282	340	85	374	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1621	1554	0	0	0	0	1669	0	1762	1801	0
Flt Permitted		0.950								0.950		
Satd. Flow (perm)	0	1621	1554	0	0	0	0	1669	0	1762	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	0%	2%	2%	2%	2%	2%	4%	2%	0%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	220	0	0	0	0	669	0	91	402	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th TWSC
6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2022 Existing
SAT Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	23	0	205	0	0	0	0	282	340	85	374	0
Future Vol, veh/h	23	0	205	0	0	0	0	282	340	85	374	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	13	0	2	2	2	2	2	4	2	0	3	2
Mvmt Flow	25	0	220	0	0	0	0	303	366	91	402	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	887	887	402	-	0	0	303	0	0
Stage 1	584	584	-	-	-	-	-	-	-
Stage 2	303	303	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.9	5.92	-	-	-	3.9	-	-
Critical Hdwy Stg 1	4.93	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.93	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.1	-	-	-	3	-	-
Pot Cap-1 Maneuver	327	331	709	0	-	-	978	-	0
Stage 1	664	553	-	0	-	-	-	-	0
Stage 2	871	702	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	297	0	709	-	-	-	978	-	-
Mov Cap-2 Maneuver	297	0	-	-	-	-	-	-	-
Stage 1	664	0	-	-	-	-	-	-	-
Stage 2	790	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	297	709	978	-
HCM Lane V/C Ratio	-	-	0.083	0.311	0.093	-
HCM Control Delay (s)	-	-	18.2	12.4	9.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	1.3	0.3	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2022 Existing
 SAT Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	11	13	596	594	3
Future Volume (vph)	6	11	13	596	594	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1556	0	0	1800	1796	0
Flt Permitted	0.984			0.999		
Satd. Flow (perm)	1556	0	0	1800	1796	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	17%	0%	0%	3%	1%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	648	635	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.8% ICU Level of Service A
Analysis Period (min)	15

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2022 Existing
 SAT Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	11	13	596	594	3
Future Vol, veh/h	6	11	13	596	594	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	0	0	3	1	33
Mvmt Flow	6	12	14	634	632	3

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1296	634	635	0	-	0
Stage 1	634	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Critical Hdwy	6.57	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.2	3.1	3	-	-	-
Pot Cap-1 Maneuver	178	506	777	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	173	506	777	-	-	-
Mov Cap-2 Maneuver	173	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	777	-	301	-	-
HCM Lane V/C Ratio	0.018	-	0.06	-	-
HCM Control Delay (s)	9.7	0	17.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2022 Existing
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	23	52	11	21	32	29	440	8	19	419	177
Future Volume (vph)	149	23	52	11	21	32	29	440	8	19	419	177
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1685	0	1572	1636	0	1620	1710	0	1550	1685	0
Flt Permitted	0.720			0.706			0.358			0.464		
Satd. Flow (perm)	1228	1685	0	1168	1636	0	610	1710	0	757	1685	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			34			2				60
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	0%	3%	0%	5%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	79	0	12	56	0	31	471	0	20	627	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	20.0	20.0		20.0	20.0		40.0	40.0		40.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.7	12.7		12.4	12.4		40.5	40.5		40.5	40.5	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.68	0.68		0.68	0.68	
v/c Ratio	0.60	0.20		0.05	0.15		0.08	0.41		0.04	0.54	
Control Delay	31.2	9.8		17.9	11.0		5.5	7.9		5.8	8.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.2	9.8		17.9	11.0		5.5	7.9		5.8	8.8	
LOS	C	A		B	B		A	A		A	A	
Approach Delay		24.0			12.3			7.7			8.7	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)	50	7		3	6		4	83		3	112	
Queue Length 95th (ft)	101	34		14	29		m16	193		10	212	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2022 Existing
 SAT Peak Hour



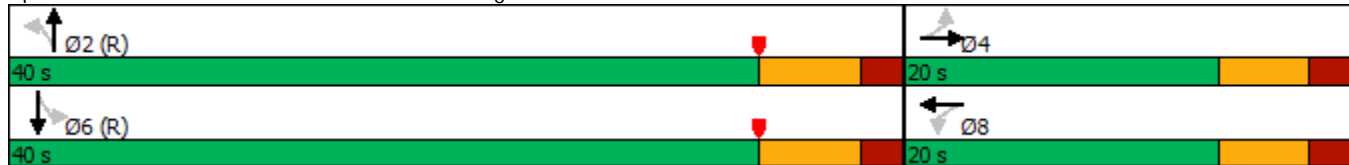
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	307	462		292	434		411	1155		511	1157	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.51	0.17		0.04	0.13		0.08	0.41		0.04	0.54	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.60
 Intersection Signal Delay: 11.0 Intersection LOS: B
 Intersection Capacity Utilization 58.8% ICU Level of Service B
 Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2022 Existing
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	23	52	11	21	32	29	440	8	19	419	177
Future Volume (veh/h)	149	23	52	11	21	32	29	440	8	19	419	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1750	1820	1708	1912	1869	1912	1878	1935	1949
Adj Flow Rate, veh/h	157	24	28	12	22	20	31	463	7	20	441	152
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	0	0	3	0	3	0	5	1	0
Cap, veh/h	344	154	179	314	155	141	525	1190	18	520	891	307
Arrive On Green	0.18	0.18	0.16	0.18	0.18	0.16	0.21	0.21	0.21	0.65	0.65	0.63
Sat Flow, veh/h	1439	869	1014	1265	878	798	842	1836	28	927	1375	474
Grp Volume(v), veh/h	157	0	52	12	0	42	31	0	470	20	0	593
Grp Sat Flow(s),veh/h/ln	1439	0	1883	1265	0	1676	842	0	1864	927	0	1849
Q Serve(g_s), s	6.2	0.0	1.4	0.5	0.0	1.3	1.9	0.0	13.0	0.8	0.0	10.1
Cycle Q Clear(g_c), s	7.5	0.0	1.4	1.9	0.0	1.3	11.9	0.0	13.0	13.7	0.0	10.1
Prop In Lane	1.00		0.54	1.00		0.48	1.00		0.01	1.00		0.26
Lane Grp Cap(c), veh/h	344	0	333	314	0	297	525	0	1208	520	0	1199
V/C Ratio(X)	0.46	0.00	0.16	0.04	0.00	0.14	0.06	0.00	0.39	0.04	0.00	0.49
Avail Cap(c_a), veh/h	449	0	471	406	0	419	525	0	1208	520	0	1199
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	21.1	21.7	0.0	21.0	17.3	0.0	13.4	9.9	0.0	5.6
Incr Delay (d2), s/veh	0.9	0.0	0.2	0.0	0.0	0.2	0.2	0.0	0.9	0.1	0.0	1.5
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	3.6	0.0	1.1	0.2	0.0	0.9	0.8	0.0	10.4	0.3	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	0.0	21.3	21.8	0.0	21.3	17.5	0.0	14.3	10.0	0.0	7.0
LnGrp LOS	C	A	C	C	A	C	B	A	B	B	A	A
Approach Vol, veh/h		209			54			501				613
Approach Delay, s/veh		24.1			21.4			14.5				7.1
Approach LOS		C			C			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.4		15.6		44.4		15.6				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		33.5		14.0		33.5		14.0				
Max Q Clear Time (g_c+I1), s		15.0		9.5		12.1		3.9				
Green Ext Time (p_c), s		9.3		0.3		13.2		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				12.9								
HCM 6th LOS				B								

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (vph)	5	1	12	23	0	7	15	468	7	11	487	7
Future Volume (vph)	5	1	12	23	0	7	15	468	7	11	487	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1670	1581	0	1698	0	0	1668	0	0	1722	1648
Flt Permitted					0.986			0.982			0.988	
Satd. Flow (perm)	0	1740	1581	0	1739	0	0	1641	0	0	1703	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			2				45
Link Speed (mph)		25			25			40				40
Link Distance (ft)		750			1000			600				1240
Travel Time (s)		20.5			27.3			10.2				21.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	13	0	31	0	0	516	0	0	525	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	16.0	16.0	16.0	16.0	16.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	73.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		7.0	7.0		7.0			53.2			53.2	53.2
Actuated g/C Ratio		0.12	0.12		0.12			0.89			0.89	0.89
v/c Ratio		0.03	0.06		0.12			0.35			0.35	0.00
Control Delay		23.5	0.5		5.0			2.8			1.5	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		23.5	0.5		5.0			2.8			1.5	0.0
LOS		C	A		A			A			A	A
Approach Delay		7.8			5.0			2.8			1.4	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2	0		0			0			0	0
Queue Length 95th (ft)		11	0		12			102			13	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		333	347		377			1455			1510	1466
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.02	0.04		0.08			0.35			0.35	0.00

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 33 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.35
 Intersection Signal Delay: 2.3 Intersection LOS: A
 Intersection Capacity Utilization 55.6% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2022 Existing
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	5	1	12	23	0	7	15	468	7	11	487	7
Future Volume (veh/h)	5	1	12	23	0	7	15	468	7	11	487	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1736	1778	1875	1846	1950
Adj Flow Rate, veh/h	5	1	6	24	0	3	16	493	7	12	513	7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	171	12	69	161	0	6	77	1332	19	71	1454	1319
Arrive On Green	0.03	0.04	0.04	0.03	0.00	0.03	0.78	0.80	0.78	1.00	1.00	1.00
Sat Flow, veh/h	1397	279	1586	1109	0	139	18	1669	23	12	1822	1652
Grp Volume(v), veh/h	6	0	6	27	0	0	516	0	0	525	0	7
Grp Sat Flow(s),veh/h/ln	1676	0	1586	1248	0	0	1711	0	0	1833	0	1652
Q Serve(g_s), s	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.2	1.3	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.83		1.00	0.89		0.11	0.03		0.01	0.02		1.00
Lane Grp Cap(c), veh/h	155	0	69	147	0	0	1399	0	0	1494	0	1319
V/C Ratio(X)	0.04	0.00	0.09	0.18	0.00	0.00	0.37	0.00	0.00	0.35	0.00	0.01
Avail Cap(c_a), veh/h	365	0	304	359	0	0	1399	0	0	1494	0	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.83
Uniform Delay (d), s/veh	28.0	0.0	27.6	28.7	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.6	0.0	0.0	0.7	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.2	0.0	0.2	0.7	0.0	0.0	0.9	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.1	0.0	28.1	29.3	0.0	0.0	2.5	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		12			27			516				532
Approach Delay, s/veh		28.1			29.3			2.5				0.5
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		52.9		7.1		52.9		7.1				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		38.0		10.5		38.0		10.5				
Max Q Clear Time (g_c+I1), s		7.2		2.2		2.0		3.3				
Green Ext Time (p_c), s		14.0		0.0		15.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			2.5									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	284	54	26	305	133	69	161	14	124	170	177
Future Volume (vph)	199	284	54	26	305	133	69	161	14	124	170	177
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1573	1809	1435	1527	1731	1592	1736	1845	0	1558	1624	1499
Flt Permitted	0.290			0.582			0.648			0.588		
Satd. Flow (perm)	480	1809	1435	935	1731	1592	1184	1845	0	964	1624	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160			255		5				247
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1025				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	4%	0%	2%	0%	5%	0%	4%	5%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	203	290	55	27	311	136	70	178	0	127	173	181
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	13.5	37.5	37.5	24.0	24.0	24.0	14.0	23.5		14.0	23.5	23.5
Total Split (%)	18.0%	50.0%	50.0%	32.0%	32.0%	32.0%	18.7%	31.3%		18.7%	31.3%	31.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	30.0	30.0	30.0	16.2	16.2	16.2	18.8	12.9		20.1	15.8	15.8
Actuated g/C Ratio	0.46	0.46	0.46	0.25	0.25	0.25	0.29	0.20		0.31	0.24	0.24
v/c Ratio	0.57	0.35	0.07	0.12	0.73	0.23	0.17	0.48		0.34	0.44	0.33
Control Delay	20.8	14.8	0.2	23.1	36.0	0.9	14.6	28.7		16.9	27.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	20.8	14.8	0.2	23.1	36.0	0.9	14.6	28.7		16.9	27.4	3.0
LOS	C	B	A	C	D	A	B	C		B	C	A
Approach Delay		15.6			25.2			24.8			15.4	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	54	79	0	9	123	0	18	66		34	67	0
Queue Length 95th (ft)	#111	148	0	29	#244	0	42	124		70	127	20
Internal Link Dist (ft)		860			410			945			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
 SAT Peak Hour

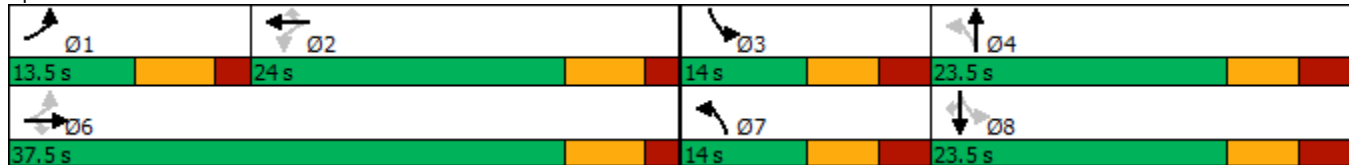


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	359	916	806	274	507	646	413	514		373	486	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.57	0.32	0.07	0.10	0.61	0.21	0.17	0.35		0.34	0.36	0.29

Intersection Summary
























Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 65.3
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 19.5
 Intersection LOS: B
 Intersection Capacity Utilization 64.8%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2022 Existing
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	284	54	26	305	133	69	161	14	124	170	177
Future Volume (veh/h)	199	284	54	26	305	133	69	161	14	124	170	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1738	1794	1837	2173	2186	2173	1655	1641	1711
Adj Flow Rate, veh/h	203	290	49	27	311	0	70	164	11	127	173	99
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	0	0	4	0	2	0	5	0	4	5	0
Cap, veh/h	419	832	705	340	401		369	274	18	373	299	264
Arrive On Green	0.14	0.45	0.45	0.22	0.22	0.00	0.07	0.14	0.12	0.11	0.18	0.18
Sat Flow, veh/h	1723	1837	1557	968	1794	1557	2069	2025	136	1576	1641	1450
Grp Volume(v), veh/h	203	290	49	27	311	0	70	0	175	127	173	99
Grp Sat Flow(s),veh/h/ln	1723	1837	1557	968	1794	1557	2069	0	2161	1576	1641	1450
Q Serve(g_s), s	4.7	6.0	1.0	1.3	9.5	0.0	1.6	0.0	4.5	3.9	5.6	3.5
Cycle Q Clear(g_c), s	4.7	6.0	1.0	1.3	9.5	0.0	1.6	0.0	4.5	3.9	5.6	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	419	832	705	340	401		369	0	293	373	299	264
V/C Ratio(X)	0.48	0.35	0.07	0.08	0.78		0.19	0.00	0.60	0.34	0.58	0.37
Avail Cap(c_a), veh/h	422	1005	852	429	568		517	0	647	411	491	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.4	10.4	9.0	18.1	21.3	0.0	19.4	0.0	23.8	18.1	21.9	21.0
Incr Delay (d2), s/veh	0.9	0.1	0.0	0.0	2.5	0.0	0.2	0.0	2.0	0.5	1.8	0.9
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	2.7	3.3	0.5	0.5	6.6	0.0	1.4	0.0	4.2	2.3	3.7	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	10.5	9.1	18.2	23.9	0.0	19.6	0.0	25.8	18.7	23.6	21.9
LnGrp LOS	B	B	A	B	C		B	A	C	B	C	C
Approach Vol, veh/h		542			338			245			399	
Approach Delay, s/veh		11.8			23.4			24.0			21.6	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	13.4	18.6	12.6	13.9		32.0	9.8	16.7				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	7.0	17.5	7.0	16.5		31.0	7.0	16.5				
Max Q Clear Time (g_c+I1), s	7.2	12.0	6.4	6.5		8.5	4.1	8.1				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.5		0.1	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	18.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
29: Colebrook Rd & Harrisburg Ave

2022 Existing
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	37	48	32	15	32	46	19	172	7	24	175	33
Future Volume (vph)	37	48	32	15	32	46	19	172	7	24	175	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1679	0	0	1633	0	0	1770	0	0	1850	0
Flt Permitted		0.984			0.992			0.995			0.995	
Satd. Flow (perm)	0	1679	0	0	1633	0	0	1770	0	0	1850	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1010			1132			1000			1025	
Travel Time (s)		19.7			22.1			27.3			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	4%	0%	0%	3%	0%	5%	2%	0%	0%	2%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	122	0	0	97	0	0	206	0	0	241	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.3%
ICU Level of Service	A
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	48	32	15	32	46	19	172	7	24	175	33
Future Vol, veh/h	37	48	32	15	32	46	19	172	7	24	175	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	8	4	0	0	3	0	5	2	0	0	2	9
Mvmt Flow	39	50	33	16	33	48	20	179	7	25	182	34
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	8.7	9.7	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	32%	16%	10%
Vol Thru, %	87%	41%	34%	75%
Vol Right, %	4%	27%	49%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	198	117	93	232
LT Vol	19	37	15	24
Through Vol	172	48	32	175
RT Vol	7	32	46	33
Lane Flow Rate	206	122	97	242
Geometry Grp	1	1	1	1
Degree of Util (X)	0.276	0.173	0.131	0.311
Departure Headway (Hd)	4.811	5.109	4.853	4.63
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	743	697	732	771
Service Time	2.871	3.18	2.926	2.687
HCM Lane V/C Ratio	0.277	0.175	0.133	0.314
HCM Control Delay	9.7	9.3	8.7	9.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.6	0.4	1.3

Lanes, Volumes, Timings
32: SR 0230 & Ridge Run Rd

2022 Existing
SAT Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	382	416	33	31	3
Future Volume (vph)	3	382	416	33	31	3
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1793	0	1658	0
Flt Permitted	0.950				0.956	
Satd. Flow (perm)	1754	1828	1793	0	1658	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1310	
Travel Time (s)		33.5	12.4		25.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	398	467	0	35	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.9% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	382	416	33	31	3
Future Vol, veh/h	3	382	416	33	31	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	3	398	433	34	32	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	467	0	-	0	854 450
Stage 1	-	-	-	-	450 -
Stage 2	-	-	-	-	404 -
Critical Hdwy	4.1	-	-	-	6.8 6.4
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	851	-	-	-	334 629
Stage 1	-	-	-	-	697 -
Stage 2	-	-	-	-	737 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	851	-	-	-	333 629
Mov Cap-2 Maneuver	-	-	-	-	478 -
Stage 1	-	-	-	-	694 -
Stage 2	-	-	-	-	737 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	851	-	-	-	488
HCM Lane V/C Ratio	0.004	-	-	-	0.073
HCM Control Delay (s)	9.2	-	-	-	13
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

APPENDIX L2

2024 NO BUILD CONDITION ANALYSES

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2024 No Build
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	
Traffic Volume (vph)	399	78	80	356	142	138
Future Volume (vph)	399	78	80	356	142	138
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1681	0	1662	1766	1535	0
Flt Permitted			0.262		0.975	
Satd. Flow (perm)	1681	0	458	1766	1535	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	17					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)						2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	12%	6%	12%	4%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	530	0	89	396	311	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	34.0		12.0	46.0	24.0	
Total Split (%)	48.6%		17.1%	65.7%	34.3%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	31.7		42.4	41.2	18.4	
Actuated g/C Ratio	0.45		0.61	0.59	0.26	
v/c Ratio	0.69		0.22	0.38	0.77	
Control Delay	22.2		5.2	6.4	39.0	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	22.2		5.2	6.4	39.0	
LOS	C		A	A	D	
Approach Delay	22.2			6.2	39.0	
Approach LOS	C			A	D	
Queue Length 50th (ft)	182		11	55	123	
Queue Length 95th (ft)	#319		m22	79	#239	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2024 No Build
 AM Peak Hour

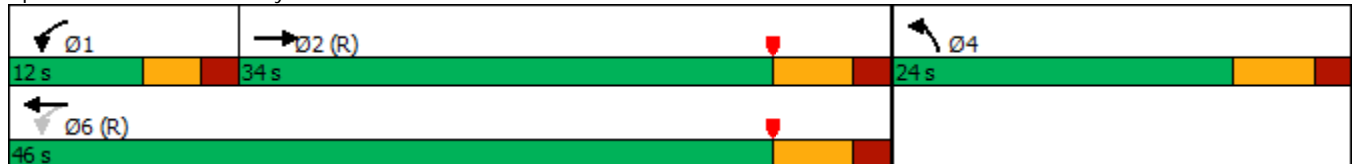


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	771		415	1040	412	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.69		0.21	0.38	0.75	

Intersection Summary

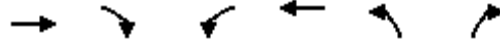
Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 61 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 20.3
 Intersection LOS: C
 Intersection Capacity Utilization 61.2%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2024 No Build
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	399	78	80	356	142	138
Future Volume (veh/h)	399	78	80	356	142	138
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1648	1542	1938	1927	1818	1846
Adj Flow Rate, veh/h	443	81	89	396	158	153
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	9	12	6	12	4	2
Cap, veh/h	658	120	452	1186	194	188
Arrive On Green	0.49	0.47	0.15	1.00	0.24	0.22
Sat Flow, veh/h	1355	248	1846	1927	825	799
Grp Volume(v), veh/h	0	524	89	396	312	0
Grp Sat Flow(s),veh/h/ln	0	1603	1846	1927	1628	0
Q Serve(g_s), s	0.0	17.5	1.4	0.0	12.7	0.0
Cycle Q Clear(g_c), s	0.0	17.5	1.4	0.0	12.7	0.0
Prop In Lane		0.15	1.00		0.51	0.49
Lane Grp Cap(c), veh/h	0	778	452	1186	384	0
V/C Ratio(X)	0.00	0.67	0.20	0.33	0.81	0.00
Avail Cap(c_a), veh/h	0	778	528	1186	437	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	13.8	8.5	0.0	25.5	0.0
Incr Delay (d2), s/veh	0.0	4.6	0.2	0.8	15.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	10.6	0.8	0.4	10.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	18.5	8.7	0.8	40.6	0.0
LnGrp LOS	A	B	A	A	D	A
Approach Vol, veh/h	524			485	312	
Approach Delay, s/veh	18.5			2.2	40.6	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.1	39.2		21.7		48.3
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	27.8		17.8		39.8
Max Q Clear Time (g_c+I1), s	3.4	19.5		14.7		2.0
Green Ext Time (p_c), s	0.1	5.0		0.8		10.2

Intersection Summary




















HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2024 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	565	1	0	529	40	0	0	2	40	0	34
Future Volume (vph)	25	565	1	0	529	40	0	0	2	40	0	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	8%	7%	0%	0%	9%	10%	0%	0%	50%	0%	0%	18%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	636	0	0	639	0	0	2	0	45	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.0%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↷		↶	↷	
Traffic Vol, veh/h	25	565	1	0	529	40	0	0	2	40	0	34
Future Vol, veh/h	25	565	1	0	529	40	0	0	2	40	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	8	7	0	0	9	10	0	0	50	0	0	18
Mvmt Flow	28	635	1	0	594	45	0	0	2	45	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	636	0	0	1329	1331	637	1311	1309	618
Stage 1	-	-	-	-	-	-	692	692	-	617	617	-
Stage 2	-	-	-	-	-	-	637	639	-	694	692	-
Critical Hdwy	3.9	-	-	5.5	-	-	6.7	6.1	6.5	6.5	5.9	6.1
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3.1	-	-	3	-	-	3	4	3.6	3	4	3.462
Pot Cap-1 Maneuver	756	-	-	585	-	-	167	181	428	185	200	484
Stage 1	-	-	-	-	-	-	528	484	-	598	537	-
Stage 2	-	-	-	-	-	-	564	508	-	547	503	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	756	-	-	585	-	-	149	174	428	179	193	484
Mov Cap-2 Maneuver	-	-	-	-	-	-	149	174	-	179	193	-
Stage 1	-	-	-	-	-	-	508	466	-	576	537	-
Stage 2	-	-	-	-	-	-	519	508	-	524	484	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	13.5	23.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	428	756	-	-	585	-	-	179	484
HCM Lane V/C Ratio	0.005	0.037	-	-	-	-	-	0.251	0.079
HCM Control Delay (s)	13.5	9.9	-	-	0	-	-	31.7	13.1
HCM Lane LOS		B	A	-	A	-	-	D	B
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	1	0.3

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	477	44	62	460	6	101	2	71	4	3	2
Future Volume (vph)	3	477	44	62	460	6	101	2	71	4	3	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1667	1552	1541	1558	1608	1645	1516	0	1761	1842	0
Flt Permitted	0.475			0.350			0.754			0.704		
Satd. Flow (perm)	826	1667	1552	568	1558	1608	1302	1516	0	1305	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			45		79			2	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	2%	2%	10%	0%	3%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	530	49	69	511	7	112	81	0	4	5	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	40.0	40.0	40.0	13.0	53.0	53.0	17.0	17.0		17.0	17.0	
Total Split (%)	57.1%	57.1%	57.1%	18.6%	75.7%	75.7%	24.3%	24.3%		24.3%	24.3%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	44.6	44.6	44.6	52.3	52.1	52.1	10.8	10.8		10.6	10.6	
Actuated g/C Ratio	0.64	0.64	0.64	0.75	0.74	0.74	0.15	0.15		0.15	0.15	
v/c Ratio	0.01	0.50	0.05	0.13	0.44	0.01	0.56	0.27		0.02	0.02	
Control Delay	6.7	7.8	0.1	1.5	3.0	0.0	38.3	9.8		24.5	21.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.7	7.8	0.1	1.5	3.0	0.0	38.3	9.8		24.5	21.0	
LOS	A	A	A	A	A	A	D	A		C	C	
Approach Delay		7.2			2.8			26.3			22.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	81	0	7	59	0	44	1		1	1	
Queue Length 95th (ft)	m1	m115	m0	2	11	m0	92	34		9	10	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
AM Peak Hour

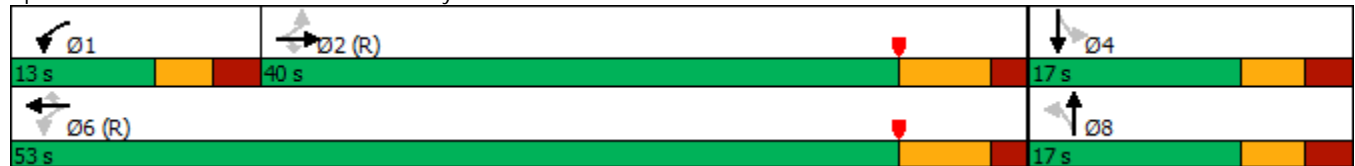


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	526	1062	1036	542	1160	1208	225	327		225	320	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.01	0.50	0.05	0.13	0.44	0.01	0.50	0.25		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 29 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 8.1
 Intersection LOS: A
 Intersection Capacity Utilization 64.4%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
 7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	3	477	44	62	460	6	101	2	71	4	3	2
Future Volume (veh/h)	3	477	44	62	460	6	101	2	71	4	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	1947	2032	1722	1609	1820	1944	1986	1929	2024	2104	2024
Adj Flow Rate, veh/h	3	530	33	69	511	6	112	2	41	4	3	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	8	2	2	10	0	3	0	4	0	0	0
Cap, veh/h	699	1191	1053	663	1169	1121	279	9	194	256	142	94
Arrive On Green	1.00	1.00	1.00	0.10	1.00	1.00	0.12	0.12	0.11	0.12	0.12	0.11
Sat Flow, veh/h	974	1947	1722	1640	1609	1542	1460	78	1609	1470	1175	784
Grp Volume(v), veh/h	3	530	33	69	511	6	112	0	43	4	0	5
Grp Sat Flow(s),veh/h/ln	974	1947	1722	1640	1609	1542	1460	0	1688	1470	0	1959
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.0	5.1	0.0	1.6	0.2	0.0	0.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.9	0.0	0.0	5.1	0.0	1.6	1.3	0.0	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	1.00		0.40
Lane Grp Cap(c), veh/h	699	1191	1053	663	1169	1121	279	0	203	256	0	236
V/C Ratio(X)	0.00	0.45	0.03	0.10	0.44	0.01	0.40	0.00	0.21	0.02	0.00	0.02
Avail Cap(c_a), veh/h	699	1191	1053	779	1169	1121	355	0	292	333	0	339
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.2	0.0	0.0	29.3	0.0	28.2	28.2	0.0	27.3
Incr Delay (d2), s/veh	0.0	1.2	0.1	0.1	1.1	0.0	0.9	0.0	0.5	0.0	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.7	0.0	0.3	0.6	0.0	3.3	0.0	1.2	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.2	0.1	3.3	1.1	0.0	30.3	0.0	28.7	28.2	0.0	27.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		566			586			155				9
Approach Delay, s/veh		1.1			1.3			29.8				27.7
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.1	48.6		13.3		56.7		13.3				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	33.2		* 11		46.2		* 11				
Max Q Clear Time (g_c+I1), s	3.4	2.5		3.8		2.5		7.6				
Green Ext Time (p_c), s	0.0	0.7		0.0		0.6		0.1				

Intersection Summary

HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2024 No Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	404	13	5	496	12	9	0	14	6	0	8
Future Volume (vph)	25	404	13	5	496	12	9	0	14	6	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1659	0	1744	1654	1445	0	1729	0	1719	1501	0
Flt Permitted	0.395			0.504				0.866				
Satd. Flow (perm)	697	1659	0	925	1654	1415	0	1526	0	1809	1501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				126		139			416	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	6%	0%	0%	11%	8%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	448	0	5	533	13	0	25	0	6	9	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	56.0		45.0	45.0	45.0	14.0	14.0		14.0	14.0	
Total Split (%)	15.7%	80.0%		64.3%	64.3%	64.3%	20.0%	20.0%		20.0%	20.0%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	60.6	62.9		58.5	58.5	58.5		7.0		7.1	7.1	
Actuated g/C Ratio	0.87	0.90		0.84	0.84	0.84		0.10		0.10	0.10	
v/c Ratio	0.04	0.30		0.01	0.39	0.01		0.09		0.03	0.02	
Control Delay	0.9	2.3		3.8	5.1	0.0		0.7		28.5	0.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	0.9	2.3		3.8	5.1	0.0		0.7		28.5	0.0	
LOS	A	A		A	A	A		A		C	A	
Approach Delay		2.2			4.9			0.7			11.4	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)	0	0		0	0	0		0		2	0	
Queue Length 95th (ft)	m2	64		m2	177	m0		0		13	0	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2024 No Build
 AM Peak Hour

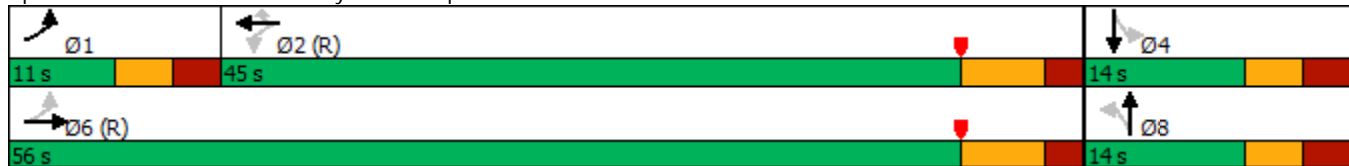


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	694	1492		773	1383	1204		325		242	561	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.04	0.30		0.01	0.39	0.01		0.08		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 7 (10%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.39
 Intersection Signal Delay: 3.7
 Intersection LOS: A
 Intersection Capacity Utilization 44.0%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2024 No Build
 AM Peak Hour






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↕		↖	↗	
Traffic Volume (veh/h)	25	404	13	5	496	12	9	0	14	6	0	8
Future Volume (veh/h)	25	404	13	5	496	12	9	0	14	6	0	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1626	1711	1949	1793	1835	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	27	434	14	5	533	13	10	0	14	6	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	6	0	0	11	8	0	0	0	0	0	0
Cap, veh/h	725	1285	41	813	1298	1125	89	0	22	159	68	0
Arrive On Green	0.06	1.00	1.00	1.00	1.00	1.00	0.02	0.00	0.02	0.04	0.00	0.00
Sat Flow, veh/h	1629	1567	51	981	1793	1554	426	0	596	1361	1837	0
Grp Volume(v), veh/h	27	0	448	5	533	13	24	0	0	6	0	0
Grp Sat Flow(s),veh/h/ln	1629	0	1617	981	1793	1554	1021	0	0	1361	1837	0
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		0.03	1.00		1.00	0.42		0.58	1.00		0.00
Lane Grp Cap(c), veh/h	725	0	1326	813	1298	1125	96	0	0	159	68	0
V/C Ratio(X)	0.04	0.00	0.34	0.01	0.41	0.01	0.25	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	824	0	1326	813	1298	1125	241	0	0	291	247	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.00	0.86	0.93	0.93	0.93	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	0.0	0.0	0.0	34.0	0.0	0.0	32.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	0.9	0.0	1.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.4	0.0	0.6	0.0	0.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.6	0.0	0.6	0.0	0.9	0.0	35.3	0.0	0.0	32.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	C	A	A
Approach Vol, veh/h		475			551			24				6
Approach Delay, s/veh		0.6			0.9			35.3				32.7
Approach LOS		A			A			D				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.7	56.1		7.2		62.8		7.2				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	38.6		8.4		49.6		8.4				
Max Q Clear Time (g_c+I1), s	2.7	2.5		2.7		2.5		3.6				
Green Ext Time (p_c), s	0.0	0.6		0.0		0.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	1.7
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	374	1	10	400	24	59	26	35	28	15	46
Future Volume (vph)	37	374	1	10	400	24	59	26	35	28	15	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1684	1685	0	1246	1591	0	1248	1497	0	0	1793	0
Flt Permitted	0.482			0.517			0.772				0.869	
Satd. Flow (perm)	855	1685	0	678	1591	0	1014	1497	0	0	1582	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					7			38			49	
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		610			1000			350			1000	
Travel Time (s)		10.4			17.0			6.8			19.5	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	100%	30%	6%	10%	26%	4%	9%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	403	0	11	456	0	63	66	0	0	95	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	45.0	45.0		45.0	45.0		25.0	25.0		25.0	25.0	
Total Split (%)	64.3%	64.3%		64.3%	64.3%		35.7%	35.7%		35.7%	35.7%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	52.5	52.5		52.5	52.5		10.9	10.9			10.9	
Actuated g/C Ratio	0.75	0.75		0.75	0.75		0.16	0.16			0.16	
v/c Ratio	0.06	0.32		0.02	0.38		0.40	0.25			0.33	
Control Delay	1.1	1.5		4.4	5.8		32.9	15.5			17.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	1.1	1.5		4.4	5.8		32.9	15.5			17.0	
LOS	A	A		A	A		C	B			B	
Approach Delay		1.5			5.8			24.0			17.0	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	1	7		1	64		25	11			18	
Queue Length 95th (ft)	3	17		7	143		55	39			52	

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 No Build
AM Peak Hour

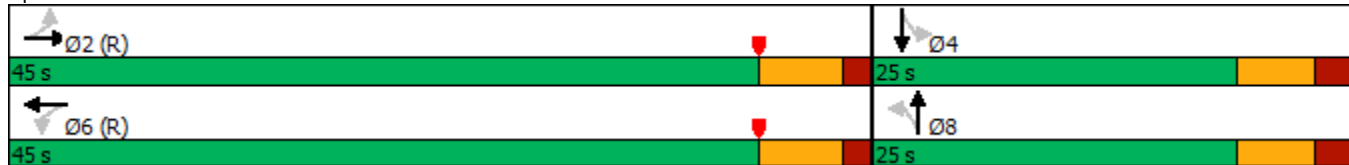


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	640	1262		508	1194		289	454			487	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.06	0.32		0.02	0.38		0.22	0.15			0.20	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	7.1
Intersection LOS:	A
Intersection Capacity Utilization	52.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2024 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	374	1	10	400	24	59	26	35	28	15	46
Future Volume (veh/h)	37	374	1	10	400	24	59	26	35	28	15	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1680	346	1485	1826	1770	1385	1694	1623	1949	2027	1864
Adj Flow Rate, veh/h	40	402	0	11	430	25	63	28	16	30	16	31
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	5	100	30	6	10	26	4	9	0	0	6
Cap, veh/h	701	1281	0	698	1304	76	216	97	55	114	43	58
Arrive On Green	1.00	1.00	0.00	0.76	0.76	0.75	0.10	0.10	0.08	0.08	0.10	0.08
Sat Flow, veh/h	876	1680	0	780	1709	99	1002	1009	577	440	450	600
Grp Volume(v), veh/h	40	402	0	11	0	455	63	0	44	77	0	0
Grp Sat Flow(s),veh/h/ln	876	1680	0	780	0	1809	1002	0	1586	1491	0	0
Q Serve(g_s), s	0.4	0.0	0.0	0.2	0.0	5.6	0.0	0.0	1.8	1.9	0.0	0.0
Cycle Q Clear(g_c), s	6.0	0.0	0.0	0.2	0.0	5.6	3.2	0.0	1.8	3.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	1.00		0.36	0.39		0.40
Lane Grp Cap(c), veh/h	701	1281	0	698	0	1380	216	0	152	193	0	0
V/C Ratio(X)	0.06	0.31	0.00	0.02	0.00	0.33	0.29	0.00	0.29	0.40	0.00	0.00
Avail Cap(c_a), veh/h	701	1281	0	698	0	1380	406	0	453	508	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.0	0.0	2.0	0.0	2.6	30.1	0.0	29.6	30.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	0.0	0.0	0.0	0.6	0.7	0.0	1.0	1.3	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.4	0.0	0.0	0.0	1.8	1.8	0.0	1.3	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.5	0.6	0.0	2.0	0.0	3.3	30.8	0.0	30.6	32.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	A
Approach Vol, veh/h		442			466			107				77
Approach Delay, s/veh		0.6			3.3			30.7				32.0
Approach LOS		A			A			C				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.3		11.7		58.3		11.7				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 39		19.0		* 39		19.0				
Max Q Clear Time (g_c+I1), s		2.0		5.7		7.6		5.2				
Green Ext Time (p_c), s		11.5		0.1		12.8		0.3				

Intersection Summary



















HCM 6th Ctrl Delay	6.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	321	0	87	520	137	0	0	186	56
Future Volume (vph)	0	0	0	321	0	87	520	137	0	0	186	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1546	1145	1544	1424	0	0	1528	1523
Flt Permitted					0.950		0.479					
Satd. Flow (perm)	0	0	0	0	1546	1145	778	1424	0	0	1528	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	8%	0%	26%	6%	21%	2%	2%	15%	15%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	334	91	542	143	0	0	194	58
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				21.0	21.0	21.0	17.0	39.0			22.0	22.0
Total Split (%)				35.0%	35.0%	35.0%	28.3%	65.0%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					15.6	15.6	32.6	32.6			15.6	15.6
Actuated g/C Ratio					0.27	0.27	0.56	0.56			0.27	0.27
v/c Ratio					0.80	0.21	0.90	0.18			0.47	0.11
Control Delay					37.0	1.9	32.9	7.0			22.3	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					37.0	1.9	32.9	7.0			22.3	0.4
LOS					D	A	C	A			C	A
Approach Delay					29.5			27.5			17.3	
Approach LOS					C			C			B	
Queue Length 50th (ft)					111	0	116	22			57	0
Queue Length 95th (ft)					#232	7	#313	45			110	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 AM Peak Hour

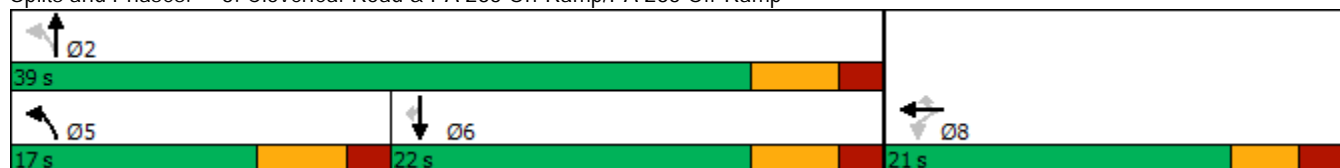


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					443	444	599	840			450	558
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.75	0.20	0.90	0.17			0.43	0.10

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	57.8
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	26.2
Intersection LOS:	C
Intersection Capacity Utilization	86.5%
ICU Level of Service	E
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	0	0	0	321	0	87	520	137	0	0	186	56
Future Volume (veh/h)	0	0	0	321	0	87	520	137	0	0	186	56
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1761	1875	1505	1693	1483	0	0	1661	1728
Adj Flow Rate, veh/h				334	0	0	542	143	0	0	194	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				8	0	26	6	21	0	0	15	15
Cap, veh/h				435	0		669	852	0	0	413	
Arrive On Green				0.22	0.00	0.00	0.23	0.57	0.00	0.00	0.25	0.00
Sat Flow, veh/h				1785	0	1275	1613	1483	0	0	1661	1464
Grp Volume(v), veh/h				334	0	0	542	143	0	0	194	0
Grp Sat Flow(s),veh/h/ln				1785	0	1275	1613	1483	0	0	1661	1464
Q Serve(g_s), s				9.2	0.0	0.0	12.0	2.4	0.0	0.0	5.2	0.0
Cycle Q Clear(g_c), s				9.2	0.0	0.0	12.0	2.4	0.0	0.0	5.2	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				435	0		669	852	0	0	413	
V/C Ratio(X)				0.77	0.00		0.81	0.17	0.00	0.00	0.47	
Avail Cap(c_a), veh/h				564	0		669	965	0	0	541	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				18.9	0.0	0.0	10.6	5.2	0.0	0.0	16.7	0.0
Incr Delay (d2), s/veh				4.7	0.0	0.0	7.4	0.3	0.0	0.0	3.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.1	0.0	0.0	4.4	0.5	0.0	0.0	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.6	0.0	0.0	18.0	5.6	0.0	0.0	19.7	0.0
LnGrp LOS				C	A		B	A	A	A	B	
Approach Vol, veh/h					334			685			194	
Approach Delay, s/veh					23.6			15.4			19.7	
Approach LOS					C			B			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		35.0			17.0	18.0		17.2				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		33.0			11.0	16.0		15.5				
Max Q Clear Time (g_c+I1), s		4.4			14.0	7.2		11.2				
Green Ext Time (p_c), s		3.1			0.0	2.0		0.7				

Intersection Summary


















HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 No Build
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	2	236	0	0	0	0	625	563	106	392	0
Future Volume (vph)	31	2	236	0	0	0	0	625	563	106	392	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1600	1454	0	0	0	0	1628	0	1588	1686	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1600	1454	0	0	0	0	1628	0	1588	1686	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	16%	0%	9%	2%	2%	2%	2%	9%	4%	11%	10%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	251	0	0	0	0	1264	0	113	417	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	86.5%
Analysis Period (min)	15
	ICU Level of Service E

HCM 6th TWSC
6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 No Build
AM Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	31	2	236	0	0	0	0	625	563	106	392	0
Future Vol, veh/h	31	2	236	0	0	0	0	625	563	106	392	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	16	0	9	2	2	2	2	9	4	11	10	2
Mvmt Flow	33	2	251	0	0	0	0	665	599	113	417	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1308	1308	417	-	0	0	665	0	0
Stage 1	643	643	-	-	-	-	-	-	-
Stage 2	665	665	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.99	-	-	-	4	-	-
Critical Hdwy Stg 1	4.96	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.96	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.2	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	170	200	673	0	-	-	729	-	0
Stage 1	624	525	-	0	-	-	-	-	0
Stage 2	610	515	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	144	0	673	-	-	-	729	-	-
Mov Cap-2 Maneuver	144	0	-	-	-	-	-	-	-
Stage 1	624	0	-	-	-	-	-	-	-
Stage 2	515	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.5	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	144	673	729	-
HCM Lane V/C Ratio	-	-	0.244	0.373	0.155	-
HCM Control Delay (s)	-	-	37.9	13.5	10.8	-
HCM Lane LOS	-	-	E	B	B	-
HCM 95th %tile Q(veh)	-	-	0.9	1.7	0.5	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 No Build
 AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	24	0	1171	620	5
Future Volume (vph)	6	24	0	1171	620	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1624	0	0	1734	1653	0
Flt Permitted	0.990					
Satd. Flow (perm)	1624	0	0	1734	1653	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	7%	10%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	1301	695	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.6%
ICU Level of Service	C
Analysis Period (min)	15

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 No Build
 AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	24	0	1171	620	5
Future Vol, veh/h	6	24	0	1171	620	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	7	10	0
Mvmt Flow	7	27	0	1301	689	6






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1993	692	695	0	-	0
Stage 1	692	-	-	-	-	-
Stage 2	1301	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	71	468	745	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	468	745	-	-	-
Mov Cap-2 Maneuver	71	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	279	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	745	-	221	-	-
HCM Lane V/C Ratio	-	-	0.151	-	-
HCM Control Delay (s)	0	-	24.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	19	88	8	12	74	31	761	8	10	498	149
Future Volume (vph)	336	19	88	8	12	74	31	761	8	10	498	149
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1604	1575	0	1391	1565	0	1500	1615	0	1628	1573	0
Flt Permitted	0.695			0.681			0.245			0.152		
Satd. Flow (perm)	1173	1575	0	996	1565	0	387	1615	0	260	1573	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			82			1				35
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	5%	13%	8%	1%	8%	9%	25%	0%	10%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	119	0	9	95	0	34	855	0	11	719	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	25.0	25.0		25.0	25.0		45.0	45.0		45.0	45.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		64.3%	64.3%		64.3%	64.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	20.0	20.0		20.0	20.0		39.5	39.5		39.5	39.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.56	0.56		0.56	0.56	
v/c Ratio	1.11	0.23		0.03	0.19		0.16	0.94		0.08	0.80	
Control Delay	111.4	7.6		18.6	7.4		7.7	30.1		8.5	20.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	111.4	7.6		18.6	7.4		7.7	30.1		8.5	20.1	
LOS	F	A		B	A		A	C		A	C	
Approach Delay		86.3			8.4			29.3			19.9	
Approach LOS		F			A			C			B	
Queue Length 50th (ft)	~188	7		3	4		4	320		2	212	
Queue Length 95th (ft)	#343	42		13	35		m9	#567		9	#434	

HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd



















2024 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	336	19	88	8	12	74	31	761	8	10	498	149
Future Volume (veh/h)	336	19	88	8	12	74	31	761	8	10	498	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	1915	1567	1703	1736	1798	1784	1556	1949	1807	1878
Adj Flow Rate, veh/h	373	21	98	9	13	82	34	846	9	11	553	166
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	5	13	8	1	8	9	25	0	10	5
Cap, veh/h	423	91	423	352	58	363	282	994	11	482	753	226
Arrive On Green	0.29	0.29	0.27	0.29	0.29	0.27	1.00	1.00	1.00	0.56	0.56	0.55
Sat Flow, veh/h	1360	317	1479	1065	201	1270	705	1762	19	673	1334	401
Grp Volume(v), veh/h	373	0	119	9	0	95	34	0	855	11	0	719
Grp Sat Flow(s),veh/h/ln	1360	0	1796	1065	0	1472	705	0	1780	673	0	1735
Q Serve(g_s), s	16.5	0.0	3.6	0.5	0.0	3.5	2.0	0.0	0.0	0.5	0.0	21.7
Cycle Q Clear(g_c), s	20.0	0.0	3.6	4.1	0.0	3.5	23.7	0.0	0.0	0.5	0.0	21.7
Prop In Lane	1.00		0.82	1.00		0.86	1.00		0.01	1.00		0.23
Lane Grp Cap(c), veh/h	423	0	513	352	0	420	282	0	1005	482	0	979
V/C Ratio(X)	0.88	0.00	0.23	0.03	0.00	0.23	0.12	0.00	0.85	0.02	0.00	0.73
Avail Cap(c_a), veh/h	423	0	513	352	0	420	282	0	1005	482	0	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.75	0.00	0.75	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	19.5	20.7	0.0	19.4	6.5	0.0	0.0	6.8	0.0	11.5
Incr Delay (d2), s/veh	18.9	0.0	0.2	0.0	0.0	0.3	0.7	0.0	7.0	0.1	0.0	4.9
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	8.3	0.0	1.4	0.1	0.0	1.1	0.2	0.0	1.9	0.1	0.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	0.0	19.7	20.7	0.0	19.7	7.1	0.0	7.0	6.8	0.0	16.3
LnGrp LOS	D	A	B	C	A	B	A	A	A	A	A	B
Approach Vol, veh/h		492			104			889				730
Approach Delay, s/veh		40.3			19.8			7.0				16.2
Approach LOS		D			B			A				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		25.0		45.0		25.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		38.5		19.0		38.5		19.0				
Max Q Clear Time (g_c+I1), s		2.0		22.0		23.7		6.1				
Green Ext Time (p_c), s		27.7		0.0		11.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				18.0								
HCM 6th LOS				B								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	16	16	1	9	2	764	7	24	547	7
Future Volume (vph)	35	0	16	16	1	9	2	764	7	24	547	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1682	0	0	1561	0	0	1615	1648
Flt Permitted		0.740			0.787			0.999			0.958	
Satd. Flow (perm)	0	1288	1581	0	1366	0	0	1559	0	0	1550	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		9			1				39
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	50%	10%	29%	0%	9%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	17	0	27	0	0	805	0	0	595	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		6			6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	17.0	17.0	17.0	17.0	17.0		53.0	53.0		53.0	53.0	53.0
Total Split (%)	24.3%	24.3%	24.3%	24.3%	24.3%		75.7%	75.7%		75.7%	75.7%	75.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.6	8.6		8.5			58.4			58.4	58.4
Actuated g/C Ratio		0.12	0.12		0.12			0.83			0.83	0.83
v/c Ratio		0.23	0.07		0.16			0.62			0.46	0.01
Control Delay		30.4	2.4		22.5			7.2			8.0	0.4
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		30.4	2.4		22.5			7.2			8.0	0.4
LOS		C	A		C			A			A	A
Approach Delay		21.5			22.5			7.2			7.9	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		14	0		7			138			160	0
Queue Length 95th (ft)		38	4		27			309			m259	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		230	320		251			1301			1294	1382
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.16	0.05		0.11			0.62			0.46	0.01

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 63 (90%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 8.3
 Intersection LOS: A
 Intersection Capacity Utilization 68.4%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (veh/h)	35	0	16	16	1	9	2	764	7	24	547	7
Future Volume (veh/h)	35	0	16	16	1	9	2	764	7	24	547	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1076	1637	1371	1875	1747	1950
Adj Flow Rate, veh/h	36	0	17	17	1	9	2	796	7	25	570	7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	50	10	29	0	9	0
Cap, veh/h	205	0	101	119	8	21	52	1296	11	78	1331	1322
Arrive On Green	0.05	0.00	0.06	0.05	0.06	0.05	0.79	0.80	0.79	1.00	1.00	1.00
Sat Flow, veh/h	1601	0	1586	545	120	333	1	1619	14	30	1663	1652
Grp Volume(v), veh/h	36	0	17	27	0	0	805	0	0	595	0	7
Grp Sat Flow(s),veh/h/ln	1601	0	1586	998	0	0	1634	0	0	1693	0	1652
Q Serve(g_s), s	0.0	0.0	0.7	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.7	2.4	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.63		0.33	0.00		0.01	0.04		1.00
Lane Grp Cap(c), veh/h	182	0	101	133	0	0	1336	0	0	1385	0	1322
V/C Ratio(X)	0.20	0.00	0.17	0.20	0.00	0.00	0.60	0.00	0.00	0.43	0.00	0.01
Avail Cap(c_a), veh/h	337	0	283	302	0	0	1336	0	0	1385	0	1322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.52	0.00	0.52
Uniform Delay (d), s/veh	31.8	0.0	31.0	32.5	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.8	0.7	0.0	0.0	2.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.3	0.5	0.0	0.0	2.1	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.3	0.0	31.8	33.3	0.0	0.0	4.8	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		53			27			805			602	
Approach Delay, s/veh		32.2			33.3			4.8			0.5	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		61.0		9.0		61.0		9.0				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		47.0		11.5		47.0		11.5				
Max Q Clear Time (g_c+I1), s		15.8		3.4		2.0		4.4				
Green Ext Time (p_c), s		22.5		0.1		20.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.5									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	190	37	3	173	198	72	359	11	106	226	205
Future Volume (vph)	262	190	37	3	173	198	72	359	11	106	226	205
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1485	1660	1113	1194	1649	1561	1637	1716	0	1500	1509	1388
Flt Permitted	0.427			0.631			0.545			0.290		
Satd. Flow (perm)	668	1660	1088	792	1649	1561	939	1716	0	457	1509	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			239		2				232
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1026				640
Travel Time (s)		14.2			7.4			28.0				10.9
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	9%	29%	33%	5%	4%	6%	13%	18%	8%	13%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	279	202	39	3	184	211	77	394	0	113	240	218
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	15.0	38.5	38.5	23.5	23.5	23.5	14.0	27.5		14.0	27.5	27.5
Total Split (%)	18.8%	48.1%	48.1%	29.4%	29.4%	29.4%	17.5%	34.4%		17.5%	34.4%	34.4%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	29.8	29.8	29.8	14.5	14.5	14.5	26.1	20.1		26.2	20.2	20.2
Actuated g/C Ratio	0.41	0.41	0.41	0.20	0.20	0.20	0.36	0.28		0.36	0.28	0.28
v/c Ratio	0.72	0.30	0.07	0.02	0.56	0.42	0.19	0.82		0.40	0.57	0.39
Control Delay	31.1	17.4	0.3	25.0	35.0	5.6	13.5	41.8		17.3	29.8	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	31.1	17.4	0.3	25.0	35.0	5.6	13.5	41.8		17.3	29.8	5.4
LOS	C	B	A	C	C	A	B	D		B	C	A
Approach Delay		23.4			19.3			37.2			18.0	
Approach LOS		C			B			D			B	
Queue Length 50th (ft)	98	66	0	1	81	0	19	168		28	94	0
Queue Length 95th (ft)	#195	114	0	8	143	39	47	#340		64	179	44

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		860			410			946			560	
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	385	774	587	201	419	575	418	522		283	459	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.72	0.26	0.07	0.01	0.44	0.37	0.18	0.75		0.40	0.52	0.37

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	72.2
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	24.3
Intersection LOS:	C
Intersection Capacity Utilization	71.3%
ICU Level of Service	C
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230

Ø1	Ø2	Ø3	Ø4
15 s	23.5 s	14 s	27.5 s
Ø5	Ø7	Ø8	
38.5 s	14 s	27.5 s	

HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	262	190	37	3	173	198	72	359	11	106	226	205
Future Volume (veh/h)	262	190	37	3	173	198	72	359	11	106	226	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1724	1709	1425	1331	1724	1808	2087	2067	1917	1598	1528	1598
Adj Flow Rate, veh/h	279	202	26	3	184	0	77	382	10	113	240	188
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	9	29	33	5	4	6	13	18	8	13	8
Cap, veh/h	439	703	496	262	330		375	477	12	305	409	362
Arrive On Green	0.14	0.41	0.41	0.19	0.19	0.00	0.06	0.24	0.22	0.09	0.27	0.27
Sat Flow, veh/h	1641	1709	1206	819	1724	1532	1988	2005	52	1522	1528	1352
Grp Volume(v), veh/h	279	202	26	3	184	0	77	0	392	113	240	188
Grp Sat Flow(s),veh/h/ln	1641	1709	1206	819	1724	1532	1988	0	2058	1522	1528	1352
Q Serve(g_s), s	8.9	5.4	0.9	0.2	6.6	0.0	1.9	0.0	12.2	3.7	9.3	8.1
Cycle Q Clear(g_c), s	8.9	5.4	0.9	0.2	6.6	0.0	1.9	0.0	12.2	3.7	9.3	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	439	703	496	262	330		375	0	490	305	409	362
V/C Ratio(X)	0.64	0.29	0.05	0.01	0.56		0.21	0.00	0.80	0.37	0.59	0.52
Avail Cap(c_a), veh/h	439	826	583	321	454		479	0	648	340	481	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.3	13.4	12.1	22.4	25.0	0.0	17.7	0.0	24.5	17.6	21.7	21.3
Incr Delay (d2), s/veh	3.0	0.1	0.0	0.0	0.5	0.0	0.3	0.0	5.3	0.7	1.3	1.2
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	3.2	1.8	0.2	0.0	2.5	0.0	0.9	0.0	6.4	1.2	3.2	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	13.5	12.1	22.4	25.5	0.0	17.9	0.0	29.8	18.3	23.1	22.4
LnGrp LOS	C	B	B	C	C		B	A	C	B	C	C
Approach Vol, veh/h		507			187			469			541	
Approach Delay, s/veh		17.2			25.5			27.9			21.8	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	18.6	12.5	22.3		33.6	10.4	24.3				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	8.5	17.0	7.0	20.5		32.0	7.0	20.5				
Max Q Clear Time (g_c+I1), s	11.4	9.1	6.2	14.2		7.9	4.4	11.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0		0.1	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay	22.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 29: SR 0230 & Ridge Run Rd

2024 No Build
 AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	280	375	23	25	3
Future Volume (vph)	3	280	375	23	25	3
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1318	1693	1723	0	1550	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1318	1693	1723	0	1550	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2697	1003		1286	
Travel Time (s)		33.4	12.4		25.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	33%	9%	5%	9%	4%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	308	437	0	30	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.1% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	280	375	23	25	3
Future Vol, veh/h	3	280	375	23	25	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	9	5	9	4	33
Mvmt Flow	3	308	412	25	27	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	437	0	-	0	739
Stage 1	-	-	-	-	425
Stage 2	-	-	-	-	314
Critical Hdwy	4.4	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	3.3	-	-	-	3
Pot Cap-1 Maneuver	776	-	-	-	395
Stage 1	-	-	-	-	715
Stage 2	-	-	-	-	819
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	776	-	-	-	393
Mov Cap-2 Maneuver	-	-	-	-	525
Stage 1	-	-	-	-	712
Stage 2	-	-	-	-	819

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	776	-	-	-	531
HCM Lane V/C Ratio	0.004	-	-	-	0.058
HCM Control Delay (s)	9.7	-	-	-	12.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2024 No Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	62	22	33	6	43	110	46	302	9	25	167	72
Future Volume (vph)	62	22	33	6	43	110	46	302	9	25	167	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1307	0	0	1540	0	0	1664	0	0	1509	0
Flt Permitted		0.974			0.998			0.994			0.995	
Satd. Flow (perm)	0	1307	0	0	1540	0	0	1664	0	0	1509	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1157			1404			999			1026	
Travel Time (s)		22.5			27.4			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	122	0	0	166	0	0	372	0	0	275	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.6%
ICU Level of Service	A
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	13.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	62	22	33	6	43	110	46	302	9	25	167	72
Future Vol, veh/h	62	22	33	6	43	110	46	302	9	25	167	72
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	65	23	34	6	45	115	48	315	9	26	174	75
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.9	10.6	15.8	13.4
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	53%	4%	9%
Vol Thru, %	85%	19%	27%	63%
Vol Right, %	3%	28%	69%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	357	117	159	264
LT Vol	46	62	6	25
Through Vol	302	22	43	167
RT Vol	9	33	110	72
Lane Flow Rate	372	122	166	275
Geometry Grp	1	1	1	1
Degree of Util (X)	0.572	0.23	0.257	0.443
Departure Headway (Hd)	5.541	6.805	5.585	5.797
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	651	525	639	619
Service Time	3.588	4.873	3.648	3.849
HCM Lane V/C Ratio	0.571	0.232	0.26	0.444
HCM Control Delay	15.8	11.9	10.6	13.4
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	3.6	0.9	1	2.3

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2024 No Build
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	650	85	191	488	122	124
Future Volume (vph)	650	85	191	488	122	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1799	0	1744	1958	1583	0
Flt Permitted			0.114		0.976	
Satd. Flow (perm)	1799	0	209	1958	1583	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	12					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	0%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	807	0	210	536	270	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	46.0		12.0	58.0	22.0	
Total Split (%)	57.5%		15.0%	72.5%	27.5%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	40.8		54.0	52.8	16.8	
Actuated g/C Ratio	0.51		0.68	0.66	0.21	
v/c Ratio	0.87		0.71	0.41	0.81	
Control Delay	29.9		21.9	7.5	51.3	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	29.9		21.9	7.5	51.3	
LOS	C		C	A	D	
Approach Delay	29.9			11.5	51.3	
Approach LOS	C			B	D	
Queue Length 50th (ft)	332		34	120	129	
Queue Length 95th (ft)	#576		m71	m151	#253	

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2024 No Build
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	923		294	1292	332	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.87		0.71	0.41	0.81	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 5 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 25.6
 Intersection LOS: C
 Intersection Capacity Utilization 79.9%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
3: Maytown Rd & SR 0230

2024 No Build
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (veh/h)	650	85	191	488	122	124
Future Volume (veh/h)	650	85	191	488	122	124
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1735	1711	2009	2090	1860	1860
Adj Flow Rate, veh/h	714	84	210	536	134	136
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	0	1	1	1	1
Cap, veh/h	823	97	347	1406	163	165
Arrive On Green	0.54	0.53	0.17	1.00	0.20	0.18
Sat Flow, veh/h	1524	179	1914	2090	825	837
Grp Volume(v), veh/h	0	798	210	536	271	0
Grp Sat Flow(s),veh/h/ln	0	1703	1914	2090	1668	0
Q Serve(g_s), s	0.0	32.5	3.6	0.0	12.5	0.0
Cycle Q Clear(g_c), s	0.0	32.5	3.6	0.0	12.5	0.0
Prop In Lane		0.11	1.00		0.49	0.50
Lane Grp Cap(c), veh/h	0	920	347	1406	329	0
V/C Ratio(X)	0.00	0.87	0.61	0.38	0.82	0.00
Avail Cap(c_a), veh/h	0	920	379	1406	350	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	16.0	14.2	0.0	31.0	0.0
Incr Delay (d2), s/veh	0.0	10.9	2.4	0.8	18.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	19.5	3.4	0.6	10.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	26.8	16.6	0.8	49.8	0.0
LnGrp LOS	A	C	B	A	D	A
Approach Vol, veh/h	798			746	271	
Approach Delay, s/veh	26.8			5.2	49.8	
Approach LOS	C			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.6	48.4		21.0		59.0
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	39.8		15.8		51.8
Max Q Clear Time (g_c+I1), s	5.6	34.5		14.5		2.0
Green Ext Time (p_c), s	0.1	4.5		0.3		16.5

Intersection Summary




















HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2024 No Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	808	0	0	951	84	1	0	2	29	0	48
Future Volume (vph)	27	808	0	0	951	84	1	0	2	29	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Flt Permitted	0.950							0.984		0.950		
Satd. Flow (perm)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	8%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	869	0	0	1113	0	0	3	0	31	52	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	66.1%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	27	808	0	0	951	84	1	0	2	29	0	48
Future Vol, veh/h	27	808	0	0	951	84	1	0	2	29	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	2	0	0	1	0	0	0	0	0	0	4
Mvmt Flow	29	869	0	0	1023	90	1	0	2	31	0	52

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1113	0	0	869	0	0	2022	2040	869	1996	1995	1069
Stage 1	-	-	-	-	-	-	927	927	-	1068	1068	-
Stage 2	-	-	-	-	-	-	1095	1113	-	928	927	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	587	-	-	447	-	-	58	72	388	67	85	308
Stage 1	-	-	-	-	-	-	397	388	-	354	359	-
Stage 2	-	-	-	-	-	-	323	324	-	417	408	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	587	-	-	447	-	-	46	68	388	64	81	308
Mov Cap-2 Maneuver	-	-	-	-	-	-	46	68	-	64	81	-
Stage 1	-	-	-	-	-	-	378	369	-	337	359	-
Stage 2	-	-	-	-	-	-	269	324	-	394	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	38.1	51.8
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	112	587	-	-	447	-	-	64	308
HCM Lane V/C Ratio	0.029	0.049	-	-	-	-	-	0.487	0.168
HCM Control Delay (s)	38.1	11.5	-	-	0	-	-	106	19
HCM Lane LOS		E	B	-	-	A	-	F	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	1.9	0.6

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	612	36	151	750	17	267	3	115	23	8	16
Future Volume (vph)	14	612	36	151	750	17	267	3	115	23	8	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1766	1584	1572	1697	1608	1694	1576	0	1761	1747	0
Flt Permitted	0.331			0.204			0.741			0.678		
Satd. Flow (perm)	576	1766	1550	338	1697	1608	1316	1576	0	1257	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			40			120			17
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1060			1340			300				300
Travel Time (s)		18.1			22.8			8.2				8.2
Confl. Peds. (#/hr)			1				2					2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	638	38	157	781	18	278	123	0	24	25	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	43.0	43.0	43.0	13.0	56.0	56.0	24.0	24.0		24.0	24.0	
Total Split (%)	53.8%	53.8%	53.8%	16.3%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	37.8	37.8	37.8	51.9	50.6	50.6	18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.47	0.47	0.47	0.65	0.63	0.63	0.23	0.23		0.23	0.23	
v/c Ratio	0.06	0.76	0.05	0.45	0.73	0.02	0.90	0.27		0.08	0.06	
Control Delay	11.6	16.9	0.2	7.8	6.5	0.1	63.8	7.1		24.6	14.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.6	16.9	0.2	7.8	6.5	0.1	63.8	7.1		24.6	14.4	
LOS	B	B	A	A	A	A	E	A		C	B	
Approach Delay		15.9			6.6			46.4			19.4	
Approach LOS		B			A			D			B	
Queue Length 50th (ft)	2	112	0	4	25	0	135	1		9	3	
Queue Length 95th (ft)	m5	m184	m0	m26	53	m0	#273	41		28	22	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
PM Peak Hour

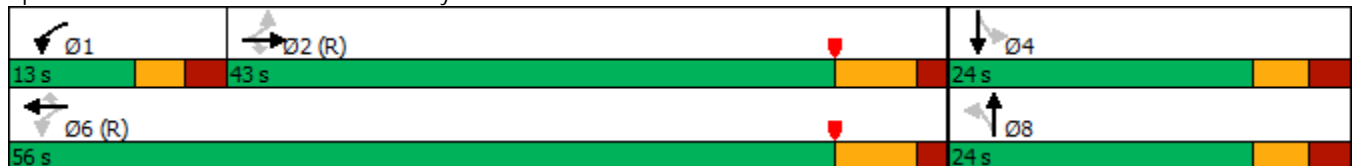


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	271	834	792	350	1072	1030	314	467		300	430	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.76	0.05	0.45	0.73	0.02	0.89	0.26		0.08	0.06	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 33 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 17.6
 Intersection LOS: B
 Intersection Capacity Utilization 90.2%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
 7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	14	612	36	151	750	17	267	3	115	23	8	16
Future Volume (veh/h)	14	612	36	151	750	17	267	3	115	23	8	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2032	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	15	638	23	157	781	15	278	3	80	24	8	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	464	1011	868	586	1106	983	422	14	372	366	157	274
Arrive On Green	1.00	1.00	1.00	0.17	1.00	1.00	0.23	0.23	0.22	0.23	0.23	0.22
Sat Flow, veh/h	752	2032	1745	1666	1736	1542	1470	61	1624	1418	684	1198
Grp Volume(v), veh/h	15	638	23	157	781	15	278	0	83	24	0	22
Grp Sat Flow(s),veh/h/ln	752	2032	1745	1666	1736	1542	1470	0	1685	1418	0	1882
Q Serve(g_s), s	0.0	0.3	0.0	3.3	0.0	0.0	14.4	0.0	3.2	1.1	0.0	0.7
Cycle Q Clear(g_c), s	0.0	0.3	0.0	3.3	0.0	0.0	14.7	0.0	3.2	3.8	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.64
Lane Grp Cap(c), veh/h	464	1011	868	586	1106	983	422	0	386	366	0	431
V/C Ratio(X)	0.03	0.63	0.03	0.27	0.71	0.02	0.66	0.00	0.22	0.07	0.00	0.05
Avail Cap(c_a), veh/h	464	1011	868	624	1106	983	437	0	402	380	0	449
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.73	0.73	0.73	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.1	0.1	0.1	6.1	0.0	0.0	29.6	0.0	25.4	26.4	0.0	24.3
Incr Delay (d2), s/veh	0.1	3.0	0.1	0.2	2.8	0.0	3.5	0.0	0.3	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	1.6	0.0	1.5	1.5	0.0	9.2	0.0	2.4	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	3.1	0.1	6.3	2.8	0.0	33.0	0.0	25.7	26.5	0.0	24.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		676			953			361				46
Approach Delay, s/veh		2.9			3.3			31.3				25.5
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.2	45.6		23.2		56.8		23.2				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	36.2		* 18		49.2		* 18				
Max Q Clear Time (g_c+I1), s	5.8	2.8		6.3		2.5		17.2				
Green Ext Time (p_c), s	0.1	0.8		0.1		1.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	8.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2024 No Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	441	1	10	755	73	9	2	1	41	3	111
Future Volume (vph)	84	441	1	10	755	73	9	2	1	41	3	111
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1729	0	1586	1818	1561	0	1831	0	1719	1506	0
Flt Permitted	0.229			0.496				0.721		0.750		
Satd. Flow (perm)	404	1729	0	828	1818	1561	0	1364	0	1357	1506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						110		1				117
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1340			610			200				300
Travel Time (s)		22.8			10.4			5.5				8.2
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	10%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	465	0	11	795	77	0	12	0	43	120	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8				4
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	62.0		51.0	51.0	51.0	18.0	18.0		18.0	18.0	
Total Split (%)	13.8%	77.5%		63.8%	63.8%	63.8%	22.5%	22.5%		22.5%	22.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	64.0	64.2		55.4	55.4	55.4		9.2		9.2	9.2	
Actuated g/C Ratio	0.80	0.80		0.69	0.69	0.69		0.12		0.12	0.12	
v/c Ratio	0.21	0.34		0.02	0.63	0.07		0.08		0.28	0.44	
Control Delay	3.5	5.7		4.7	11.4	0.6		30.1		36.1	12.3	
Queue Delay	0.0	0.0		0.0	0.1	0.0		0.0		0.0	0.0	
Total Delay	3.5	5.7		4.7	11.5	0.6		30.1		36.1	12.3	
LOS	A	A		A	B	A		C		D	B	
Approach Delay		5.4			10.5			30.1			18.6	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	10	118		1	294	0		5		20	1	
Queue Length 95th (ft)	m17	m202		m3	403	m1		20		48	46	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2024 No Build
 PM Peak Hour

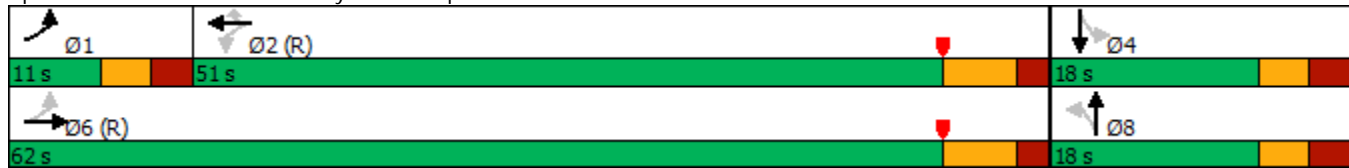


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	426	1386		573	1258	1114		229		227	349	
Starvation Cap Reductn	0	0		0	41	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.21	0.34		0.02	0.65	0.07		0.05		0.19	0.34	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 11 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 9.7
 Intersection LOS: A
 Intersection Capacity Utilization 66.6%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2024 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↕		↖	↗	
Traffic Volume (veh/h)	84	441	1	10	755	73	9	2	1	41	3	111
Future Volume (veh/h)	84	441	1	10	755	73	9	2	1	41	3	111
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1683	1711	1807	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	88	464	1	11	795	68	9	2	0	43	3	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	10	1	0	0	0	0	0	0	0
Cap, veh/h	579	1343	3	711	1341	1145	112	19	0	205	5	110
Arrive On Green	0.10	1.00	1.00	1.00	1.00	1.00	0.06	0.07	0.00	0.07	0.07	0.06
Sat Flow, veh/h	1629	1678	4	896	1935	1652	406	255	0	1376	72	1472
Grp Volume(v), veh/h	88	0	465	11	795	68	11	0	0	43	0	64
Grp Sat Flow(s),veh/h/ln	1629	0	1682	896	1935	1652	661	0	0	1376	0	1544
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	1.9	0.0	3.2
Prop In Lane	1.00		0.00	1.00		1.00	0.82		0.00	1.00		0.95
Lane Grp Cap(c), veh/h	579	0	1346	711	1341	1145	123	0	0	205	0	116
V/C Ratio(X)	0.15	0.00	0.35	0.02	0.59	0.06	0.09	0.00	0.00	0.21	0.00	0.55
Avail Cap(c_a), veh/h	629	0	1346	711	1341	1145	253	0	0	333	0	259
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.59	0.00	0.59	0.76	0.76	0.76	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.1	0.0	0.0	0.0	0.0	0.0	34.9	0.0	0.0	35.1	0.0	36.2
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	1.5	0.1	0.3	0.0	0.0	0.5	0.0	4.1
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.3	0.0	1.0	0.0	0.4	0.0	0.0	1.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.1	0.0	0.4	0.0	1.5	0.1	35.2	0.0	0.0	35.6	0.0	40.3
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		553			874			11				107
Approach Delay, s/veh		0.7			1.3			35.2				38.4
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.6	60.9		10.6		69.4		10.6				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	44.6		12.4		55.6		12.4				
Max Q Clear Time (g_c+I1), s	3.5	2.5		5.2		2.5		5.2				
Green Ext Time (p_c), s	0.0	1.1		0.2		0.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	3.9
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 No Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	390	21	40	644	32	91	35	29	33	43	93
Future Volume (vph)	62	390	21	40	644	32	91	35	29	33	43	93
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1708	0	1573	1677	0	1572	1604	0	0	1801	0
Flt Permitted	0.320			0.487			0.522				0.921	
Satd. Flow (perm)	556	1708	0	806	1677	0	863	1604	0	0	1675	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			31			83	
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		610			1000			350			1000	
Travel Time (s)		10.4			17.0			6.8			19.5	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	3%	0%	3%	1%	0%	0%	3%	3%	0%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	433	0	42	712	0	96	68	0	0	178	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0		48.0	48.0		32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	56.3	56.3		56.3	56.3		13.8	13.8			13.8	
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.17	0.17			0.17	
v/c Ratio	0.17	0.36		0.07	0.60		0.65	0.23			0.50	
Control Delay	1.6	1.4		5.4	9.8		49.7	18.0			20.1	
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0			0.0	
Total Delay	1.6	1.4		5.4	9.9		49.7	18.0			20.1	
LOS	A	A		A	A		D	B			C	
Approach Delay		1.5			9.7			36.6			20.1	
Approach LOS		A			A			D			C	
Queue Length 50th (ft)	1	7		5	151		45	16			42	
Queue Length 95th (ft)	3	9		20	327		88	45			91	

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 No Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	391	1203		567	1181		291	561				620
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	28		0	0				1
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.17	0.36		0.07	0.62		0.33	0.12				0.29

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	11.0
Intersection LOS:	B
Intersection Capacity Utilization	82.5%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
13: Sheaffer Rd & SR 0230

2024 No Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	390	21	40	644	32	91	35	29	33	43	93
Future Volume (veh/h)	62	390	21	40	644	32	91	35	29	33	43	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1708	1750	1869	1898	1912	1750	1708	1708	1949	1997	1921
Adj Flow Rate, veh/h	65	411	21	42	678	32	96	37	13	35	45	77
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	0	3	1	0	0	3	3	0	2	2
Cap, veh/h	490	1197	61	800	1336	63	232	160	56	92	81	113
Arrive On Green	1.00	1.00	1.00	0.74	0.74	0.73	0.13	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	680	1610	82	955	1797	85	1185	1206	424	275	608	850
Grp Volume(v), veh/h	65	0	432	42	0	710	96	0	50	157	0	0
Grp Sat Flow(s),veh/h/ln	680	0	1693	955	0	1882	1185	0	1629	1734	0	0
Q Serve(g_s), s	1.8	0.0	0.0	0.9	0.0	12.5	0.3	0.0	2.2	4.3	0.0	0.0
Cycle Q Clear(g_c), s	14.3	0.0	0.0	0.9	0.0	12.5	7.2	0.0	2.2	6.9	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.26	0.22		0.49
Lane Grp Cap(c), veh/h	490	0	1258	800	0	1399	232	0	217	264	0	0
V/C Ratio(X)	0.13	0.00	0.34	0.05	0.00	0.51	0.41	0.00	0.23	0.60	0.00	0.00
Avail Cap(c_a), veh/h	490	0	1258	800	0	1399	475	0	550	611	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	2.8	0.0	4.2	33.2	0.0	31.1	33.4	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.1	0.0	1.3	1.2	0.0	0.5	2.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.4	0.2	0.0	5.8	3.2	0.0	1.6	5.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.0	0.0	0.7	2.9	0.0	5.6	34.4	0.0	31.7	35.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	D	A	A
Approach Vol, veh/h		497			752			146				157
Approach Delay, s/veh		0.9			5.4			33.5				35.5
Approach LOS		A			A			C				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		64.4		15.6		64.4		15.6				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 42		26.0		* 42		26.0				
Max Q Clear Time (g_c+I1), s		2.0		8.9		14.5		9.2				
Green Ext Time (p_c), s		12.6		0.4		18.6		0.4				

Intersection Summary



















HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	563	0	121	273	142	0	0	225	47
Future Volume (vph)	0	0	0	563	0	121	273	142	0	0	225	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1653	1414	1589	1511	0	0	1658	1637
Flt Permitted					0.950		0.402					
Satd. Flow (perm)	0	0	0	0	1653	1414	672	1511	0	0	1658	1637
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						151						143
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	1%	0%	2%	3%	14%	2%	2%	6%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	593	127	287	149	0	0	237	49
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				30.0	30.0	30.0	13.0	35.0			22.0	22.0
Total Split (%)				46.2%	46.2%	46.2%	20.0%	53.8%			33.8%	33.8%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					24.7	24.7	28.9	28.9			15.9	15.9
Actuated g/C Ratio					0.39	0.39	0.46	0.46			0.25	0.25
v/c Ratio					0.92	0.20	0.68	0.22			0.57	0.09
Control Delay					41.4	2.8	21.7	11.5			27.0	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					41.4	2.8	21.7	11.5			27.0	0.4
LOS					D	A	C	B			C	A
Approach Delay					34.6			18.2			22.4	
Approach LOS					C			B			C	
Queue Length 50th (ft)					215	0	71	33			81	0
Queue Length 95th (ft)					#405	22	#136	66			145	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 PM Peak Hour

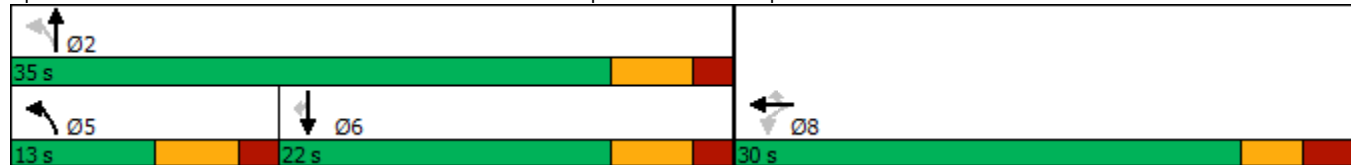


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					669	662	424	720			447	546
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.89	0.19	0.68	0.21			0.53	0.09

Intersection Summary

Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 63.1
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 27.2
 Intersection LOS: C
 Intersection Capacity Utilization 121.2%
 ICU Level of Service H
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	0	0	0	563	0	121	273	142	0	0	225	47
Future Volume (veh/h)	0	0	0	563	0	121	273	142	0	0	225	47
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1860	1875	1846	1736	1581	0	0	1789	1846
Adj Flow Rate, veh/h				593	0	0	287	149	0	0	237	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	0	2	3	14	0	0	6	7
Cap, veh/h				688	0		467	712	0	0	403	
Arrive On Green				0.37	0.00	0.00	0.14	0.45	0.00	0.00	0.23	0.00
Sat Flow, veh/h				1785	0	1564	1653	1581	0	0	1789	1564
Grp Volume(v), veh/h				593	0	0	287	149	0	0	237	0
Grp Sat Flow(s),veh/h/ln				1785	0	1564	1653	1581	0	0	1789	1564
Q Serve(g_s), s				17.8	0.0	0.0	7.3	3.3	0.0	0.0	6.8	0.0
Cycle Q Clear(g_c), s				17.8	0.0	0.0	7.3	3.3	0.0	0.0	6.8	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				688	0		467	712	0	0	403	
V/C Ratio(X)				0.86	0.00		0.61	0.21	0.00	0.00	0.59	
Avail Cap(c_a), veh/h				788	0		467	822	0	0	527	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.8	0.0	0.0	13.6	9.6	0.0	0.0	20.0	0.0
Incr Delay (d2), s/veh				8.8	0.0	0.0	2.4	0.5	0.0	0.0	4.9	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				13.0	0.0	0.0	4.5	1.8	0.0	0.0	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				25.6	0.0	0.0	16.0	10.2	0.0	0.0	24.9	0.0
LnGrp LOS				C	A		B	B	A	A	C	
Approach Vol, veh/h					593			436			237	
Approach Delay, s/veh					25.6			14.0			24.9	
Approach LOS					C			B			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.0			13.0	18.0		26.7				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		24.5				
Max Q Clear Time (g_c+I1), s		5.3			9.3	8.8		19.8				
Green Ext Time (p_c), s		2.9			0.0	2.1		1.5				

Intersection Summary


















HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 No Build
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	3	494	0	0	0	0	376	432	97	698	0
Future Volume (vph)	43	3	494	0	0	0	0	376	432	97	698	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1564	1569	0	0	0	0	1665	0	1663	1801	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1564	1569	0	0	0	0	1665	0	1663	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	19%	0%	1%	2%	2%	2%	2%	5%	2%	6%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	509	0	0	0	0	833	0	100	720	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	121.2%
ICU Level of Service	H
Analysis Period (min)	15

HCM 6th TWSC
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 No Build
 PM Peak Hour

Intersection												
Int Delay, s/veh	21.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	43	3	494	0	0	0	0	376	432	97	698	0
Future Vol, veh/h	43	3	494	0	0	0	0	376	432	97	698	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	19	0	1	2	2	2	2	5	2	6	3	2
Mvmt Flow	44	3	509	0	0	0	0	388	445	100	720	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1308	1308	720	-	0	0	388	0	0
Stage 1	920	920	-	-	-	-	-	-	-
Stage 2	388	388	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.91	-	-	-	4	-	-
Critical Hdwy Stg 1	4.99	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.99	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	167	200	~ 478	0	-	-	888	-	0
Stage 1	460	411	-	0	-	-	-	-	0
Stage 2	777	653	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	148	0	~ 478	-	-	-	888	-	-
Mov Cap-2 Maneuver	148	0	-	-	-	-	-	-	-
Stage 1	460	0	-	-	-	-	-	-	-
Stage 2	689	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	85	0	1.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	148	478	888	-
HCM Lane V/C Ratio	-	-	0.32	1.065	0.113	-
HCM Control Delay (s)	-	-	40.4	89.1	9.6	-
HCM Lane LOS	-	-	E	F	A	-
HCM 95th %tile Q(veh)	-	-	1.3	15.9	0.4	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 No Build
 PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	9	8	793	1165	10
Future Volume (vph)	3	9	8	793	1165	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1631	0	0	1802	1781	0
Flt Permitted	0.988					
Satd. Flow (perm)	1631	0	0	1802	1781	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	0	826	1211	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	71.9%			ICU Level of Service C		
Analysis Period (min)	15					

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 No Build
 PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	9	8	793	1165	10
Future Vol, veh/h	3	9	8	793	1165	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	3	9	8	818	1201	10






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2040	1206	1211	0	-	0
Stage 1	1206	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	66	234	513	-	-	-
Stage 1	312	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	64	234	513	-	-	-
Mov Cap-2 Maneuver	64	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	477	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	513	-	141	-	-
HCM Lane V/C Ratio	0.016	-	0.088	-	-
HCM Control Delay (s)	12.1	0	33	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 No Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	33	77	9	40	35	59	553	13	49	810	319
Future Volume (vph)	218	33	77	9	40	35	59	553	13	49	810	319
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1683	0	1416	1704	0	1620	1693	0	1628	1672	0
Flt Permitted	0.706			0.682			0.107			0.373		
Satd. Flow (perm)	1204	1683	0	1017	1704	0	182	1693	0	639	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81			37			4				63
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	11%	0%	0%	0%	4%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	229	116	0	9	79	0	62	596	0	52	1189	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	17.0	17.0		17.0	17.0		43.0	43.0		43.0	43.0	
Total Split (%)	28.3%	28.3%		28.3%	28.3%		71.7%	71.7%		71.7%	71.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.0	12.0		12.0	12.0		37.5	37.5		37.5	37.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.62	0.62		0.62	0.62	
v/c Ratio	0.95	0.29		0.04	0.21		0.55	0.56		0.13	1.11	
Control Delay	76.8	10.9		20.2	14.2		31.9	13.0		5.6	79.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	76.8	10.9		20.2	14.2		31.9	13.0		5.6	79.5	
LOS	E	B		C	B		C	B		A	E	
Approach Delay		54.6			14.8			14.8			76.4	
Approach LOS		D			B			B			E	
Queue Length 50th (ft)	82	10		3	13		25	245		7	~503	
Queue Length 95th (ft)	#202	47		13	43		m#74	290		19	#726	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2024 No Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	240	401		203	370		113	1059		399	1068	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.95	0.29		0.04	0.21		0.55	0.56		0.13	1.11	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 53.5 Intersection LOS: D
 Intersection Capacity Utilization 93.7% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd



















2024 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Volume (veh/h)	218	33	77	9	40	35	59	553	13	49	810	319
Future Volume (veh/h)	218	33	77	9	40	35	59	553	13	49	810	319
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1595	1820	1750	1912	1855	1912	1949	1921	1935
Adj Flow Rate, veh/h	229	35	57	9	42	23	62	582	13	52	853	325
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	11	0	0	0	4	0	0	2	1
Cap, veh/h	357	141	230	296	221	121	120	1130	25	411	828	316
Arrive On Green	0.20	0.20	0.18	0.20	0.20	0.18	0.21	0.21	0.20	0.63	0.63	0.61
Sat Flow, veh/h	1409	707	1151	1113	1105	605	487	1807	40	857	1325	505
Grp Volume(v), veh/h	229	0	92	9	0	65	62	0	595	52	0	1178
Grp Sat Flow(s),veh/h/ln	1409	0	1858	1113	0	1711	487	0	1848	857	0	1830
Q Serve(g_s), s	9.7	0.0	2.5	0.4	0.0	1.9	0.0	0.0	17.2	2.6	0.0	37.5
Cycle Q Clear(g_c), s	11.6	0.0	2.5	2.9	0.0	1.9	37.5	0.0	17.2	19.7	0.0	37.5
Prop In Lane	1.00		0.62	1.00		0.35	1.00		0.02	1.00		0.28
Lane Grp Cap(c), veh/h	357	0	372	296	0	342	120	0	1155	411	0	1144
V/C Ratio(X)	0.64	0.00	0.25	0.03	0.00	0.19	0.52	0.00	0.52	0.13	0.00	1.03
Avail Cap(c_a), veh/h	357	0	372	296	0	342	120	0	1155	411	0	1144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.00	0.84	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	20.5	21.4	0.0	20.1	42.6	0.0	15.7	14.0	0.0	11.4
Incr Delay (d2), s/veh	3.9	0.0	0.3	0.0	0.0	0.3	12.7	0.0	1.4	0.6	0.0	34.6
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	6.0	0.0	1.9	0.2	0.0	1.3	2.5	0.0	12.9	0.9	0.0	28.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	0.0	20.8	21.5	0.0	20.4	55.3	0.0	17.1	14.6	0.0	46.0
LnGrp LOS	C	A	C	C	A	C	E	A	B	B	A	F
Approach Vol, veh/h		321			74			657				1230
Approach Delay, s/veh		26.4			20.5			20.7				44.7
Approach LOS		C			C			C				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		17.0		43.0		17.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		36.5		11.0		36.5		11.0				
Max Q Clear Time (g_c+I1), s		19.2		13.6		39.5		4.9				
Green Ext Time (p_c), s		10.9		0.0		0.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				34.4								
HCM 6th LOS				C								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	17	61	0	38	16	573	5	10	851	34
Future Volume (vph)	15	0	17	61	0	38	16	573	5	10	851	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1672	0	0	1640	0	0	1722	1648
Flt Permitted		0.772			0.803			0.972			0.993	
Satd. Flow (perm)	0	1343	1581	0	1384	0	0	1596	0	0	1711	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			1				45
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	18	0	104	0	0	625	0	0	907	36
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	15.0	15.0	15.0	15.0	15.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	75.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.6	8.6		8.6			45.1			45.1	45.1
Actuated g/C Ratio		0.14	0.14		0.14			0.75			0.75	0.75
v/c Ratio		0.08	0.07		0.42			0.52			0.71	0.03
Control Delay		22.2	1.4		18.2			8.2			3.4	0.1
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		22.2	1.4		18.2			8.2			3.4	0.1
LOS		C	A		B			A			A	A
Approach Delay		11.2			18.2			8.2			3.2	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		5	0		16			223			20	0
Queue Length 95th (ft)		19	3		53			196			m28	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		235	322		287			1200			1286	1249
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.07	0.06		0.36			0.52			0.71	0.03

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 25 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 6.1
 Intersection LOS: A
 Intersection Capacity Utilization 72.6%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	15	0	17	61	0	38	16	573	5	10	851	34
Future Volume (veh/h)	15	0	17	61	0	38	16	573	5	10	851	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1707	1778	1875	1846	1950
Adj Flow Rate, veh/h	16	0	10	64	0	25	17	603	5	11	896	35
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	5	0	0	2	0
Cap, veh/h	287	0	163	200	3	39	74	1213	10	65	1354	1221
Arrive On Green	0.09	0.00	0.10	0.09	0.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1628	0	1586	941	26	378	16	1641	13	6	1832	1652
Grp Volume(v), veh/h	16	0	10	89	0	0	625	0	0	907	0	35
Grp Sat Flow(s),veh/h/ln	1628	0	1586	1346	0	0	1671	0	0	1838	0	1652
Q Serve(g_s), s	0.0	0.0	0.3	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.3	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.72		0.28	0.03		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	260	0	163	219	0	0	1269	0	0	1389	0	1221
V/C Ratio(X)	0.06	0.00	0.06	0.41	0.00	0.00	0.49	0.00	0.00	0.65	0.00	0.03
Avail Cap(c_a), veh/h	356	0	278	324	0	0	1269	0	0	1389	0	1221
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.00	0.09
Uniform Delay (d), s/veh	24.8	0.0	24.3	26.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	1.2	0.0	0.0	1.4	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.2	2.3	0.0	0.0	0.9	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	0.0	24.5	27.8	0.0	0.0	1.4	0.0	0.0	0.2	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		26			89			625				942
Approach Delay, s/veh		24.8			27.8			1.4				0.2
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		49.3		10.7		49.3		10.7				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		39.0		9.5		39.0		9.5				
Max Q Clear Time (g_c+I1), s		2.0		2.5		2.0		6.0				
Green Ext Time (p_c), s		19.5		0.0		29.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			2.5									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	282	59	22	298	133	93	279	17	217	348	287
Future Volume (vph)	216	282	59	22	298	133	93	279	17	217	348	287
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1588	1791	1435	1512	1697	1577	1522	1810	0	1604	1640	1442
Flt Permitted	0.223			0.582			0.442			0.386		
Satd. Flow (perm)	373	1791	1435	927	1697	1577	708	1810	0	652	1640	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			159		2				296
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1028				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	5%	2%	3%	14%	7%	6%	1%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	223	291	61	23	307	137	96	306	0	224	359	296
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	23.0	68.0	68.0	45.0	45.0	45.0	15.0	32.0		20.0	37.0	37.0
Total Split (%)	19.2%	56.7%	56.7%	37.5%	37.5%	37.5%	12.5%	26.7%		16.7%	30.8%	30.8%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	48.2	48.2	48.2	26.1	26.1	26.1	49.5	40.8		59.0	45.6	45.6
Actuated g/C Ratio	0.40	0.40	0.40	0.22	0.22	0.22	0.41	0.34		0.49	0.38	0.38
v/c Ratio	0.70	0.40	0.10	0.11	0.83	0.29	0.27	0.50		0.52	0.58	0.40
Control Delay	36.1	26.3	1.2	35.8	63.2	4.9	20.9	37.0		18.5	28.9	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	36.1	26.3	1.2	35.8	63.2	4.9	20.9	37.0		18.5	28.9	6.8
LOS	D	C	A	D	E	A	C	D		B	C	A
Approach Delay		27.4			44.7			33.2			18.8	
Approach LOS		C			D			C			B	
Queue Length 50th (ft)	117	156	0	14	228	0	39	190		97	169	36
Queue Length 95th (ft)	158	202	7	35	306	34	82	313		m157	344	77
Internal Link Dist (ft)		860			410			948			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	327	932	795	305	558	625	355	617		434	623	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	0.31	0.08	0.08	0.55	0.22	0.27	0.50		0.52	0.58	0.40

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	107 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	28.6
Intersection LOS:	C
Intersection Capacity Utilization	77.6%
ICU Level of Service	D
Analysis Period (min)	15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	282	59	22	298	133	93	279	17	217	348	287
Future Volume (veh/h)	216	282	59	22	298	133	93	279	17	217	348	287
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1823	1823	1837	1724	1766	1822	1974	2156	2087	1697	1655	1655
Adj Flow Rate, veh/h	223	291	31	23	307	0	96	288	17	224	359	225
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	5	2	3	14	7	6	1	4	4
Cap, veh/h	312	677	578	253	350		425	750	44	503	703	595
Arrive On Green	0.13	0.37	0.37	0.20	0.20	0.00	0.06	0.37	0.36	0.15	0.56	0.56
Sat Flow, veh/h	1736	1823	1557	975	1766	1544	1880	2016	119	1616	1655	1402
Grp Volume(v), veh/h	223	291	31	23	307	0	96	0	305	224	359	225
Grp Sat Flow(s),veh/h/ln	1736	1823	1557	975	1766	1544	1880	0	2135	1616	1655	1402
Q Serve(g_s), s	11.6	14.3	1.5	2.3	20.2	0.0	3.7	0.0	12.6	9.7	15.9	10.7
Cycle Q Clear(g_c), s	11.6	14.3	1.5	2.3	20.2	0.0	3.7	0.0	12.6	9.7	15.9	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	312	677	578	253	350		425	0	794	503	703	595
V/C Ratio(X)	0.71	0.43	0.05	0.09	0.88		0.23	0.00	0.38	0.44	0.51	0.38
Avail Cap(c_a), veh/h	344	950	811	381	581		457	0	794	513	703	595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	28.2	24.2	39.5	46.7	0.0	21.0	0.0	27.6	17.6	18.5	17.3
Incr Delay (d2), s/veh	6.2	0.2	0.0	0.1	4.4	0.0	0.3	0.0	1.4	0.6	2.6	1.8
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	8.9	10.1	1.0	1.0	14.0	0.0	3.0	0.0	11.1	6.0	9.6	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	28.4	24.2	39.5	51.1	0.0	21.2	0.0	29.0	18.2	21.1	19.2
LnGrp LOS	D	C	C	D	D		C	A	C	B	C	B
Approach Vol, veh/h		545			330			401			808	
Approach Delay, s/veh		32.2			50.3			27.2			19.8	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	20.8	29.3	19.3	50.6		50.1	13.0	57.0				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	16.5	38.5	13.0	25.0		61.5	8.0	30.0				
Max Q Clear Time (g_c+I1), s	14.1	22.7	12.2	14.6		16.8	6.2	18.4				
Green Ext Time (p_c), s	0.2	0.1	0.1	1.0		0.1	0.0	2.5				

Intersection Summary

HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 29: SR 0230 & Ridge Run Rd

2024 No Build
 PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	475	409	56	37	1
Future Volume (vph)	6	475	409	56	37	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1763	0	1670	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	1754	1828	1763	0	1670	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1319	
Travel Time (s)		33.5	12.4		25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	495	484	0	40	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.0% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	475	409	56	37	1
Future Vol, veh/h	6	475	409	56	37	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	2	0	0
Mvmt Flow	6	495	426	58	39	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	484	0	-	0	962 455
Stage 1	-	-	-	-	455 -
Stage 2	-	-	-	-	507 -
Critical Hdwy	4.1	-	-	-	6.8 6.4
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	840	-	-	-	283 625
Stage 1	-	-	-	-	693 -
Stage 2	-	-	-	-	650 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	840	-	-	-	281 625
Mov Cap-2 Maneuver	-	-	-	-	433 -
Stage 1	-	-	-	-	688 -
Stage 2	-	-	-	-	650 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	840	-	-	-	437
HCM Lane V/C Ratio	0.007	-	-	-	0.091
HCM Control Delay (s)	9.3	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2024 No Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	77	81	76	4	51	55	32	258	6	84	310	47
Future Volume (vph)	77	81	76	4	51	55	32	258	6	84	310	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1396	0	0	1575	0	0	1668	0	0	1572	0
Flt Permitted		0.984			0.998			0.995			0.991	
Satd. Flow (perm)	0	1396	0	0	1575	0	0	1668	0	0	1572	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1146			1234			997			1028	
Travel Time (s)		22.3			24.0			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	243	0	0	114	0	0	308	0	0	460	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	65.5%
ICU Level of Service	C
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	22.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	77	81	76	4	51	55	32	258	6	84	310	47
Future Vol, veh/h	77	81	76	4	51	55	32	258	6	84	310	47
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	80	84	79	4	53	57	33	269	6	88	323	49
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.4	11.8	17.4	32
HCM LOS	C	B	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	33%	4%	19%
Vol Thru, %	87%	35%	46%	70%
Vol Right, %	2%	32%	50%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	296	234	110	441
LT Vol	32	77	4	84
Through Vol	258	81	51	310
RT Vol	6	76	55	47
Lane Flow Rate	308	244	115	459
Geometry Grp	1	1	1	1
Degree of Util (X)	0.555	0.496	0.217	0.817
Departure Headway (Hd)	6.478	7.331	6.831	6.399
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	555	490	524	565
Service Time	4.53	5.386	4.9	4.443
HCM Lane V/C Ratio	0.555	0.498	0.219	0.812
HCM Control Delay	17.4	17.4	11.8	32
HCM Lane LOS	C	C	B	D
HCM 95th-tile Q	3.4	2.7	0.8	8.2

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2024 No Build
SAT Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	
Traffic Volume (vph)	610	82	130	519	88	124
Future Volume (vph)	610	82	130	519	88	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1835	0	1761	1958	1577	0
Flt Permitted			0.228		0.980	
Satd. Flow (perm)	1835	0	423	1958	1577	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	8					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	699	0	131	524	214	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	52.0		13.0	65.0	45.0	
Total Split (%)	47.3%		11.8%	59.1%	40.9%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effect Green (s)	62.9		76.7	75.5	24.1	
Actuated g/C Ratio	0.57		0.70	0.69	0.22	
v/c Ratio	0.66		0.33	0.39	0.62	
Control Delay	21.3		7.0	8.2	46.1	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	21.3		7.0	8.2	46.1	
LOS	C		A	A	D	
Approach Delay	21.3			8.0	46.1	
Approach LOS	C			A	D	
Queue Length 50th (ft)	321		31	161	137	
Queue Length 95th (ft)	535		m46	m232	200	
Internal Link Dist (ft)	920			1120	920	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2024 No Build
 SAT Peak Hour

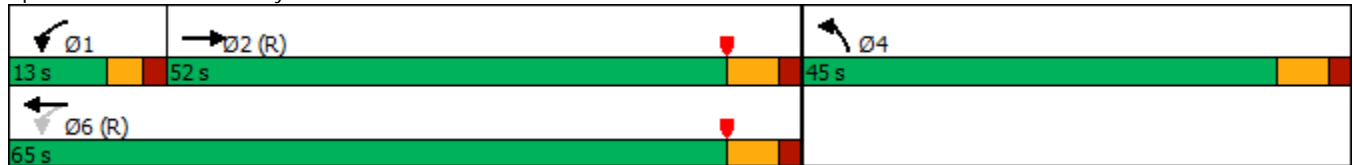


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)			150			
Base Capacity (vph)	1053		404	1343	570	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.66		0.32	0.39	0.38	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 97 (88%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 19.1
 Intersection LOS: B
 Intersection Capacity Utilization 71.9%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2024 No Build
 SAT Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	610	82	130	519	88	124
Future Volume (veh/h)	610	82	130	519	88	124
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1765	1711	2024	2090	1875	1860
Adj Flow Rate, veh/h	616	81	131	524	89	125
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	0	0	1	0	1
Cap, veh/h	985	130	496	1536	118	165
Arrive On Green	0.64	0.64	0.05	0.73	0.17	0.16
Sat Flow, veh/h	1528	201	1927	2090	690	968
Grp Volume(v), veh/h	0	697	131	524	215	0
Grp Sat Flow(s),veh/h/ln	0	1728	1927	2090	1666	0
Q Serve(g_s), s	0.0	26.5	2.3	9.8	13.5	0.0
Cycle Q Clear(g_c), s	0.0	26.5	2.3	9.8	13.5	0.0
Prop In Lane		0.12	1.00		0.41	0.58
Lane Grp Cap(c), veh/h	0	1114	496	1536	284	0
V/C Ratio(X)	0.00	0.63	0.26	0.34	0.76	0.00
Avail Cap(c_a), veh/h	0	1114	550	1536	603	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	11.7	9.1	5.2	43.7	0.0
Incr Delay (d2), s/veh	0.0	2.7	0.3	0.6	13.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	15.1	1.5	6.8	10.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	14.3	9.4	5.8	57.5	0.0
LnGrp LOS	A	B	A	A	E	A
Approach Vol, veh/h	697			655	215	
Approach Delay, s/veh	14.3			6.5	57.5	
Approach LOS	B			A	E	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.9	76.1		24.0		86.0
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	8.0	45.8		38.8		58.8
Max Q Clear Time (g_c+I1), s	4.3	28.5		15.5		11.8
Green Ext Time (p_c), s	0.1	11.7		2.2		15.7

Intersection Summary




















HCM 6th Ctrl Delay	17.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2024 No Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	793	0	1	812	100	0	0	1	48	0	35
Future Volume (vph)	16	793	0	1	812	100	0	0	1	48	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	826	0	1	950	0	0	1	0	50	36	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.8%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	16	793	0	1	812	100	0	0	1	48	0	35
Future Vol, veh/h	16	793	0	1	812	100	0	0	1	48	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	17	826	0	1	846	104	0	0	1	50	0	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	950	0	0	826	0	0	1778	1812	826	1761	1760	898
Stage 1	-	-	-	-	-	-	860	860	-	900	900	-
Stage 2	-	-	-	-	-	-	918	952	-	861	860	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	654	-	-	470	-	-	84	97	410	95	115	383
Stage 1	-	-	-	-	-	-	431	413	-	431	418	-
Stage 2	-	-	-	-	-	-	401	379	-	451	433	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	654	-	-	470	-	-	74	94	410	93	112	383
Mov Cap-2 Maneuver	-	-	-	-	-	-	74	94	-	93	112	-
Stage 1	-	-	-	-	-	-	420	402	-	420	417	-
Stage 2	-	-	-	-	-	-	362	378	-	438	422	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	13.8	53.8
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	410	654	-	-	470	-	-	93	383
HCM Lane V/C Ratio	0.003	0.025	-	-	0.002	-	-	0.538	0.095
HCM Control Delay (s)	13.8	10.6	-	-	12.7	-	-	81.8	15.4
HCM Lane LOS		B			B			F	C
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	2.4	0.3

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	560	49	152	652	15	254	3	159	34	4	14
Future Volume (vph)	21	560	49	152	652	15	254	3	159	34	4	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1783	1584	1572	1697	1608	1694	1574	0	1761	1744	0
Flt Permitted	0.397			0.280			0.745			0.547		
Satd. Flow (perm)	690	1783	1584	463	1697	1573	1329	1574	0	1014	1744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83			29			167			15
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1060			1340			300				300
Travel Time (s)		18.1			22.8			8.2				8.2
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	589	52	160	686	16	267	170	0	36	19	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	57.0	57.0	57.0	22.0	79.0	79.0	31.0	31.0		31.0	31.0	
Total Split (%)	51.8%	51.8%	51.8%	20.0%	71.8%	71.8%	28.2%	28.2%		28.2%	28.2%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	59.2	59.2	59.2	75.6	74.3	74.3	25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.54	0.54	0.54	0.69	0.68	0.68	0.23	0.23		0.23	0.23	
v/c Ratio	0.06	0.61	0.06	0.38	0.60	0.01	0.89	0.35		0.16	0.05	
Control Delay	14.0	17.2	2.2	7.2	8.8	0.5	71.3	7.7		35.4	17.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.0	17.2	2.2	7.2	8.8	0.5	71.3	7.7		35.4	17.4	
LOS	B	B	A	A	A	A	E	A		D	B	
Approach Delay		15.9			8.4			46.6			29.2	
Approach LOS		B			A			D			C	
Queue Length 50th (ft)	6	167	0	27	148	0	181	2		20	2	
Queue Length 95th (ft)	m15	285	m5	40	203	m0	#326	56		49	22	

Lanes, Volumes, Timings
 7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	371	959	890	495	1146	1072	315	500		240	425	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.61	0.06	0.32	0.60	0.01	0.85	0.34		0.15	0.04	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 4 (4%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 19.7
 Intersection LOS: B
 Intersection Capacity Utilization 84.7%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
 7: Giant Plaza Dr/Carey Ln & SR 0230

2024 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	21	560	49	152	652	15	254	3	159	34	4	14
Future Volume (veh/h)	21	560	49	152	652	15	254	3	159	34	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2047	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	22	589	30	160	686	11	267	3	102	36	4	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	545	1192	1015	620	1203	1067	377	10	344	290	131	263
Arrive On Green	1.00	1.00	1.00	0.14	1.00	1.00	0.21	0.21	0.20	0.21	0.21	0.20
Sat Flow, veh/h	824	2047	1743	1666	1736	1540	1489	48	1642	1395	626	1253
Grp Volume(v), veh/h	22	589	30	160	686	11	267	0	105	36	0	12
Grp Sat Flow(s),veh/h/ln	824	2047	1743	1666	1736	1540	1489	0	1691	1395	0	1879
Q Serve(g_s), s	0.0	0.0	0.0	3.9	0.0	0.0	19.0	0.0	5.8	2.4	0.0	0.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.9	0.0	0.0	19.1	0.0	5.8	7.8	0.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.67
Lane Grp Cap(c), veh/h	545	1192	1015	620	1203	1067	377	0	354	290	0	394
V/C Ratio(X)	0.04	0.49	0.03	0.26	0.57	0.01	0.71	0.00	0.30	0.12	0.00	0.03
Avail Cap(c_a), veh/h	545	1192	1015	769	1203	1067	418	0	401	329	0	446
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.0	0.0	0.0	41.9	0.0	37.1	39.7	0.0	34.9
Incr Delay (d2), s/veh	0.1	1.5	0.1	0.2	1.6	0.0	4.9	0.0	0.5	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.9	0.0	2.0	1.0	0.0	12.0	0.0	4.5	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.1	1.5	0.1	6.2	1.6	0.0	46.8	0.0	37.5	39.9	0.0	34.9
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h		641			857			372				48
Approach Delay, s/veh		1.4			2.4			44.2				38.6
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.2	69.9		28.0		82.0		28.0				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	16.5	50.2		* 25		72.2		* 25				
Max Q Clear Time (g_c+I1), s	6.4	2.5		10.3		2.5		21.6				
Green Ext Time (p_c), s	0.3	0.7		0.1		0.8		0.5				

Intersection Summary

HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2024 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	507	12	4	635	66	9	3	10	61	38	127
Future Volume (vph)	106	507	12	4	635	66	9	3	10	61	38	127
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1742	0	1744	1818	1561	0	1765	0	1719	1573	0
Flt Permitted	0.303			0.455				0.601		0.742		
Satd. Flow (perm)	534	1742	0	835	1818	1561	0	1082	0	1342	1573	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				80		11			137	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	558	0	4	683	71	0	24	0	66	178	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	14.0	82.0		68.0	68.0	68.0	28.0	28.0		28.0	28.0	
Total Split (%)	12.7%	74.5%		61.8%	61.8%	61.8%	25.5%	25.5%		25.5%	25.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	89.0	88.1		75.5	75.5	75.5		11.9		11.9	11.9	
Actuated g/C Ratio	0.81	0.80		0.69	0.69	0.69		0.11		0.11	0.11	
v/c Ratio	0.22	0.40		0.01	0.55	0.06		0.19		0.46	0.61	
Control Delay	4.0	4.9		6.5	12.7	1.8		32.1		55.0	22.1	
Queue Delay	0.0	0.0		0.0	0.2	0.0		0.0		0.0	0.0	
Total Delay	4.0	4.9		6.5	12.9	1.8		32.1		55.0	22.1	
LOS	A	A		A	B	A		C		D	C	
Approach Delay		4.8			11.8			32.1			31.0	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	14	80		1	273	2		8		44	27	
Queue Length 95th (ft)	m30	184		m3	443	8		33		86	94	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2024 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	530	1395		572	1247	1095		238		285	442	
Starvation Cap Reductn	0	0		0	131	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.22	0.40		0.01	0.61	0.06		0.10		0.23	0.40	

Intersection Summary	
Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	9 (8%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.1
Intersection LOS:	B
Intersection Capacity Utilization	64.7%
ICU Level of Service	C
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2024 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	507	12	4	635	66	9	3	10	61	38	127
Future Volume (veh/h)	106	507	12	4	635	66	9	3	10	61	38	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1711	1949	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	114	545	11	4	683	58	10	3	7	66	41	66
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	620	1350	27	711	1406	1200	67	27	24	189	59	96
Arrive On Green	0.09	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1629	1657	33	889	1935	1652	187	291	257	1375	631	1016
Grp Volume(v), veh/h	114	0	556	4	683	58	20	0	0	66	0	107
Grp Sat Flow(s),veh/h/ln	1629	0	1691	889	1935	1652	735	0	0	1375	0	1647
Q Serve(g_s), s	1.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	6.9
Cycle Q Clear(g_c), s	1.7	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	5.4	0.0	6.9
Prop In Lane	1.00		0.02	1.00		1.00	0.50		0.35	1.00		0.62
Lane Grp Cap(c), veh/h	620	0	1378	711	1406	1200	112	0	0	189	0	155
V/C Ratio(X)	0.18	0.00	0.40	0.01	0.49	0.05	0.18	0.00	0.00	0.35	0.00	0.69
Avail Cap(c_a), veh/h	684	0	1378	711	1406	1200	283	0	0	352	0	350
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.00	0.78	0.90	0.90	0.90	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.4	0.0	0.0	0.0	0.0	0.0	46.2	0.0	0.0	47.6	0.0	48.6
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.1	0.1	0.8	0.0	0.0	1.1	0.0	5.4
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.5	0.0	0.8	0.0	1.0	0.0	0.0	3.2	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.5	0.0	0.7	0.0	1.1	0.1	46.9	0.0	0.0	48.7	0.0	53.9
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		670			745			20			173	
Approach Delay, s/veh		1.0			1.0			46.9			51.9	
Approach LOS		A			A			D			D	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.7	85.3		15.0		95.0		15.0				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	8.5	61.6		22.4		75.6		22.4				
Max Q Clear Time (g_c+I1), s	4.2	2.5		8.9		2.5		9.0				
Green Ext Time (p_c), s	0.1	0.9		0.5		0.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	485	23	20	518	13	66	23	17	15	20	74
Future Volume (vph)	54	485	23	20	518	13	66	23	17	15	20	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1744	0	1620	1698	0	1541	1660	0	0	1821	0
Flt Permitted	0.426			0.439			0.538				0.952	
Satd. Flow (perm)	740	1744	0	749	1698	0	873	1660	0	0	1746	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			18				78
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	535	0	21	559	0	69	42	0	0	115	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	64.0	64.0		64.0	64.0		46.0	46.0		46.0	46.0	
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%	41.8%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	86.8	86.8		86.8	86.8		13.3	13.3				13.3
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.12	0.12				0.12
v/c Ratio	0.10	0.39		0.04	0.42		0.66	0.19				0.41
Control Delay	5.2	6.3		3.5	5.3		73.0	29.1				20.7
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0				0.0
Total Delay	5.2	6.5		3.5	5.3		73.0	29.1				20.7
LOS	A	A		A	A		E	C				C
Approach Delay		6.4			5.2			56.4				20.7
Approach LOS		A			A			E				C
Queue Length 50th (ft)	11	149		3	99		47	15				24
Queue Length 95th (ft)	27	194		10	194		91	46				73
Internal Link Dist (ft)		530			920			270				920

Lanes, Volumes, Timings
 13: Sheaffer Rd & SR 0230

2024 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	583	1376		591	1339		325	630			699	
Starvation Cap Reductn	0	207		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	3		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.10	0.46		0.04	0.42		0.21	0.07			0.16	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.0
Intersection LOS:	B
Intersection Capacity Utilization	67.9%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2024 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	485	23	20	518	13	66	23	17	15	20	74
Future Volume (veh/h)	54	485	23	20	518	13	66	23	17	15	20	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1736	1750	1912	1912	1912	1722	1750	1750	1949	2027	1949
Adj Flow Rate, veh/h	57	511	19	21	545	13	69	24	6	16	21	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	0	0	0	0	2	0	0	0	0	0
Cap, veh/h	667	1390	52	812	1554	37	170	100	25	62	50	60
Arrive On Green	1.00	1.00	1.00	0.84	0.84	0.83	0.07	0.07	0.07	0.07	0.07	0.07
Sat Flow, veh/h	784	1663	62	893	1859	44	1245	1351	338	287	681	811
Grp Volume(v), veh/h	57	0	530	21	0	558	69	0	30	68	0	0
Grp Sat Flow(s),veh/h/ln	784	0	1725	893	0	1904	1245	0	1689	1779	0	0
Q Serve(g_s), s	0.7	0.0	0.0	0.4	0.0	7.5	0.9	0.0	1.8	1.9	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	0.4	0.0	7.5	4.9	0.0	1.8	4.0	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.02	1.00		0.20	0.24		0.46
Lane Grp Cap(c), veh/h	667	0	1442	812	0	1591	170	0	125	156	0	0
V/C Ratio(X)	0.09	0.00	0.37	0.03	0.00	0.35	0.41	0.00	0.24	0.44	0.00	0.00
Avail Cap(c_a), veh/h	667	0	1442	812	0	1591	541	0	630	675	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.00	0.92	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.0	0.0	1.5	0.0	2.1	49.3	0.0	48.1	49.3	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.1	0.0	0.6	1.6	0.0	1.0	1.9	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.5	0.1	0.0	2.9	3.4	0.0	1.4	3.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	0.0	0.7	1.6	0.0	2.7	50.9	0.0	49.1	51.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		587			579			99				68
Approach Delay, s/veh		0.7			2.7			50.3				51.2
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		96.8		13.2		96.8		13.2				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 58		40.0		* 58		40.0				
Max Q Clear Time (g_c+I1), s		2.0		6.0		9.5		6.9				
Green Ext Time (p_c), s		19.1		0.2		20.2		0.3				

Intersection Summary

HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	336	1	59	204	112	0	0	127	27
Future Volume (vph)	0	0	0	336	1	59	204	112	0	0	127	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1642	1442	1574	1641	0	0	1740	1578
Flt Permitted					0.953		0.497					
Satd. Flow (perm)	0	0	0	0	1642	1442	823	1641	0	0	1740	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	4%	5%	2%	2%	1%	11%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	351	61	213	117	0	0	132	28
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				25.0	25.0	25.0	13.0	35.0			22.0	22.0
Total Split (%)				41.7%	41.7%	41.7%	21.7%	58.3%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					16.5	16.5	27.3	27.3			14.2	14.2
Actuated g/C Ratio					0.31	0.31	0.51	0.51			0.27	0.27
v/c Ratio					0.69	0.11	0.40	0.14			0.29	0.05
Control Delay					24.3	0.4	10.7	8.4			18.6	0.2
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					24.3	0.4	10.7	8.4			18.6	0.2
LOS					C	A	B	A			B	A
Approach Delay					20.7			9.9			15.4	
Approach LOS					C			A			B	
Queue Length 50th (ft)					92	0	35	18			33	0
Queue Length 95th (ft)					183	0	78	45			75	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 SAT Peak Hour

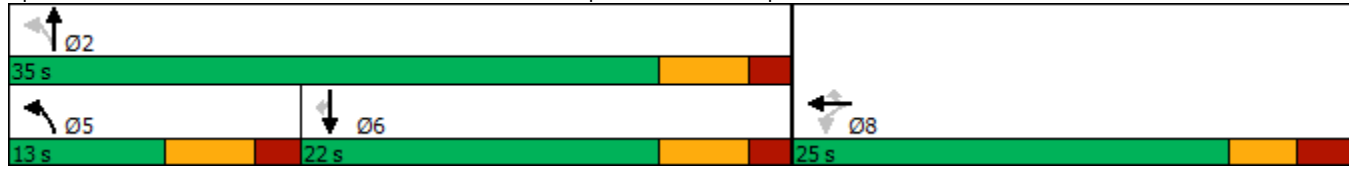


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					636	659	534	930			559	612
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.55	0.09	0.40	0.13			0.24	0.05

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	53.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	15.8
Intersection LOS:	B
Intersection Capacity Utilization	54.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (veh/h)	0	0	0	336	1	59	204	112	0	0	127	27
Future Volume (veh/h)	0	0	0	336	1	59	204	112	0	0	127	27
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1846	1875	1875	1722	1707	0	0	1860	1787
Adj Flow Rate, veh/h				350	1	0	212	117	0	0	132	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	0	4	5	0	0	1	11
Cap, veh/h				474	1		661	913	0	0	506	
Arrive On Green				0.25	0.27	0.00	0.16	0.53	0.00	0.00	0.27	0.00
Sat Flow, veh/h				1780	5	1589	1640	1707	0	0	1860	1514
Grp Volume(v), veh/h				351	0	0	212	117	0	0	132	0
Grp Sat Flow(s),veh/h/ln				1785	0	1589	1640	1707	0	0	1860	1514
Q Serve(g_s), s				8.7	0.0	0.0	3.7	1.6	0.0	0.0	2.7	0.0
Cycle Q Clear(g_c), s				8.7	0.0	0.0	3.7	1.6	0.0	0.0	2.7	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				476	0		661	913	0	0	506	
V/C Ratio(X)				0.74	0.00		0.32	0.13	0.00	0.00	0.26	
Avail Cap(c_a), veh/h				765	0		675	1071	0	0	661	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.5	0.0	0.0	7.9	5.6	0.0	0.0	13.6	0.0
Incr Delay (d2), s/veh				2.3	0.0	0.0	0.3	0.2	0.0	0.0	1.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				6.3	0.0	0.0	1.7	0.7	0.0	0.0	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				18.8	0.0	0.0	8.2	5.8	0.0	0.0	14.6	0.0
LnGrp LOS				B	A		A	A	A	A	B	
Approach Vol, veh/h					351			329			132	
Approach Delay, s/veh					18.8			7.3			14.6	
Approach LOS					B			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.6			12.6	18.0		17.2				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		19.5				
Max Q Clear Time (g_c+I1), s		3.6			5.7	4.7		10.7				
Green Ext Time (p_c), s		2.2			0.1	1.5		1.2				

Intersection Summary


















HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 No Build
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	207	0	0	0	0	285	344	86	379	0
Future Volume (vph)	23	0	207	0	0	0	0	285	344	86	379	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1621	1554	0	0	0	0	1669	0	1762	1801	0
Flt Permitted		0.950								0.950		
Satd. Flow (perm)	0	1621	1554	0	0	0	0	1669	0	1762	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	0%	2%	2%	2%	2%	2%	4%	2%	0%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	223	0	0	0	0	676	0	92	408	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th TWSC
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 No Build
 SAT Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	23	0	207	0	0	0	0	285	344	86	379	0
Future Vol, veh/h	23	0	207	0	0	0	0	285	344	86	379	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	13	0	2	2	2	2	2	4	2	0	3	2
Mvmt Flow	25	0	223	0	0	0	0	306	370	92	408	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	898	898	408	-	0	0	306	0	0
Stage 1	592	592	-	-	-	-	-	-	-
Stage 2	306	306	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.9	5.92	-	-	-	3.9	-	-
Critical Hdwy Stg 1	4.93	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.93	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.1	-	-	-	3	-	-
Pot Cap-1 Maneuver	321	326	704	0	-	-	976	-	0
Stage 1	659	549	-	0	-	-	-	-	0
Stage 2	869	700	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	291	0	704	-	-	-	976	-	-
Mov Cap-2 Maneuver	291	0	-	-	-	-	-	-	-
Stage 1	659	0	-	-	-	-	-	-	-
Stage 2	787	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	291	704	976	-
HCM Lane V/C Ratio	-	-	0.085	0.316	0.095	-
HCM Control Delay (s)	-	-	18.5	12.5	9.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	1.4	0.3	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 No Build
 SAT Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	11	13	603	601	3
Future Volume (vph)	6	11	13	603	601	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1556	0	0	1800	1796	0
Flt Permitted	0.984			0.999		
Satd. Flow (perm)	1556	0	0	1800	1796	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	17%	0%	0%	3%	1%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	655	642	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.2% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	11	13	603	601	3
Future Vol, veh/h	6	11	13	603	601	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	0	0	3	1	33
Mvmt Flow	6	12	14	641	639	3

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1310	641	642	0	-	0
Stage 1	641	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Critical Hdwy	6.57	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.2	3.1	3	-	-	-
Pot Cap-1 Maneuver	174	501	773	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	169	501	773	-	-	-
Mov Cap-2 Maneuver	169	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	530	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	773	-	296	-	-
HCM Lane V/C Ratio	0.018	-	0.061	-	-
HCM Control Delay (s)	9.7	0	18	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	23	53	11	21	32	29	445	8	19	424	179
Future Volume (vph)	151	23	53	11	21	32	29	445	8	19	424	179
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1683	0	1572	1636	0	1620	1710	0	1550	1685	0
Flt Permitted	0.720			0.705			0.354			0.461		
Satd. Flow (perm)	1228	1683	0	1167	1636	0	604	1710	0	752	1685	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			34			2				60
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	0%	3%	0%	5%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	80	0	12	56	0	31	476	0	20	634	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	20.0	20.0		20.0	20.0		40.0	40.0		40.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.7	12.7		12.4	12.4		40.5	40.5		40.5	40.5	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.68	0.68		0.68	0.68	
v/c Ratio	0.61	0.20		0.05	0.15		0.08	0.41		0.04	0.55	
Control Delay	31.5	9.8		17.9	11.0		5.4	7.9		5.8	8.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.5	9.8		17.9	11.0		5.4	7.9		5.8	8.9	
LOS	C	A		B	B		A	A		A	A	
Approach Delay		24.2			12.3			7.8			8.8	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)	51	7		3	6		4	84		3	114	
Queue Length 95th (ft)	102	35		14	29		m16	196		10	217	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2024 No Build
 SAT Peak Hour

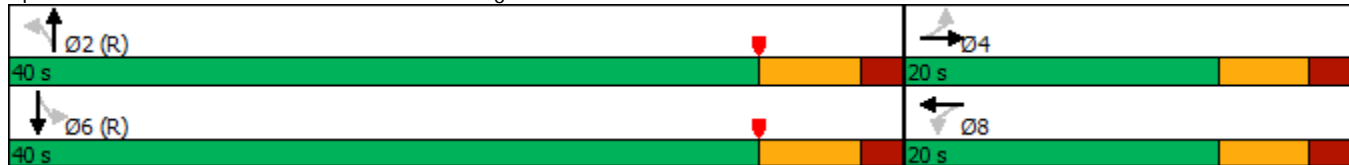


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	307	462		291	434		407	1155		507	1157	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.52	0.17		0.04	0.13		0.08	0.41		0.04	0.55	

Intersection Summary






















Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 11.1 Intersection LOS: B
 Intersection Capacity Utilization 59.3% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2024 No Build
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	23	53	11	21	32	29	445	8	19	424	179
Future Volume (veh/h)	151	23	53	11	21	32	29	445	8	19	424	179
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1750	1820	1708	1912	1869	1912	1878	1935	1949
Adj Flow Rate, veh/h	159	24	29	12	22	20	31	468	7	20	446	154
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	0	0	3	0	3	0	5	1	0
Cap, veh/h	346	152	184	315	157	142	518	1188	18	515	889	307
Arrive On Green	0.18	0.18	0.16	0.18	0.18	0.16	0.21	0.21	0.21	0.65	0.65	0.63
Sat Flow, veh/h	1439	852	1029	1264	878	798	837	1837	27	923	1375	475
Grp Volume(v), veh/h	159	0	53	12	0	42	31	0	475	20	0	600
Grp Sat Flow(s),veh/h/ln	1439	0	1881	1264	0	1676	837	0	1864	923	0	1849
Q Serve(g_s), s	6.3	0.0	1.4	0.5	0.0	1.3	1.9	0.0	13.1	0.8	0.0	10.3
Cycle Q Clear(g_c), s	7.6	0.0	1.4	1.9	0.0	1.3	12.2	0.0	13.1	13.9	0.0	10.3
Prop In Lane	1.00		0.55	1.00		0.48	1.00		0.01	1.00		0.26
Lane Grp Cap(c), veh/h	346	0	335	315	0	299	518	0	1205	515	0	1196
V/C Ratio(X)	0.46	0.00	0.16	0.04	0.00	0.14	0.06	0.00	0.39	0.04	0.00	0.50
Avail Cap(c_a), veh/h	449	0	470	406	0	419	518	0	1205	515	0	1196
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	21.1	21.7	0.0	21.0	17.5	0.0	13.5	10.0	0.0	5.6
Incr Delay (d2), s/veh	1.0	0.0	0.2	0.0	0.0	0.2	0.2	0.0	0.9	0.1	0.0	1.5
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	3.7	0.0	1.1	0.2	0.0	0.9	0.8	0.0	10.6	0.3	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	0.0	21.3	21.7	0.0	21.2	17.7	0.0	14.4	10.2	0.0	7.1
LnGrp LOS	C	A	C	C	A	C	B	A	B	B	A	A
Approach Vol, veh/h		212			54			506			620	
Approach Delay, s/veh		24.0			21.3			14.6			7.2	
Approach LOS		C			C			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.3		15.7		44.3		15.7				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		33.5		14.0		33.5		14.0				
Max Q Clear Time (g_c+I1), s		15.1		9.6		12.3		3.9				
Green Ext Time (p_c), s		9.3		0.3		13.2		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				13.0								
HCM 6th LOS				B								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (vph)	5	1	12	23	0	7	15	474	7	11	493	7
Future Volume (vph)	5	1	12	23	0	7	15	474	7	11	493	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1670	1581	0	1698	0	0	1668	0	0	1722	1648
Flt Permitted					0.986			0.983			0.988	
Satd. Flow (perm)	0	1740	1581	0	1739	0	0	1643	0	0	1703	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			2				45
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	13	0	31	0	0	522	0	0	531	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	16.0	16.0	16.0	16.0	16.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	73.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		7.0	7.0		7.0			53.2			53.2	53.2
Actuated g/C Ratio		0.12	0.12		0.12			0.89			0.89	0.89
v/c Ratio		0.03	0.06		0.12			0.36			0.35	0.00
Control Delay		23.5	0.5		5.0			2.9			1.5	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		23.5	0.5		5.0			2.9			1.5	0.0
LOS		C	A		A			A			A	A
Approach Delay		7.8			5.0			2.9			1.5	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2	0		0			0			0	0
Queue Length 95th (ft)		11	0		12			104			13	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		333	347		377			1457			1510	1466
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.02	0.04		0.08			0.36			0.35	0.00

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 33 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.36
 Intersection Signal Delay: 2.3
 Intersection LOS: A
 Intersection Capacity Utilization 56.0%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	5	1	12	23	0	7	15	474	7	11	493	7
Future Volume (veh/h)	5	1	12	23	0	7	15	474	7	11	493	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1736	1778	1875	1846	1950
Adj Flow Rate, veh/h	5	1	6	24	0	3	16	499	7	12	519	7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	171	12	69	161	0	6	76	1333	18	71	1454	1319
Arrive On Green	0.03	0.04	0.04	0.03	0.00	0.03	0.78	0.80	0.78	1.00	1.00	1.00
Sat Flow, veh/h	1397	279	1586	1109	0	139	18	1670	23	12	1822	1652
Grp Volume(v), veh/h	6	0	6	27	0	0	522	0	0	531	0	7
Grp Sat Flow(s),veh/h/ln	1676	0	1586	1248	0	0	1711	0	0	1833	0	1652
Q Serve(g_s), s	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.2	1.3	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.83		1.00	0.89		0.11	0.03		0.01	0.02		1.00
Lane Grp Cap(c), veh/h	155	0	69	147	0	0	1399	0	0	1494	0	1319
V/C Ratio(X)	0.04	0.00	0.09	0.18	0.00	0.00	0.37	0.00	0.00	0.36	0.00	0.01
Avail Cap(c_a), veh/h	365	0	304	359	0	0	1399	0	0	1494	0	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.83
Uniform Delay (d), s/veh	28.0	0.0	27.6	28.7	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.6	0.0	0.0	0.8	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.2	0.0	0.2	0.7	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.1	0.0	28.1	29.3	0.0	0.0	2.5	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		12			27			522				538
Approach Delay, s/veh		28.1			29.3			2.5				0.5
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		52.9		7.1		52.9		7.1				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		38.0		10.5		38.0		10.5				
Max Q Clear Time (g_c+I1), s		7.3		2.2		2.0		3.3				
Green Ext Time (p_c), s		14.1		0.0		15.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				2.5								
HCM 6th LOS				A								

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	287	55	26	309	135	70	163	14	125	172	179
Future Volume (vph)	201	287	55	26	309	135	70	163	14	125	172	179
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%				4%
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1573	1809	1435	1527	1731	1592	1736	1845	0	1558	1624	1499
Flt Permitted	0.283			0.581			0.646			0.587		
Satd. Flow (perm)	468	1809	1435	934	1731	1592	1180	1845	0	962	1624	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160			255		5				247
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1025				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	4%	0%	2%	0%	5%	0%	4%	5%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	205	293	56	27	315	138	71	180	0	128	176	183
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	13.5	37.5	37.5	24.0	24.0	24.0	14.0	23.5		14.0	23.5	23.5
Total Split (%)	18.0%	50.0%	50.0%	32.0%	32.0%	32.0%	18.7%	31.3%		18.7%	31.3%	31.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	30.1	30.1	30.1	16.3	16.3	16.3	18.9	13.0		20.2	15.9	15.9
Actuated g/C Ratio	0.46	0.46	0.46	0.25	0.25	0.25	0.29	0.20		0.31	0.24	0.24
v/c Ratio	0.58	0.35	0.08	0.12	0.73	0.24	0.18	0.49		0.35	0.45	0.33
Control Delay	21.4	14.9	0.2	23.1	36.5	0.9	14.6	28.8		17.0	27.6	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	21.4	14.9	0.2	23.1	36.5	0.9	14.6	28.8		17.0	27.6	3.1
LOS	C	B	A	C	D	A	B	C		B	C	A
Approach Delay		15.8			25.5			24.8				15.6
Approach LOS		B			C			C				B
Queue Length 50th (ft)	54	81	0	9	125	0	19	67		35	69	0
Queue Length 95th (ft)	#115	149	0	29	#248	0	43	126		71	129	21
Internal Link Dist (ft)		860			410			945				560

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
 SAT Peak Hour

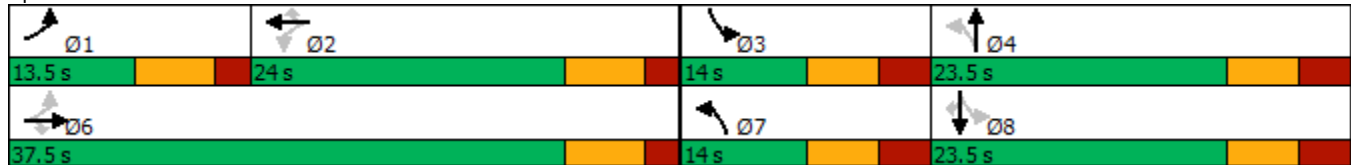


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	354	913	803	272	505	645	412	512		372	485	621
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.58	0.32	0.07	0.10	0.62	0.21	0.17	0.35		0.34	0.36	0.29

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 65.5
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 19.7
 Intersection LOS: B
 Intersection Capacity Utilization 65.3%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 No Build
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	287	55	26	309	135	70	163	14	125	172	179
Future Volume (veh/h)	201	287	55	26	309	135	70	163	14	125	172	179
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1738	1794	1837	2173	2186	2173	1655	1641	1711
Adj Flow Rate, veh/h	205	293	50	27	315	0	71	166	11	128	176	101
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	0	0	4	0	2	0	5	0	4	5	0
Cap, veh/h	418	835	707	339	404		367	276	18	372	300	265
Arrive On Green	0.14	0.45	0.45	0.23	0.23	0.00	0.07	0.14	0.12	0.11	0.18	0.18
Sat Flow, veh/h	1723	1837	1557	964	1794	1557	2069	2027	134	1576	1641	1450
Grp Volume(v), veh/h	205	293	50	27	315	0	71	0	177	128	176	101
Grp Sat Flow(s),veh/h/ln	1723	1837	1557	964	1794	1557	2069	0	2161	1576	1641	1450
Q Serve(g_s), s	4.7	6.1	1.1	1.3	9.7	0.0	1.7	0.0	4.5	3.9	5.8	3.6
Cycle Q Clear(g_c), s	4.7	6.1	1.1	1.3	9.7	0.0	1.7	0.0	4.5	3.9	5.8	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	418	835	707	339	404		367	0	294	372	300	265
V/C Ratio(X)	0.49	0.35	0.07	0.08	0.78		0.19	0.00	0.60	0.34	0.59	0.38
Avail Cap(c_a), veh/h	418	998	845	425	563		511	0	642	408	487	430
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.5	10.4	9.1	18.2	21.5	0.0	19.5	0.0	24.0	18.3	22.1	21.2
Incr Delay (d2), s/veh	0.9	0.1	0.0	0.0	2.9	0.0	0.3	0.0	2.0	0.5	1.8	0.9
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	2.8	3.4	0.5	0.5	6.9	0.0	1.4	0.0	4.3	2.3	3.8	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.4	10.5	9.1	18.2	24.3	0.0	19.8	0.0	26.0	18.8	23.9	22.1
LnGrp LOS	B	B	A	B	C		B	A	C	B	C	C
Approach Vol, veh/h		548			342			248			405	
Approach Delay, s/veh		11.8			23.9			24.2			21.8	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	13.5	18.8	12.6	14.0		32.3	9.9	16.8				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	7.0	17.5	7.0	16.5		31.0	7.0	16.5				
Max Q Clear Time (g_c+I1), s	7.2	12.2	6.4	6.5		8.6	4.2	8.3				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.5		0.1	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
29: Colebrook Rd & Harrisburg Ave

2024 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	37	49	32	15	32	47	19	174	7	24	177	33
Future Volume (vph)	37	49	32	15	32	47	19	174	7	24	177	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1680	0	0	1631	0	0	1770	0	0	1850	0
Flt Permitted		0.984			0.992			0.995			0.995	
Satd. Flow (perm)	0	1680	0	0	1631	0	0	1770	0	0	1850	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1010			1132			1000			1025	
Travel Time (s)		19.7			22.1			27.3			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	4%	0%	0%	3%	0%	5%	2%	0%	0%	2%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	123	0	0	98	0	0	208	0	0	243	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.5%
ICU Level of Service	A
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	49	32	15	32	47	19	174	7	24	177	33
Future Vol, veh/h	37	49	32	15	32	47	19	174	7	24	177	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	8	4	0	0	3	0	5	2	0	0	2	9
Mvmt Flow	39	51	33	16	33	49	20	181	7	25	184	34
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	8.7	9.8	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	31%	16%	10%
Vol Thru, %	87%	42%	34%	76%
Vol Right, %	4%	27%	50%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	200	118	94	234
LT Vol	19	37	15	24
Through Vol	174	49	32	177
RT Vol	7	32	47	33
Lane Flow Rate	208	123	98	244
Geometry Grp	1	1	1	1
Degree of Util (X)	0.279	0.175	0.132	0.314
Departure Headway (Hd)	4.82	5.124	4.862	4.64
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	742	694	730	770
Service Time	2.88	3.193	2.936	2.697
HCM Lane V/C Ratio	0.28	0.177	0.134	0.317
HCM Control Delay	9.8	9.3	8.7	9.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.6	0.5	1.3

Lanes, Volumes, Timings
32: SR 0230 & Ridge Run Rd

2024 No Build
SAT Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	387	421	33	31	3
Future Volume (vph)	3	387	421	33	31	3
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1793	0	1658	0
Flt Permitted	0.950				0.956	
Satd. Flow (perm)	1754	1828	1793	0	1658	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1310	
Travel Time (s)		33.5	12.4		25.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	403	473	0	35	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.2% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	387	421	33	31	3
Future Vol, veh/h	3	387	421	33	31	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	3	403	439	34	32	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	473	0	-	0	865
Stage 1	-	-	-	-	456
Stage 2	-	-	-	-	409
Critical Hdwy	4.1	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	847	-	-	-	329
Stage 1	-	-	-	-	692
Stage 2	-	-	-	-	733
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	847	-	-	-	328
Mov Cap-2 Maneuver	-	-	-	-	474
Stage 1	-	-	-	-	689
Stage 2	-	-	-	-	733

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13
HCM LOS			B

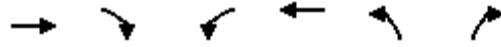
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	847	-	-	-	484
HCM Lane V/C Ratio	0.004	-	-	-	0.073
HCM Control Delay (s)	9.3	-	-	-	13
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

APPENDIX L3

2024 BUILD CONDITION ANALYSES

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2024 Build
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	445	78	88	387	142	151
Future Volume (vph)	445	78	88	387	142	151
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1685	0	1662	1766	1530	0
Flt Permitted			0.219		0.976	
Satd. Flow (perm)	1685	0	383	1766	1530	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	15					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)						2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	12%	6%	12%	4%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	581	0	98	430	326	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	34.0		12.0	46.0	24.0	
Total Split (%)	48.6%		17.1%	65.7%	34.3%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	31.6		42.3	41.1	18.5	
Actuated g/C Ratio	0.45		0.60	0.59	0.26	
v/c Ratio	0.76		0.26	0.41	0.81	
Control Delay	25.4		5.6	6.5	41.9	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	25.4		5.6	6.5	41.9	
LOS	C		A	A	D	
Approach Delay	25.4			6.3	41.9	
Approach LOS	C			A	D	
Queue Length 50th (ft)	211		12	58	130	
Queue Length 95th (ft)	#390		23	82	#256	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

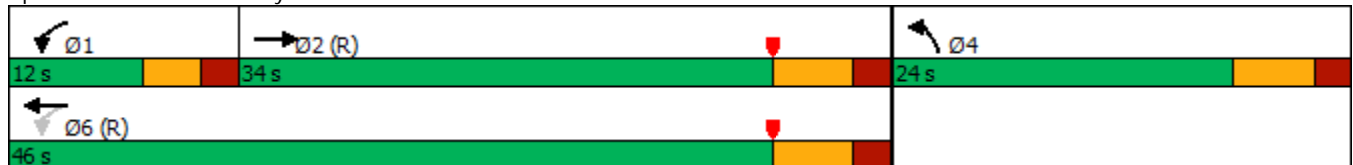
2024 Build
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	768		377	1037	410	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.76		0.26	0.41	0.80	

Intersection Summary
 Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 61 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 22.1
 Intersection LOS: C
 Intersection Capacity Utilization 65.1%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2024 Build
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	445	78	88	387	142	151
Future Volume (veh/h)	445	78	88	387	142	151
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1648	1542	1938	1927	1818	1846
Adj Flow Rate, veh/h	494	81	98	430	158	168
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	9	12	6	12	4	2
Cap, veh/h	656	108	400	1171	191	203
Arrive On Green	0.48	0.46	0.15	1.00	0.24	0.23
Sat Flow, veh/h	1381	226	1846	1927	785	834
Grp Volume(v), veh/h	0	575	98	430	327	0
Grp Sat Flow(s),veh/h/ln	0	1607	1846	1927	1624	0
Q Serve(g_s), s	0.0	20.5	1.6	0.0	13.4	0.0
Cycle Q Clear(g_c), s	0.0	20.5	1.6	0.0	13.4	0.0
Prop In Lane		0.14	1.00		0.48	0.51
Lane Grp Cap(c), veh/h	0	764	400	1171	396	0
V/C Ratio(X)	0.00	0.75	0.24	0.37	0.83	0.00
Avail Cap(c_a), veh/h	0	764	473	1171	436	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	15.1	9.7	0.0	25.3	0.0
Incr Delay (d2), s/veh	0.0	6.8	0.3	0.9	16.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	12.4	0.9	0.5	10.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	21.8	10.0	0.9	41.4	0.0
LnGrp LOS	A	C	B	A	D	A
Approach Vol, veh/h	575			528	327	
Approach Delay, s/veh	21.8			2.6	41.4	
Approach LOS	C			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.3	38.5		22.3		47.7
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	27.8		17.8		39.8
Max Q Clear Time (g_c+I1), s	3.6	22.5		15.4		2.0
Green Ext Time (p_c), s	0.1	3.6		0.7		11.3

Intersection Summary




















HCM 6th Ctrl Delay	19.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2024 Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	624	1	0	568	45	0	0	2	45	0	34
Future Volume (vph)	25	624	1	0	568	45	0	0	2	45	0	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	8%	7%	0%	0%	9%	10%	0%	0%	50%	0%	0%	18%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	702	0	0	689	0	0	2	0	51	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.9%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	25	624	1	0	568	45	0	0	2	45	0	34
Future Vol, veh/h	25	624	1	0	568	45	0	0	2	45	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	8	7	0	0	9	10	0	0	50	0	0	18
Mvmt Flow	28	701	1	0	638	51	0	0	2	51	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	689	0	0	702	0	0	1442	1447	703	1424	1422	665
Stage 1	-	-	-	-	-	-	758	758	-	664	664	-
Stage 2	-	-	-	-	-	-	684	689	-	760	758	-
Critical Hdwy	3.9	-	-	5.5	-	-	6.7	6.1	6.5	6.5	5.9	6.1
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3.1	-	-	3	-	-	3	4	3.6	3	4	3.462
Pot Cap-1 Maneuver	730	-	-	542	-	-	141	156	391	157	174	456
Stage 1	-	-	-	-	-	-	487	455	-	567	515	-
Stage 2	-	-	-	-	-	-	533	485	-	507	475	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	730	-	-	542	-	-	125	150	391	151	167	456
Mov Cap-2 Maneuver	-	-	-	-	-	-	125	150	-	151	167	-
Stage 1	-	-	-	-	-	-	468	438	-	545	515	-
Stage 2	-	-	-	-	-	-	488	485	-	484	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	14.3	28.9
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	391	730	-	-	542	-	-	151	456
HCM Lane V/C Ratio	0.006	0.038	-	-	-	-	-	0.335	0.084
HCM Control Delay (s)	14.3	10.1	-	-	0	-	-	40.4	13.6
HCM Lane LOS		B	B	-	-	A	-	E	B
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	1.4	0.3

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (vph)	3	541	44	62	504	6	101	2	71	4	3	2
Future Volume (vph)	3	541	44	62	504	6	101	2	71	4	3	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1667	1552	1541	1558	1608	1645	1516	0	1761	1842	0
Flt Permitted	0.454			0.303			0.754			0.704		
Satd. Flow (perm)	789	1667	1552	492	1558	1608	1302	1516	0	1305	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			45		79				2
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1060			1340			300				300
Travel Time (s)		18.1			22.8			8.2				8.2
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	2%	2%	10%	0%	3%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	601	49	69	560	7	112	81	0	4	5	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	40.0	40.0	40.0	13.0	53.0	53.0	17.0	17.0		17.0	17.0	
Total Split (%)	57.1%	57.1%	57.1%	18.6%	75.7%	75.7%	24.3%	24.3%		24.3%	24.3%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	44.6	44.6	44.6	52.3	52.1	52.1	10.8	10.8		10.6	10.6	
Actuated g/C Ratio	0.64	0.64	0.64	0.75	0.74	0.74	0.15	0.15		0.15	0.15	
v/c Ratio	0.01	0.57	0.05	0.14	0.48	0.01	0.56	0.27		0.02	0.02	
Control Delay	6.7	8.5	0.1	1.5	3.1	0.0	38.3	9.8		24.5	21.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.7	8.5	0.1	1.5	3.1	0.0	38.3	9.8		24.5	21.0	
LOS	A	A	A	A	A	A	D	A		C	C	
Approach Delay		7.9			2.9			26.3			22.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	91	0	6	60	0	44	1		1	1	
Queue Length 95th (ft)	m1	m125	m0	1	11	m0	92	34		9	10	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	502	1062	1036	494	1160	1208	225	327		225	320	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.01	0.57	0.05	0.14	0.48	0.01	0.50	0.25		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 29 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.57
 Intersection Signal Delay: 8.2
 Intersection LOS: A
 Intersection Capacity Utilization 66.8%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	3	541	44	62	504	6	101	2	71	4	3	2
Future Volume (veh/h)	3	541	44	62	504	6	101	2	71	4	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	1947	2032	1722	1609	1820	1944	1986	1929	2024	2104	2024
Adj Flow Rate, veh/h	3	601	33	69	560	6	112	2	41	4	3	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	8	2	2	10	0	3	0	4	0	0	0
Cap, veh/h	672	1191	1053	633	1169	1121	279	9	194	256	142	94
Arrive On Green	1.00	1.00	1.00	0.10	1.00	1.00	0.12	0.12	0.11	0.12	0.12	0.11
Sat Flow, veh/h	931	1947	1722	1640	1609	1542	1460	78	1609	1470	1175	784
Grp Volume(v), veh/h	3	601	33	69	560	6	112	0	43	4	0	5
Grp Sat Flow(s),veh/h/ln	931	1947	1722	1640	1609	1542	1460	0	1688	1470	0	1959
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.0	5.1	0.0	1.6	0.2	0.0	0.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.9	0.0	0.0	5.1	0.0	1.6	1.3	0.0	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	1.00		0.40
Lane Grp Cap(c), veh/h	672	1191	1053	633	1169	1121	279	0	203	256	0	236
V/C Ratio(X)	0.00	0.50	0.03	0.11	0.48	0.01	0.40	0.00	0.21	0.02	0.00	0.02
Avail Cap(c_a), veh/h	672	1191	1053	749	1169	1121	355	0	292	333	0	339
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.2	0.0	0.0	29.3	0.0	28.2	28.2	0.0	27.3
Incr Delay (d2), s/veh	0.0	1.5	0.1	0.1	1.3	0.0	0.9	0.0	0.5	0.0	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.9	0.0	0.3	0.7	0.0	3.3	0.0	1.2	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.5	0.1	3.3	1.3	0.0	30.3	0.0	28.7	28.2	0.0	27.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		637			635			155				9
Approach Delay, s/veh		1.4			1.5			29.8				27.7
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.1	48.6		13.3		56.7		13.3				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	33.2		* 11		46.2		* 11				
Max Q Clear Time (g_c+I1), s	3.4	2.5		3.8		2.5		7.6				
Green Ext Time (p_c), s	0.0	0.8		0.0		0.7		0.1				

Intersection Summary

HCM 6th Ctrl Delay	4.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2024 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	468	13	5	540	12	9	0	14	6	0	8
Future Volume (vph)	25	468	13	5	540	12	9	0	14	6	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1660	0	1744	1654	1445	0	1729	0	1719	1501	0
Flt Permitted	0.367			0.473				0.866				
Satd. Flow (perm)	647	1660	0	868	1654	1415	0	1526	0	1809	1501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				126		139			386	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	6%	0%	0%	11%	8%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	517	0	5	581	13	0	25	0	6	9	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8				4
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	56.0		45.0	45.0	45.0	14.0	14.0		14.0	14.0	
Total Split (%)	15.7%	80.0%		64.3%	64.3%	64.3%	20.0%	20.0%		20.0%	20.0%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	60.6	62.9		58.5	58.5	58.5		7.0		7.1	7.1	
Actuated g/C Ratio	0.87	0.90		0.84	0.84	0.84		0.10		0.10	0.10	
v/c Ratio	0.04	0.35		0.01	0.42	0.01		0.09		0.03	0.02	
Control Delay	0.8	2.6		3.6	5.0	0.0		0.7		28.5	0.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	0.8	2.6		3.6	5.0	0.0		0.7		28.5	0.1	
LOS	A	A		A	A	A		A		C	A	
Approach Delay		2.5			4.9			0.7			11.5	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)	0	0		0	0	0		0		2	0	
Queue Length 95th (ft)	m1	76		m1	160	m0		0		13	0	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2024 Build
 AM Peak Hour

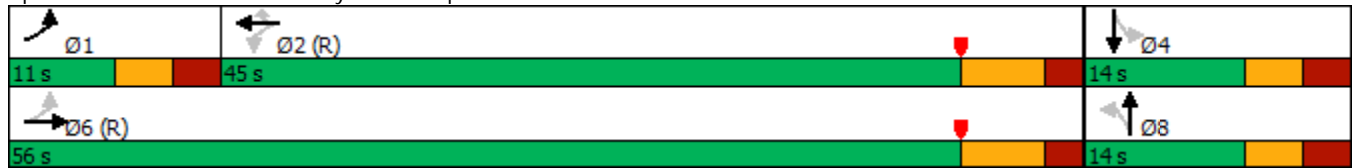


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	655	1493		726	1383	1204		325		242	535	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.04	0.35		0.01	0.42	0.01		0.08		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 7 (10%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.42
 Intersection Signal Delay: 3.8
 Intersection LOS: A
 Intersection Capacity Utilization 46.4%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2024 Build
 AM Peak Hour






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↕		↖	↗	
Traffic Volume (veh/h)	25	468	13	5	540	12	9	0	14	6	0	8
Future Volume (veh/h)	25	468	13	5	540	12	9	0	14	6	0	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1626	1711	1949	1793	1835	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	27	503	14	5	581	13	10	0	14	6	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	6	0	0	11	8	0	0	0	0	0	0
Cap, veh/h	700	1291	36	770	1298	1125	89	0	22	159	68	0
Arrive On Green	0.06	1.00	1.00	1.00	1.00	1.00	0.02	0.00	0.02	0.04	0.00	0.00
Sat Flow, veh/h	1629	1575	44	921	1793	1554	426	0	596	1361	1837	0
Grp Volume(v), veh/h	27	0	517	5	581	13	24	0	0	6	0	0
Grp Sat Flow(s),veh/h/ln	1629	0	1619	921	1793	1554	1021	0	0	1361	1837	0
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		0.03	1.00		1.00	0.42		0.58	1.00		0.00
Lane Grp Cap(c), veh/h	700	0	1327	770	1298	1125	96	0	0	159	68	0
V/C Ratio(X)	0.04	0.00	0.39	0.01	0.45	0.01	0.25	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	799	0	1327	770	1298	1125	241	0	0	291	247	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.00	0.81	0.91	0.91	0.91	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	0.0	0.0	0.0	34.0	0.0	0.0	32.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.7	0.0	1.0	0.0	1.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.5	0.0	0.7	0.0	0.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.6	0.0	0.7	0.0	1.0	0.0	35.3	0.0	0.0	32.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	C	A	A
Approach Vol, veh/h		544			599			24				6
Approach Delay, s/veh		0.7			1.0			35.3				32.7
Approach LOS		A			A			D				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.7	56.1		7.2		62.8		7.2				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	38.6		8.4		49.6		8.4				
Max Q Clear Time (g_c+I1), s	2.7	2.5		2.7		2.5		3.6				
Green Ext Time (p_c), s	0.0	0.7		0.0		0.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	1.7
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	438	1	10	456	24	59	26	35	28	15	46
Future Volume (vph)	37	438	1	10	456	24	59	26	35	28	15	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1684	1685	0	1246	1593	0	1248	1497	0	0	1793	0
Flt Permitted	0.445			0.472			0.772				0.869	
Satd. Flow (perm)	789	1685	0	619	1593	0	1014	1497	0	0	1582	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			38				49
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	100%	30%	6%	10%	26%	4%	9%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	472	0	11	516	0	63	66	0	0	95	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	45.0	45.0		45.0	45.0		25.0	25.0		25.0	25.0	
Total Split (%)	64.3%	64.3%		64.3%	64.3%		35.7%	35.7%		35.7%	35.7%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	52.5	52.5		52.5	52.5		10.9	10.9				10.9
Actuated g/C Ratio	0.75	0.75		0.75	0.75		0.16	0.16				0.16
v/c Ratio	0.07	0.37		0.02	0.43		0.40	0.25				0.33
Control Delay	1.0	1.6		4.5	6.3		32.9	15.5				17.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	1.0	1.6		4.5	6.3		32.9	15.5				17.0
LOS	A	A		A	A		C	B				B
Approach Delay		1.6			6.3			24.0				17.0
Approach LOS		A			A			C				B
Queue Length 50th (ft)	1	7		1	77		25	11				18
Queue Length 95th (ft)	3	17		7	171		55	39				52

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	591	1262		463	1195		289	454			487	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.07	0.37		0.02	0.43		0.22	0.15			0.20	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.43
Intersection Signal Delay:	7.0
Intersection LOS:	A
Intersection Capacity Utilization	52.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2024 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	438	1	10	456	24	59	26	35	28	15	46
Future Volume (veh/h)	37	438	1	10	456	24	59	26	35	28	15	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1680	346	1485	1826	1770	1385	1694	1623	1949	2027	1864
Adj Flow Rate, veh/h	40	471	0	11	490	25	63	28	16	30	16	31
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	5	100	30	6	10	26	4	9	0	0	6
Cap, veh/h	657	1281	0	662	1314	67	216	97	55	114	43	58
Arrive On Green	1.00	1.00	0.00	0.76	0.76	0.75	0.10	0.10	0.08	0.08	0.10	0.08
Sat Flow, veh/h	829	1680	0	732	1723	88	1002	1009	577	440	450	600
Grp Volume(v), veh/h	40	471	0	11	0	515	63	0	44	77	0	0
Grp Sat Flow(s),veh/h/ln	829	1680	0	732	0	1811	1002	0	1586	1491	0	0
Q Serve(g_s), s	0.4	0.0	0.0	0.3	0.0	6.6	0.0	0.0	1.8	1.9	0.0	0.0
Cycle Q Clear(g_c), s	7.1	0.0	0.0	0.3	0.0	6.6	3.2	0.0	1.8	3.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	1.00		0.36	0.39		0.40
Lane Grp Cap(c), veh/h	657	1281	0	662	0	1381	216	0	152	193	0	0
V/C Ratio(X)	0.06	0.37	0.00	0.02	0.00	0.37	0.29	0.00	0.29	0.40	0.00	0.00
Avail Cap(c_a), veh/h	657	1281	0	662	0	1381	406	0	453	508	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.4	0.0	0.0	2.0	0.0	2.8	30.1	0.0	29.6	30.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.8	0.0	0.0	0.0	0.8	0.7	0.0	1.0	1.3	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.5	0.0	0.0	0.0	2.2	1.8	0.0	1.3	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	0.8	0.0	2.0	0.0	3.5	30.8	0.0	30.6	32.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	A
Approach Vol, veh/h		511			526			107				77
Approach Delay, s/veh		0.8			3.5			30.7				32.0
Approach LOS		A			A			C				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.3		11.7		58.3		11.7				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 39		19.0		* 39		19.0				
Max Q Clear Time (g_c+I1), s		2.0		5.7		8.6		5.2				
Green Ext Time (p_c), s		14.0		0.1		14.5		0.3				

Intersection Summary



















HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	385	0	87	550	150	0	0	206	56
Future Volume (vph)	0	0	0	385	0	87	550	150	0	0	206	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1546	1145	1544	1424	0	0	1528	1523
Flt Permitted					0.950		0.448					
Satd. Flow (perm)	0	0	0	0	1546	1145	728	1424	0	0	1528	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	8%	0%	26%	6%	21%	2%	2%	15%	15%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	401	91	573	156	0	0	215	58
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				21.0	21.0	21.0	17.0	39.0			22.0	22.0
Total Split (%)				35.0%	35.0%	35.0%	28.3%	65.0%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					16.5	16.5	32.7	32.7			15.7	15.7
Actuated g/C Ratio					0.28	0.28	0.56	0.56			0.27	0.27
v/c Ratio					0.92	0.21	1.00	0.20			0.53	0.11
Control Delay					52.6	1.8	53.4	7.2			23.7	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					52.6	1.8	53.4	7.2			23.7	0.4
LOS					D	A	D	A			C	A
Approach Delay					43.3			43.5			18.7	
Approach LOS					D			D			B	
Queue Length 50th (ft)					141	0	127	24			64	0
Queue Length 95th (ft)					#294	7	#391	49			122	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 AM Peak Hour

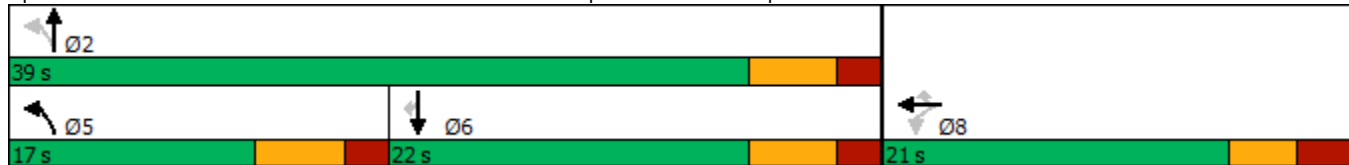


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					434	439	572	824			442	551
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.92	0.21	1.00	0.19			0.49	0.11

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 58.7
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 38.9
 Intersection LOS: D
 Intersection Capacity Utilization 91.5%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (veh/h)	0	0	0	385	0	87	550	150	0	0	206	56
Future Volume (veh/h)	0	0	0	385	0	87	550	150	0	0	206	56
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1761	1875	1505	1693	1483	0	0	1661	1728
Adj Flow Rate, veh/h				401	0	0	573	156	0	0	215	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				8	0	26	6	21	0	0	15	15
Cap, veh/h				489	0		621	818	0	0	397	
Arrive On Green				0.26	0.00	0.00	0.22	0.55	0.00	0.00	0.24	0.00
Sat Flow, veh/h				1785	0	1275	1613	1483	0	0	1661	1464
Grp Volume(v), veh/h				401	0	0	573	156	0	0	215	0
Grp Sat Flow(s),veh/h/ln				1785	0	1275	1613	1483	0	0	1661	1464
Q Serve(g_s), s				11.5	0.0	0.0	12.0	2.9	0.0	0.0	6.2	0.0
Cycle Q Clear(g_c), s				11.5	0.0	0.0	12.0	2.9	0.0	0.0	6.2	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				489	0		621	818	0	0	397	
V/C Ratio(X)				0.82	0.00		0.92	0.19	0.00	0.00	0.54	
Avail Cap(c_a), veh/h				541	0		621	927	0	0	519	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				19.0	0.0	0.0	13.4	6.1	0.0	0.0	18.1	0.0
Incr Delay (d2), s/veh				8.9	0.0	0.0	19.5	0.4	0.0	0.0	4.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.6	0.0	0.0	7.2	0.7	0.0	0.0	2.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				27.9	0.0	0.0	32.9	6.5	0.0	0.0	22.2	0.0
LnGrp LOS				C	A		C	A	A	A	C	
Approach Vol, veh/h					401			729			215	
Approach Delay, s/veh					27.9			27.3			22.2	
Approach LOS					C			C			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		35.0			17.0	18.0		19.4				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		33.0			11.0	16.0		15.5				
Max Q Clear Time (g_c+I1), s		4.9			14.0	8.2		13.5				
Green Ext Time (p_c), s		3.4			0.0	2.0		0.4				

Intersection Summary


















HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 Build
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	2	282	0	0	0	0	668	607	106	476	0
Future Volume (vph)	31	2	282	0	0	0	0	668	607	106	476	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1600	1454	0	0	0	0	1629	0	1588	1686	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1600	1454	0	0	0	0	1629	0	1588	1686	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	16%	0%	9%	2%	2%	2%	2%	9%	4%	11%	10%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	300	0	0	0	0	1357	0	113	506	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	91.5%
Analysis Period (min)	15
	ICU Level of Service F

HCM 6th TWSC
6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 Build
AM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↗	↕	
Traffic Vol, veh/h	31	2	282	0	0	0	0	668	607	106	476	0
Future Vol, veh/h	31	2	282	0	0	0	0	668	607	106	476	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	16	0	9	2	2	2	2	9	4	11	10	2
Mvmt Flow	33	2	300	0	0	0	0	711	646	113	506	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1443	1443	506	-	0	0	711	0	0
Stage 1	732	732	-	-	-	-	-	-	-
Stage 2	711	711	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.99	-	-	-	4	-	-
Critical Hdwy Stg 1	4.96	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.96	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.2	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	138	170	602	0	-	-	705	-	0
Stage 1	571	486	-	0	-	-	-	-	0
Stage 2	583	495	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	116	0	602	-	-	-	705	-	-
Mov Cap-2 Maneuver	116	0	-	-	-	-	-	-	-
Stage 1	571	0	-	-	-	-	-	-	-
Stage 2	490	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.2	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	116	602	705	-
HCM Lane V/C Ratio	-	-	0.303	0.498	0.16	-
HCM Control Delay (s)	-	-	49	16.8	11.1	-
HCM Lane LOS	-	-	E	C	B	-
HCM 95th %tile Q(veh)	-	-	1.2	2.8	0.6	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 Build
 AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	24	0	1258	750	5
Future Volume (vph)	6	24	0	1258	750	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1624	0	0	1734	1652	0
Flt Permitted	0.990					
Satd. Flow (perm)	1624	0	0	1734	1652	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	7%	10%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	1398	839	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	76.2% ICU Level of Service D
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	24	0	1258	750	5
Future Vol, veh/h	6	24	0	1258	750	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	7	10	0
Mvmt Flow	7	27	0	1398	833	6

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2234	836	839	0	-	0
Stage 1	836	-	-	-	-	-
Stage 2	1398	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	50	386	672	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	250	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	50	386	672	-	-	-
Mov Cap-2 Maneuver	50	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	250	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.3	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	672	-	165	-	-
HCM Lane V/C Ratio	-	-	0.202	-	-
HCM Control Delay (s)	0	-	32.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 Build
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	19	104	8	12	74	41	848	8	10	628	149
Future Volume (vph)	336	19	104	8	12	74	41	848	8	10	628	149
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1604	1567	0	1391	1565	0	1500	1616	0	1628	1580	0
Flt Permitted	0.695			0.669			0.146			0.101		
Satd. Flow (perm)	1173	1567	0	978	1565	0	231	1616	0	173	1580	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		116			82			1				28
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	5%	13%	8%	1%	8%	9%	25%	0%	10%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	137	0	9	95	0	46	951	0	11	864	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	25.0	25.0		25.0	25.0		45.0	45.0		45.0	45.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		64.3%	64.3%		64.3%	64.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	20.0	20.0		20.0	20.0		39.5	39.5		39.5	39.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.56	0.56		0.56	0.56	
v/c Ratio	1.11	0.26		0.03	0.19		0.35	1.04		0.11	0.96	
Control Delay	111.4	7.2		18.6	7.4		13.4	54.1		10.5	37.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	111.4	7.2		18.6	7.4		13.4	54.1		10.5	37.8	
LOS	F	A		B	A		B	D		B	D	
Approach Delay		83.4			8.4			52.2			37.4	
Approach LOS		F			A			D			D	
Queue Length 50th (ft)	~188	7		3	4		5	~457		2	312	
Queue Length 95th (ft)	#343	44		13	35		m11	#665		10	#585	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

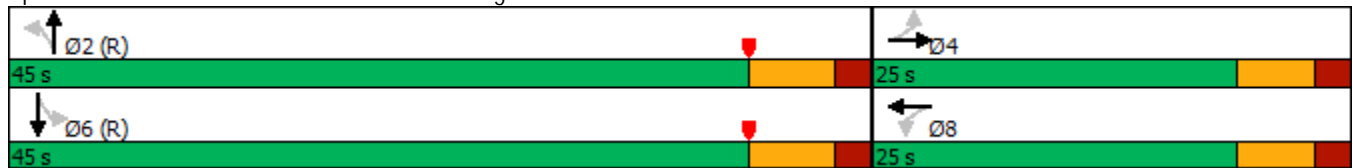
2024 Build
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		920			920			1160			2095	
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	335	530		279	505		130	912		97	903	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.11	0.26		0.03	0.19		0.35	1.04		0.11	0.96	

Intersection Summary	
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection	
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.11
Intersection Signal Delay:	51.6
Intersection LOS:	D
Intersection Capacity Utilization	82.7%
ICU Level of Service	E
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2024 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	336	19	104	8	12	74	41	848	8	10	628	149
Future Volume (veh/h)	336	19	104	8	12	74	41	848	8	10	628	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	1915	1567	1703	1736	1798	1784	1556	1949	1807	1878
Adj Flow Rate, veh/h	373	21	116	9	13	82	46	942	9	11	698	166
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	5	13	8	1	8	9	25	0	10	5
Cap, veh/h	423	78	433	339	58	363	187	995	10	450	796	189
Arrive On Green	0.29	0.29	0.27	0.29	0.29	0.27	1.00	1.00	1.00	0.56	0.56	0.55
Sat Flow, veh/h	1360	274	1515	1048	201	1270	615	1764	17	615	1411	336
Grp Volume(v), veh/h	373	0	137	9	0	95	46	0	951	11	0	864
Grp Sat Flow(s),veh/h/ln	1360	0	1790	1048	0	1472	615	0	1781	615	0	1746
Q Serve(g_s), s	16.5	0.0	4.2	0.5	0.0	3.5	4.6	0.0	0.0	0.6	0.0	29.9
Cycle Q Clear(g_c), s	20.0	0.0	4.2	4.7	0.0	3.5	34.5	0.0	0.0	0.6	0.0	29.9
Prop In Lane	1.00		0.85	1.00		0.86	1.00		0.01	1.00		0.19
Lane Grp Cap(c), veh/h	423	0	511	339	0	420	187	0	1005	450	0	985
V/C Ratio(X)	0.88	0.00	0.27	0.03	0.00	0.23	0.25	0.00	0.95	0.02	0.00	0.88
Avail Cap(c_a), veh/h	423	0	511	339	0	420	187	0	1005	450	0	985
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.66	0.00	0.66	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	19.7	21.2	0.0	19.4	13.1	0.0	0.0	6.8	0.0	13.2
Incr Delay (d2), s/veh	18.9	0.0	0.3	0.0	0.0	0.3	2.1	0.0	13.4	0.1	0.0	10.9
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	8.3	0.0	1.7	0.1	0.0	1.1	0.6	0.0	3.7	0.1	0.0	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	0.0	20.0	21.2	0.0	19.7	15.1	0.0	13.4	6.9	0.0	24.1
LnGrp LOS	D	A	B	C	A	B	B	A	B	A	A	C
Approach Vol, veh/h		510			104			997				875
Approach Delay, s/veh		39.6			19.8			13.5				23.9
Approach LOS		D			B			B				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		25.0		45.0		25.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		38.5		19.0		38.5		19.0				
Max Q Clear Time (g_c+I1), s		2.0		22.0		31.9		6.7				
Green Ext Time (p_c), s		30.2		0.0		6.0		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		22.8
HCM 6th LOS		C

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	16	16	1	9	2	861	7	24	693	7
Future Volume (vph)	35	0	16	16	1	9	2	861	7	24	693	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1682	0	0	1561	0	0	1614	1648
Flt Permitted		0.740			0.787			0.999			0.961	
Satd. Flow (perm)	0	1288	1581	0	1366	0	0	1560	0	0	1554	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		9			1				39
Link Speed (mph)		25			25			40				40
Link Distance (ft)		750			1000			600				1240
Travel Time (s)		20.5			27.3			10.2				21.1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	50%	10%	29%	0%	9%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	17	0	27	0	0	906	0	0	747	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	17.0	17.0	17.0	17.0	17.0		53.0	53.0		53.0	53.0	53.0
Total Split (%)	24.3%	24.3%	24.3%	24.3%	24.3%		75.7%	75.7%		75.7%	75.7%	75.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.6	8.6		8.5			58.4			58.4	58.4
Actuated g/C Ratio		0.12	0.12		0.12			0.83			0.83	0.83
v/c Ratio		0.23	0.07		0.16			0.70			0.58	0.01
Control Delay		30.4	2.4		22.5			9.5			9.4	0.6
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		30.4	2.4		22.5			9.5			9.4	0.6
LOS		C	A		C			A			A	A
Approach Delay		21.5			22.5			9.5			9.3	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		14	0		7			179			243	0
Queue Length 95th (ft)		38	4		27			#539			m279	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
 AM Peak Hour

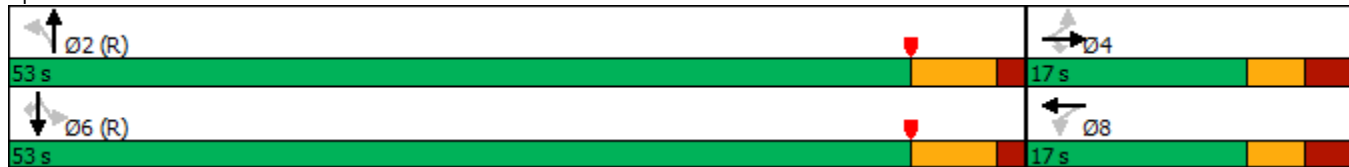


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		230	320		251			1302			1297	1382
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.16	0.05		0.11			0.70			0.58	0.01

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 63 (90%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 10.0 Intersection LOS: B
 Intersection Capacity Utilization 73.9% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (veh/h)	35	0	16	16	1	9	2	861	7	24	693	7
Future Volume (veh/h)	35	0	16	16	1	9	2	861	7	24	693	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1076	1637	1371	1875	1747	1950
Adj Flow Rate, veh/h	36	0	17	17	1	9	2	897	7	25	722	7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	50	10	29	0	9	0
Cap, veh/h	205	0	101	119	8	21	52	1298	10	73	1339	1322
Arrive On Green	0.05	0.00	0.06	0.05	0.06	0.05	0.79	0.80	0.79	1.00	1.00	1.00
Sat Flow, veh/h	1601	0	1586	545	120	333	1	1621	13	24	1673	1652
Grp Volume(v), veh/h	36	0	17	27	0	0	906	0	0	747	0	7
Grp Sat Flow(s),veh/h/ln	1601	0	1586	998	0	0	1634	0	0	1697	0	1652
Q Serve(g_s), s	0.0	0.0	0.7	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.7	2.4	0.0	0.0	17.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.63		0.33	0.00		0.01	0.03		1.00
Lane Grp Cap(c), veh/h	182	0	101	133	0	0	1336	0	0	1387	0	1322
V/C Ratio(X)	0.20	0.00	0.17	0.20	0.00	0.00	0.68	0.00	0.00	0.54	0.00	0.01
Avail Cap(c_a), veh/h	337	0	283	302	0	0	1336	0	0	1387	0	1322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.21	0.00	0.21
Uniform Delay (d), s/veh	31.8	0.0	31.0	32.5	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.8	0.7	0.0	0.0	2.8	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.3	0.5	0.0	0.0	2.7	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.3	0.0	31.8	33.3	0.0	0.0	6.0	0.0	0.0	0.3	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		53			27			906			754	
Approach Delay, s/veh		32.2			33.3			6.0			0.3	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		61.0		9.0		61.0		9.0				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		47.0		11.5		47.0		11.5				
Max Q Clear Time (g_c+I1), s		19.8		3.4		2.0		4.4				
Green Ext Time (p_c), s		22.2		0.1		27.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	4.7
HCM 6th LOS	A

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	241	37	52	238	198	72	369	51	106	210	184
Future Volume (vph)	275	241	37	52	238	198	72	369	51	106	210	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1485	1660	1113	1194	1649	1561	1637	1684	0	1500	1509	1388
Flt Permitted	0.320			0.601			0.573			0.223		
Satd. Flow (perm)	500	1660	1088	754	1649	1561	988	1684	0	352	1509	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			239			8			232
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1026				640
Travel Time (s)		14.2			7.4			28.0				10.9
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	9%	29%	33%	5%	4%	6%	13%	18%	8%	13%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	293	256	39	55	253	211	77	447	0	113	223	196
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	15.0	38.5	38.5	23.5	23.5	23.5	14.0	27.5		14.0	27.5	27.5
Total Split (%)	18.8%	48.1%	48.1%	29.4%	29.4%	29.4%	17.5%	34.4%		17.5%	34.4%	34.4%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	30.8	30.8	30.8	15.6	15.6	15.6	27.8	21.7		27.9	21.8	21.8
Actuated g/C Ratio	0.41	0.41	0.41	0.21	0.21	0.21	0.37	0.29		0.37	0.29	0.29
v/c Ratio	0.89	0.38	0.07	0.35	0.74	0.41	0.18	0.90		0.45	0.51	0.35
Control Delay	49.3	18.2	0.3	33.5	42.6	5.4	14.0	52.0		19.5	28.8	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.3	18.2	0.3	33.5	42.6	5.4	14.0	52.0		19.5	28.8	4.0
LOS	D	B	A	C	D	A	B	D		B	C	A
Approach Delay		32.5			26.5			46.4			17.7	
Approach LOS		C			C			D			B	
Queue Length 50th (ft)	104	86	0	23	116	0	21	210		31	92	0
Queue Length 95th (ft)	#251	145	0	57	#212	39	47	#405		64	166	32

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		860			410			946			560	
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	331	739	567	183	401	560	437	494		255	439	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.89	0.35	0.07	0.30	0.63	0.38	0.18	0.90		0.44	0.51	0.35

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	74.8
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	30.8
Intersection LOS:	C
Intersection Capacity Utilization	78.4%
ICU Level of Service	D
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230

Ø1	Ø2	Ø3	Ø4
15 s	23.5 s	14 s	27.5 s
Ø6	Ø7	Ø8	
38.5 s	14 s	27.5 s	

HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	241	37	52	238	198	72	369	51	106	210	184
Future Volume (veh/h)	275	241	37	52	238	198	72	369	51	106	210	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1724	1709	1425	1331	1724	1808	2087	2067	1917	1598	1528	1598
Adj Flow Rate, veh/h	293	256	26	55	253	0	77	393	52	113	223	166
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	9	29	33	5	4	6	13	18	8	13	8
Cap, veh/h	373	685	483	249	328		414	467	62	290	444	392
Arrive On Green	0.13	0.40	0.40	0.19	0.19	0.00	0.06	0.26	0.25	0.09	0.29	0.29
Sat Flow, veh/h	1641	1709	1206	779	1724	1532	1988	1788	237	1522	1528	1352
Grp Volume(v), veh/h	293	256	26	55	253	0	77	0	445	113	223	166
Grp Sat Flow(s),veh/h/ln	1641	1709	1206	779	1724	1532	1988	0	2024	1522	1528	1352
Q Serve(g_s), s	9.5	7.5	0.9	4.4	9.9	0.0	1.9	0.0	14.8	3.7	8.6	7.1
Cycle Q Clear(g_c), s	9.5	7.5	0.9	4.4	9.9	0.0	1.9	0.0	14.8	3.7	8.6	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	373	685	483	249	328		414	0	529	290	444	392
V/C Ratio(X)	0.79	0.37	0.05	0.22	0.77		0.19	0.00	0.84	0.39	0.50	0.42
Avail Cap(c_a), veh/h	373	792	559	298	436		512	0	611	321	461	408
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.7	15.0	13.1	25.1	27.4	0.0	17.2	0.0	25.0	17.7	21.0	20.4
Incr Delay (d2), s/veh	10.6	0.1	0.0	0.2	4.1	0.0	0.2	0.0	9.1	0.9	0.9	0.7
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	4.3	2.5	0.2	0.7	4.1	0.0	0.9	0.0	8.2	1.2	2.9	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	15.2	13.1	25.3	31.5	0.0	17.4	0.0	34.1	18.6	21.9	21.2
LnGrp LOS	C	B	B	C	C		B	A	C	B	C	C
Approach Vol, veh/h		575			308			522			502	
Approach Delay, s/veh		22.8			30.4			31.6			20.9	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	19.0	12.6	24.6		34.0	10.5	26.7				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	8.5	17.0	7.0	20.5		32.0	7.0	20.5				
Max Q Clear Time (g_c+I1), s	12.0	12.4	6.2	16.8		10.0	4.4	11.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8		0.1	0.0	1.4				

Intersection Summary

HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2024 Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	155	0	762	15	183	500	0
Future Volume (vph)	0	0	0	0	0	155	0	762	15	183	500	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%				-2%
Storage Length (ft)	0		0	0		0	0		150	325		0
Storage Lanes	0		1	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1640	1489	1787	1745	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1640	1489	1787	1745	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		500			500			640			600	
Travel Time (s)		8.5			8.5			17.5			16.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	9%	2%	2%	10%	2%
Shared Lane Traffic (%)									10%			
Lane Group Flow (vph)	0	0	0	0	0	172	0	849	15	203	556	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.2%
ICU Level of Service	B
Analysis Period (min)	15

HCM 6th TWSC
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2024 Build
 AM Peak Hour

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↘	↗	↘	↘	
Traffic Vol, veh/h	0	0	0	0	0	155	0	762	15	183	500	0
Future Vol, veh/h	0	0	0	0	0	155	0	762	15	183	500	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	150	325	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	9	2	2	10	2
Mvmt Flow	0	0	0	0	0	172	0	847	17	203	556	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	-	-	556	-	-	847	-	0	0	864	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	-	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.1	-	-	3.318	-	-	-	3	-	-
Pot Cap-1 Maneuver	0	0	559	0	0	362	0	-	-	660	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	559	-	-	362	-	-	-	660	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		23.6		0		3.4	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	362	660	-
HCM Lane V/C Ratio	-	-	-	0.476	0.308	-
HCM Control Delay (s)	-	-	0	23.6	12.9	-
HCM Lane LOS	-	-	A	C	B	-
HCM 95th %tile Q(veh)	-	-	-	2.5	1.3	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	113	285	387	51	65	141
Future Volume (vph)	113	285	387	51	65	141
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350			325	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1805	1743	1810	1583	1664	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1805	1743	1810	1583	1664	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2697		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	9%	5%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	317	430	57	229	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.9%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	113	285	387	51	65	141
Future Vol, veh/h	113	285	387	51	65	141
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	325	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	9	5	2	2	2
Mvmt Flow	126	317	430	57	72	157

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	487	0	-	0	999
Stage 1	-	-	-	-	430
Stage 2	-	-	-	-	569
Critical Hdwy	4.5	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	794	-	-	-	298
Stage 1	-	-	-	-	747
Stage 2	-	-	-	-	640
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	794	-	-	-	251
Mov Cap-2 Maneuver	-	-	-	-	404
Stage 1	-	-	-	-	628
Stage 2	-	-	-	-	640

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	794	-	-	-	551
HCM Lane V/C Ratio	0.158	-	-	-	0.415
HCM Control Delay (s)	10.4	-	-	-	16.1
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.6	-	-	-	2

Lanes, Volumes, Timings
29: SR 0230 & Ridge Run Rd

2024 Build
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	323	439	23	25	3
Future Volume (vph)	3	323	439	23	25	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1318	1693	1725	0	1550	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1318	1693	1725	0	1550	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2697	1003		1286	
Travel Time (s)		33.4	12.4		25.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	33%	9%	5%	9%	4%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	355	507	0	30	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.5%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	323	439	23	25	3
Future Vol, veh/h	3	323	439	23	25	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	9	5	9	4	33
Mvmt Flow	3	355	482	25	27	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	507	0	-	0	856 495
Stage 1	-	-	-	-	495 -
Stage 2	-	-	-	-	361 -
Critical Hdwy	4.4	-	-	-	6.84 6.7
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	3.3	-	-	-	3 3.4
Pot Cap-1 Maneuver	734	-	-	-	330 528
Stage 1	-	-	-	-	656 -
Stage 2	-	-	-	-	774 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	734	-	-	-	329 528
Mov Cap-2 Maneuver	-	-	-	-	471 -
Stage 1	-	-	-	-	653 -
Stage 2	-	-	-	-	774 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	734	-	-	-	477
HCM Lane V/C Ratio	0.004	-	-	-	0.065
HCM Control Delay (s)	9.9	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2024 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	69	22	33	6	43	119	46	336	9	31	189	77
Future Volume (vph)	69	22	33	6	43	119	46	336	9	31	189	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1300	0	0	1537	0	0	1665	0	0	1514	0
Flt Permitted		0.973			0.998			0.994			0.995	
Satd. Flow (perm)	0	1300	0	0	1537	0	0	1665	0	0	1514	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1157			1404			999			1026	
Travel Time (s)		22.5			27.4			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	129	0	0	175	0	0	407	0	0	309	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.4%

ICU Level of Service B

Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	69	22	33	6	43	119	46	336	9	31	189	77
Future Vol, veh/h	69	22	33	6	43	119	46	336	9	31	189	77
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	72	23	34	6	45	124	48	350	9	32	197	80
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.6	11.3	18.7	15.3
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	56%	4%	10%
Vol Thru, %	86%	18%	26%	64%
Vol Right, %	2%	27%	71%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	391	124	168	297
LT Vol	46	69	6	31
Through Vol	336	22	43	189
RT Vol	9	33	119	77
Lane Flow Rate	407	129	175	309
Geometry Grp	1	1	1	1
Degree of Util (X)	0.646	0.255	0.284	0.514
Departure Headway (Hd)	5.71	7.107	5.851	5.983
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	631	502	609	600
Service Time	3.777	5.201	3.939	4.057
HCM Lane V/C Ratio	0.645	0.257	0.287	0.515
HCM Control Delay	18.7	12.6	11.3	15.3
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	4.7	1	1.2	2.9

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2024 Build
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	701	85	206	542	122	137
Future Volume (vph)	701	85	206	542	122	137
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1801	0	1744	1958	1578	0
Flt Permitted			0.089		0.977	
Satd. Flow (perm)	1801	0	163	1958	1578	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	11					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	0%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	863	0	226	596	285	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	46.0		12.0	58.0	22.0	
Total Split (%)	57.5%		15.0%	72.5%	27.5%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	40.8		54.0	52.8	16.8	
Actuated g/C Ratio	0.51		0.68	0.66	0.21	
v/c Ratio	0.93		0.84	0.46	0.86	
Control Delay	37.6		36.9	7.3	57.0	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	37.6		36.9	7.3	57.0	
LOS	D		D	A	E	
Approach Delay	37.6			15.5	57.0	
Approach LOS	D			B	E	
Queue Length 50th (ft)	377		52	128	138	
Queue Length 95th (ft)	#641		m#105	m158	#273	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2024 Build
 PM Peak Hour

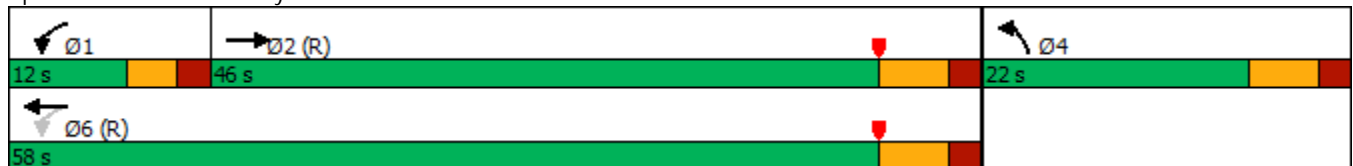


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	923		268	1292	331	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.93		0.84	0.46	0.86	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 5 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 31.2
 Intersection LOS: C
 Intersection Capacity Utilization 84.5%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2024 Build
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	701	85	206	542	122	137
Future Volume (veh/h)	701	85	206	542	122	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1735	1711	2009	2090	1860	1860
Adj Flow Rate, veh/h	770	84	226	596	134	151
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	0	1	1	1	1
Cap, veh/h	811	88	295	1391	159	180
Arrive On Green	0.53	0.51	0.18	1.00	0.20	0.19
Sat Flow, veh/h	1537	168	1914	2090	779	878
Grp Volume(v), veh/h	0	854	226	596	286	0
Grp Sat Flow(s),veh/h/ln	0	1705	1914	2090	1663	0
Q Serve(g_s), s	0.0	38.0	4.0	0.0	13.2	0.0
Cycle Q Clear(g_c), s	0.0	38.0	4.0	0.0	13.2	0.0
Prop In Lane		0.10	1.00		0.47	0.53
Lane Grp Cap(c), veh/h	0	899	295	1391	340	0
V/C Ratio(X)	0.00	0.95	0.77	0.43	0.84	0.00
Avail Cap(c_a), veh/h	0	899	318	1391	349	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	17.9	16.0	0.0	30.8	0.0
Incr Delay (d2), s/veh	0.0	20.0	9.9	1.0	20.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	24.6	4.8	0.7	11.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	38.0	25.9	1.0	51.0	0.0
LnGrp LOS	A	D	C	A	D	A
Approach Vol, veh/h	854			822	286	
Approach Delay, s/veh	38.0			7.8	51.0	
Approach LOS	D			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.0	47.4		21.6		58.4
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	39.8		15.8		51.8
Max Q Clear Time (g_c+I1), s	6.0	40.0		15.2		2.0
Green Ext Time (p_c), s	0.1	0.0		0.1		19.1

Intersection Summary




















HCM 6th Ctrl Delay	27.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2024 Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	874	0	0	1020	92	1	0	2	35	0	48
Future Volume (vph)	27	874	0	0	1020	92	1	0	2	35	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Flt Permitted	0.950							0.984		0.950		
Satd. Flow (perm)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	8%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	940	0	0	1196	0	0	3	0	38	52	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.1%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	27	874	0	0	1020	92	1	0	2	35	0	48
Future Vol, veh/h	27	874	0	0	1020	92	1	0	2	35	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	2	0	0	1	0	0	0	0	0	0	4
Mvmt Flow	29	940	0	0	1097	99	1	0	2	38	0	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1196	0	0	940	0	0	2172	2194	940	2146	2145	1148
Stage 1	-	-	-	-	-	-	998	998	-	1147	1147	-
Stage 2	-	-	-	-	-	-	1174	1196	-	999	998	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	555	-	-	412	-	-	46	58	354	53	70	279
Stage 1	-	-	-	-	-	-	364	362	-	323	334	-
Stage 2	-	-	-	-	-	-	293	299	-	384	383	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	555	-	-	412	-	-	36	55	354	51	66	279
Mov Cap-2 Maneuver	-	-	-	-	-	-	36	55	-	51	66	-
Stage 1	-	-	-	-	-	-	345	343	-	306	334	-
Stage 2	-	-	-	-	-	-	239	299	-	362	363	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	46.5	88.2
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	90	555	-	-	412	-	-	51	279
HCM Lane V/C Ratio	0.036	0.052	-	-	-	-	-	0.738	0.185
HCM Control Delay (s)	46.5	11.8	-	-	0	-	-	180.7	20.8
HCM Lane LOS	E	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	3	0.7

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	684	36	151	827	17	267	3	115	23	8	16
Future Volume (vph)	14	684	36	151	827	17	267	3	115	23	8	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1766	1584	1572	1697	1608	1694	1576	0	1761	1747	0
Flt Permitted	0.267			0.148			0.741			0.678		
Satd. Flow (perm)	464	1766	1550	245	1697	1608	1316	1576	0	1257	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			40		120			17	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)			1				2					2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	713	38	157	861	18	278	123	0	24	25	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	43.0	43.0	43.0	13.0	56.0	56.0	24.0	24.0		24.0	24.0	
Total Split (%)	53.8%	53.8%	53.8%	16.3%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	37.8	37.8	37.8	51.9	50.6	50.6	18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.47	0.47	0.47	0.65	0.63	0.63	0.23	0.23		0.23	0.23	
v/c Ratio	0.07	0.85	0.05	0.53	0.80	0.02	0.90	0.27		0.08	0.06	
Control Delay	12.1	21.0	0.2	15.4	8.8	0.1	63.8	7.1		24.6	14.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	12.1	21.0	0.2	15.4	8.8	0.1	63.8	7.1		24.6	14.4	
LOS	B	C	A	B	A	A	E	A		C	B	
Approach Delay		19.8			9.6			46.4			19.4	
Approach LOS		B			A			D			B	
Queue Length 50th (ft)	3	145	0	7	26	0	135	1		9	3	
Queue Length 95th (ft)	m4	m221	m0	m44	#61	m0	#273	41		28	22	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	218	834	792	299	1072	1030	314	467		300	430	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.07	0.85	0.05	0.53	0.80	0.02	0.89	0.26		0.08	0.06	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 33 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 19.8
 Intersection LOS: B
 Intersection Capacity Utilization 94.5%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	14	684	36	151	827	17	267	3	115	23	8	16
Future Volume (veh/h)	14	684	36	151	827	17	267	3	115	23	8	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2032	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	15	712	23	157	861	15	278	3	80	24	8	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	437	1011	868	561	1106	983	422	14	372	366	157	274
Arrive On Green	1.00	1.00	1.00	0.17	1.00	1.00	0.23	0.23	0.22	0.23	0.23	0.22
Sat Flow, veh/h	697	2032	1745	1666	1736	1542	1470	61	1624	1418	684	1198
Grp Volume(v), veh/h	15	712	23	157	861	15	278	0	83	24	0	22
Grp Sat Flow(s),veh/h/ln	697	2032	1745	1666	1736	1542	1470	0	1685	1418	0	1882
Q Serve(g_s), s	0.0	0.4	0.0	3.3	0.0	0.0	14.4	0.0	3.2	1.1	0.0	0.7
Cycle Q Clear(g_c), s	0.0	0.4	0.0	3.3	0.0	0.0	14.7	0.0	3.2	3.8	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.64
Lane Grp Cap(c), veh/h	437	1011	868	561	1106	983	422	0	386	366	0	431
V/C Ratio(X)	0.03	0.70	0.03	0.28	0.78	0.02	0.66	0.00	0.22	0.07	0.00	0.05
Avail Cap(c_a), veh/h	437	1011	868	600	1106	983	437	0	402	380	0	449
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.66	0.66	0.66	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.1	0.1	0.1	6.1	0.0	0.0	29.6	0.0	25.4	26.4	0.0	24.3
Incr Delay (d2), s/veh	0.1	4.1	0.1	0.2	3.6	0.0	3.5	0.0	0.3	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	2.2	0.0	1.5	2.0	0.0	9.2	0.0	2.4	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	4.2	0.1	6.3	3.6	0.0	33.0	0.0	25.7	26.5	0.0	24.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		750			1033			361				46
Approach Delay, s/veh		4.0			4.0			31.3				25.5
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.2	45.6		23.2		56.8		23.2				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	36.2		* 18		49.2		* 18				
Max Q Clear Time (g_c+I1), s	5.8	2.9		6.3		2.5		17.2				
Green Ext Time (p_c), s	0.1	0.9		0.1		1.1		0.1				

Intersection Summary

HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2024 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	513	1	10	832	73	9	2	1	41	3	111
Future Volume (vph)	84	513	1	10	832	73	9	2	1	41	3	111
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1729	0	1586	1818	1561	0	1831	0	1719	1506	0
Flt Permitted	0.186			0.462				0.721		0.750		
Satd. Flow (perm)	328	1729	0	771	1818	1561	0	1364	0	1357	1506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						110		1				117
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1340			610			200				300
Travel Time (s)		22.8			10.4			5.5				8.2
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	10%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	541	0	11	876	77	0	12	0	43	120	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8				4
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	62.0		51.0	51.0	51.0	18.0	18.0		18.0	18.0	
Total Split (%)	13.8%	77.5%		63.8%	63.8%	63.8%	22.5%	22.5%		22.5%	22.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	64.0	64.2		55.4	55.4	55.4		9.2		9.2	9.2	
Actuated g/C Ratio	0.80	0.80		0.69	0.69	0.69		0.12		0.12	0.12	
v/c Ratio	0.24	0.39		0.02	0.70	0.07		0.08		0.28	0.44	
Control Delay	3.5	6.6		4.3	12.4	0.4		30.1		36.1	12.3	
Queue Delay	0.0	0.0		0.0	0.1	0.0		0.0		0.0	0.0	
Total Delay	3.5	6.6		4.3	12.5	0.4		30.1		36.1	12.3	
LOS	A	A		A	B	A		C		D	B	
Approach Delay		6.2			11.5			30.1			18.6	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	9	157		1	341	1		5		20	1	
Queue Length 95th (ft)	m15	m253		m2	#477	m1		20		48	46	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2024 Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	371	1386		533	1258	1114		229		227	349	
Starvation Cap Reductn	0	0		0	39	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.24	0.39		0.02	0.72	0.07		0.05		0.19	0.34	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 11 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 10.4 Intersection LOS: B
 Intersection Capacity Utilization 70.8% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2024 Build
 PM Peak Hour























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↕		↖	↗	
Traffic Volume (veh/h)	84	513	1	10	832	73	9	2	1	41	3	111
Future Volume (veh/h)	84	513	1	10	832	73	9	2	1	41	3	111
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1683	1711	1807	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	88	540	1	11	876	68	9	2	0	43	3	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	10	1	0	0	0	0	0	0	0
Cap, veh/h	549	1343	2	669	1341	1145	112	19	0	205	5	110
Arrive On Green	0.10	1.00	1.00	1.00	1.00	1.00	0.06	0.07	0.00	0.07	0.07	0.06
Sat Flow, veh/h	1629	1679	3	835	1935	1652	406	255	0	1376	72	1472
Grp Volume(v), veh/h	88	0	541	11	876	68	11	0	0	43	0	64
Grp Sat Flow(s),veh/h/ln	1629	0	1682	835	1935	1652	661	0	0	1376	0	1544
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	1.9	0.0	3.2
Prop In Lane	1.00		0.00	1.00		1.00	0.82		0.00	1.00		0.95
Lane Grp Cap(c), veh/h	549	0	1346	669	1341	1145	123	0	0	205	0	116
V/C Ratio(X)	0.16	0.00	0.40	0.02	0.65	0.06	0.09	0.00	0.00	0.21	0.00	0.55
Avail Cap(c_a), veh/h	599	0	1346	669	1341	1145	253	0	0	333	0	259
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.00	0.45	0.69	0.69	0.69	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.1	0.0	0.0	0.0	0.0	0.0	34.9	0.0	0.0	35.1	0.0	36.2
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	1.7	0.1	0.3	0.0	0.0	0.5	0.0	4.1
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.3	0.0	1.2	0.0	0.4	0.0	0.0	1.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.1	0.0	0.4	0.0	1.7	0.1	35.2	0.0	0.0	35.6	0.0	40.3
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		629			955			11				107
Approach Delay, s/veh		0.6			1.6			35.2				38.4
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.6	60.9		10.6		69.4		10.6				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	44.6		12.4		55.6		12.4				
Max Q Clear Time (g_c+I1), s	3.5	2.5		5.2		2.5		5.2				
Green Ext Time (p_c), s	0.0	1.2		0.2		0.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	3.8
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	462	21	40	721	32	91	35	29	33	43	93
Future Volume (vph)	62	462	21	40	721	32	91	35	29	33	43	93
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%				-4%
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1712	0	1573	1679	0	1572	1604	0	0	1801	0
Flt Permitted	0.276			0.439			0.522				0.921	
Satd. Flow (perm)	480	1712	0	726	1679	0	863	1604	0	0	1675	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			4			31				83
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	3%	0%	3%	1%	0%	0%	3%	3%	0%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	508	0	42	793	0	96	68	0	0	178	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0		48.0	48.0		32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	56.3	56.3		56.3	56.3		13.8	13.8				13.8
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.17	0.17				0.17
v/c Ratio	0.19	0.42		0.08	0.67		0.65	0.23				0.50
Control Delay	1.9	1.6		5.5	11.5		49.7	18.0				20.1
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0				0.0
Total Delay	1.9	1.6		5.5	11.6		49.7	18.0				20.1
LOS	A	A		A	B		D	B				C
Approach Delay		1.6			11.3			36.6				20.1
Approach LOS		A			B			D				C
Queue Length 50th (ft)	1	8		6	184		45	16				42
Queue Length 95th (ft)	2	10		20	407		88	45				91

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	337	1206		510	1182		291	561			620	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	42		0	0			2	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.19	0.42		0.08	0.70		0.33	0.12			0.29	

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	11.4
Intersection LOS:	B
Intersection Capacity Utilization	82.5%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
13: Sheaffer Rd & SR 0230

2024 Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	462	21	40	721	32	91	35	29	33	43	93
Future Volume (veh/h)	62	462	21	40	721	32	91	35	29	33	43	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1708	1750	1869	1898	1912	1750	1708	1708	1949	1997	1921
Adj Flow Rate, veh/h	65	486	21	42	759	32	96	37	13	35	45	77
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	0	3	1	0	0	3	3	0	2	2
Cap, veh/h	442	1208	52	753	1344	57	232	160	56	92	81	113
Arrive On Green	1.00	1.00	1.00	0.74	0.74	0.73	0.13	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	631	1625	70	891	1808	76	1185	1206	424	275	608	850
Grp Volume(v), veh/h	65	0	507	42	0	791	96	0	50	157	0	0
Grp Sat Flow(s),veh/h/ln	631	0	1695	891	0	1884	1185	0	1629	1734	0	0
Q Serve(g_s), s	2.4	0.0	0.0	1.0	0.0	14.9	0.3	0.0	2.2	4.3	0.0	0.0
Cycle Q Clear(g_c), s	17.3	0.0	0.0	1.0	0.0	14.9	7.2	0.0	2.2	6.9	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.04	1.00		0.26	0.22		0.49
Lane Grp Cap(c), veh/h	442	0	1260	753	0	1400	232	0	217	264	0	0
V/C Ratio(X)	0.15	0.00	0.40	0.06	0.00	0.56	0.41	0.00	0.23	0.60	0.00	0.00
Avail Cap(c_a), veh/h	442	0	1260	753	0	1400	475	0	550	611	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.2	0.0	0.0	2.8	0.0	4.6	33.2	0.0	31.1	33.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.1	0.0	1.7	1.2	0.0	0.5	2.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.6	0.2	0.0	7.0	3.2	0.0	1.6	5.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.8	0.0	0.9	2.9	0.0	6.2	34.4	0.0	31.7	35.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	D	A	A
Approach Vol, veh/h		572			833			146			157	
Approach Delay, s/veh		1.1			6.0			33.5			35.5	
Approach LOS		A			A			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		64.4		15.6		64.4		15.6				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 42		26.0		* 42		26.0				
Max Q Clear Time (g_c+I1), s		2.0		8.9		16.9		9.2				
Green Ext Time (p_c), s		15.5		0.4		19.1		0.4				

Intersection Summary



















HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	634	0	121	327	164	0	0	246	47
Future Volume (vph)	0	0	0	634	0	121	327	164	0	0	246	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1653	1414	1589	1511	0	0	1658	1637
Flt Permitted					0.950		0.370					
Satd. Flow (perm)	0	0	0	0	1653	1414	619	1511	0	0	1658	1637
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						151						143
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	1%	0%	2%	3%	14%	2%	2%	6%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	667	127	344	173	0	0	259	49
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2				6
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2				6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				30.0	30.0	30.0	13.0	35.0			22.0	22.0
Total Split (%)				46.2%	46.2%	46.2%	20.0%	53.8%			33.8%	33.8%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					25.5	25.5	29.1	29.1			16.1	16.1
Actuated g/C Ratio					0.40	0.40	0.45	0.45			0.25	0.25
v/c Ratio					1.01	0.19	0.86	0.25			0.62	0.09
Control Delay					61.9	2.8	36.8	11.9			28.8	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					61.9	2.8	36.8	11.9			28.8	0.4
LOS					E	A	D	B			C	A
Approach Delay					52.4			28.5			24.3	
Approach LOS					D			C			C	
Queue Length 50th (ft)					-273	0	89	39			90	0
Queue Length 95th (ft)					#476	22	#213	76			159	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 PM Peak Hour

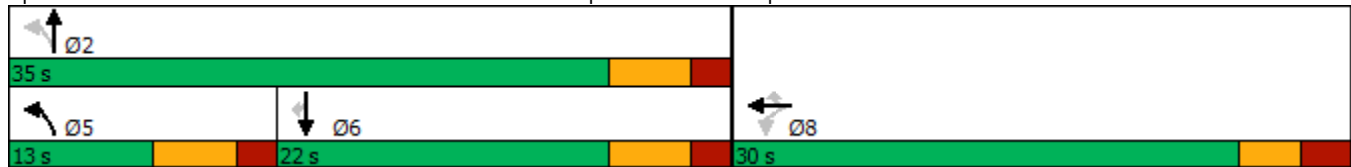


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					658	653	402	707			440	539
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					1.01	0.19	0.86	0.24			0.59	0.09

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	64.1
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.01
Intersection Signal Delay:	39.4
Intersection LOS:	D
Intersection Capacity Utilization:	138.2%
ICU Level of Service:	H
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	0	0	0	634	0	121	327	164	0	0	246	47
Future Volume (veh/h)	0	0	0	634	0	121	327	164	0	0	246	47
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1860	1875	1846	1736	1581	0	0	1789	1846
Adj Flow Rate, veh/h				667	0	0	344	173	0	0	259	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	0	2	3	14	0	0	6	7
Cap, veh/h				734	0		425	682	0	0	386	
Arrive On Green				0.39	0.00	0.00	0.13	0.43	0.00	0.00	0.22	0.00
Sat Flow, veh/h				1785	0	1564	1653	1581	0	0	1789	1564
Grp Volume(v), veh/h				667	0	0	344	173	0	0	259	0
Grp Sat Flow(s),veh/h/ln				1785	0	1564	1653	1581	0	0	1789	1564
Q Serve(g_s), s				21.3	0.0	0.0	8.0	4.2	0.0	0.0	8.0	0.0
Cycle Q Clear(g_c), s				21.3	0.0	0.0	8.0	4.2	0.0	0.0	8.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				734	0		425	682	0	0	386	
V/C Ratio(X)				0.91	0.00		0.81	0.25	0.00	0.00	0.67	
Avail Cap(c_a), veh/h				755	0		425	787	0	0	504	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				17.2	0.0	0.0	17.4	10.9	0.0	0.0	21.7	0.0
Incr Delay (d2), s/veh				14.7	0.0	0.0	11.2	0.7	0.0	0.0	7.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				16.3	0.0	0.0	7.8	2.4	0.0	0.0	6.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.9	0.0	0.0	28.6	11.7	0.0	0.0	28.9	0.0
LnGrp LOS				C	A		C	B	A	A	C	
Approach Vol, veh/h					667			517			259	
Approach Delay, s/veh					31.9			22.9			28.9	
Approach LOS					C			C			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.0			13.0	18.0		29.3				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		24.5				
Max Q Clear Time (g_c+I1), s		6.2			10.0	10.0		23.3				
Green Ext Time (p_c), s		3.4			0.0	2.0		0.5				

Intersection Summary


















HCM 6th Ctrl Delay	28.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 Build
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	3	543	0	0	0	0	452	509	97	790	0
Future Volume (vph)	43	3	543	0	0	0	0	452	509	97	790	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1564	1569	0	0	0	0	1665	0	1663	1801	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1564	1569	0	0	0	0	1665	0	1663	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	19%	0%	1%	2%	2%	2%	2%	5%	2%	6%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	560	0	0	0	0	991	0	100	814	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	138.2%
ICU Level of Service	H
Analysis Period (min)	15

HCM 6th TWSC
6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 Build
PM Peak Hour

Intersection												
Int Delay, s/veh	42.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	43	3	543	0	0	0	0	452	509	97	790	0
Future Vol, veh/h	43	3	543	0	0	0	0	452	509	97	790	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	19	0	1	2	2	2	2	5	2	6	3	2
Mvmt Flow	44	3	560	0	0	0	0	466	525	100	814	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1480	1480	814	-	0	0	466	0	0
Stage 1	1014	1014	-	-	-	-	-	-	-
Stage 2	466	466	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.91	-	-	-	4	-	-
Critical Hdwy Stg 1	4.99	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.99	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	129	162	~ 425	0	-	-	840	-	0
Stage 1	419	377	-	0	-	-	-	-	0
Stage 2	720	611	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	114	0	~ 425	-	-	-	840	-	-
Mov Cap-2 Maneuver	114	0	-	-	-	-	-	-	-
Stage 1	419	0	-	-	-	-	-	-	-
Stage 2	634	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	175.4	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	114	425	840	-
HCM Lane V/C Ratio	-	-	0.416	1.317	0.119	-
HCM Control Delay (s)	-	-	57.4	185.4	9.9	-
HCM Lane LOS	-	-	F	F	A	-
HCM 95th %tile Q(veh)	-	-	1.8	25.2	0.4	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 Build
 PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	9	8	946	1306	10
Future Volume (vph)	3	9	8	946	1306	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1631	0	0	1801	1781	0
Flt Permitted	0.988					
Satd. Flow (perm)	1631	0	0	1801	1781	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	0	983	1356	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	79.3% ICU Level of Service D
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	9	8	946	1306	10
Future Vol, veh/h	3	9	8	946	1306	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	3	9	8	975	1346	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2342	1351	1356	0	-	0
Stage 1	1351	-	-	-	-	-
Stage 2	991	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	42	192	461	-	-	-
Stage 1	264	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	40	192	461	-	-	-
Mov Cap-2 Maneuver	40	-	-	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	399	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	47	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	461	-	98	-	-
HCM Lane V/C Ratio	0.018	-	0.126	-	-
HCM Control Delay (s)	13	0	47	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	33	95	9	40	35	78	706	13	49	951	319
Future Volume (vph)	218	33	95	9	40	35	78	706	13	49	951	319
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1670	0	1416	1704	0	1620	1694	0	1628	1678	0
Flt Permitted	0.706			0.671			0.107			0.269		
Satd. Flow (perm)	1204	1670	0	1000	1704	0	182	1694	0	461	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		100			37			3				54
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	11%	0%	0%	0%	4%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	229	135	0	9	79	0	82	757	0	52	1337	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	17.0	17.0		17.0	17.0		43.0	43.0		43.0	43.0	
Total Split (%)	28.3%	28.3%		28.3%	28.3%		71.7%	71.7%		71.7%	71.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.0	12.0		12.0	12.0		37.5	37.5		37.5	37.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.62	0.62		0.62	0.62	
v/c Ratio	0.95	0.33		0.04	0.21		0.73	0.71		0.18	1.25	
Control Delay	76.8	10.3		20.2	14.2		44.3	15.1		6.7	137.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	76.8	10.3		20.2	14.2		44.3	15.1		6.7	137.5	
LOS	E	B		C	B		D	B		A	F	
Approach Delay		52.1			14.8			17.9				132.6
Approach LOS		D			B			B				F
Queue Length 50th (ft)	82	10		3	13		38	346		7	~624	
Queue Length 95th (ft)	#202	50		13	43		m#65	356		21	#854	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	240	414		200	370		113	1059		288	1069	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.95	0.33		0.04	0.21		0.73	0.71		0.18	1.25	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.25
 Intersection Signal Delay: 81.9 Intersection LOS: F
 Intersection Capacity Utilization 101.5% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2024 Build
 PM Peak Hour





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	33	95	9	40	35	78	706	13	49	951	319
Future Volume (veh/h)	218	33	95	9	40	35	78	706	13	49	951	319
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1595	1820	1750	1912	1855	1912	1949	1921	1935
Adj Flow Rate, veh/h	229	35	76	9	42	23	82	743	13	52	1001	325
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	11	0	0	0	4	0	0	2	1
Cap, veh/h	357	116	252	282	221	121	120	1136	20	304	868	282
Arrive On Green	0.20	0.20	0.18	0.20	0.20	0.18	0.21	0.21	0.20	0.63	0.63	0.61
Sat Flow, veh/h	1409	580	1259	1094	1105	605	423	1817	32	738	1389	451
Grp Volume(v), veh/h	229	0	111	9	0	65	82	0	756	52	0	1326
Grp Sat Flow(s),veh/h/ln	1409	0	1839	1094	0	1711	423	0	1849	738	0	1839
Q Serve(g_s), s	9.7	0.0	3.1	0.4	0.0	1.9	0.0	0.0	22.5	3.4	0.0	37.5
Cycle Q Clear(g_c), s	11.6	0.0	3.1	3.5	0.0	1.9	37.5	0.0	22.5	25.9	0.0	37.5
Prop In Lane	1.00		0.68	1.00		0.35	1.00		0.02	1.00		0.25
Lane Grp Cap(c), veh/h	357	0	368	282	0	342	120	0	1156	304	0	1150
V/C Ratio(X)	0.64	0.00	0.30	0.03	0.00	0.19	0.68	0.00	0.65	0.17	0.00	1.15
Avail Cap(c_a), veh/h	357	0	368	282	0	342	120	0	1156	304	0	1150
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.69	0.00	0.69	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	20.7	22.0	0.0	20.1	42.6	0.0	17.9	18.2	0.0	11.4
Incr Delay (d2), s/veh	3.9	0.0	0.5	0.0	0.0	0.3	19.6	0.0	2.0	1.2	0.0	79.3
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	6.0	0.0	2.3	0.2	0.0	1.3	3.5	0.0	15.8	1.1	0.0	49.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	0.0	21.2	22.0	0.0	20.4	62.2	0.0	19.9	19.4	0.0	90.6
LnGrp LOS	C	A	C	C	A	C	E	A	B	B	A	F
Approach Vol, veh/h		340			74			838				1378
Approach Delay, s/veh		26.2			20.6			24.0				88.0
Approach LOS		C			C			C				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		17.0		43.0		17.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		36.5		11.0		36.5		11.0				
Max Q Clear Time (g_c+I1), s		24.5		13.6		39.5		5.5				
Green Ext Time (p_c), s		9.6		0.0		0.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	57.7
HCM 6th LOS	E

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	17	61	0	38	16	745	5	10	1010	34
Future Volume (vph)	15	0	17	61	0	38	16	745	5	10	1010	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1672	0	0	1639	0	0	1722	1648
Flt Permitted		0.772			0.803			0.973			0.992	
Satd. Flow (perm)	0	1343	1581	0	1384	0	0	1597	0	0	1710	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			1				45
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	18	0	104	0	0	806	0	0	1074	36
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	15.0	15.0	15.0	15.0	15.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	75.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.6	8.6		8.6			45.1			45.1	45.1
Actuated g/C Ratio		0.14	0.14		0.14			0.75			0.75	0.75
v/c Ratio		0.08	0.07		0.42			0.67			0.84	0.03
Control Delay		22.2	1.4		18.2			8.7			6.7	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		22.2	1.4		18.2			8.7			6.7	0.0
LOS		C	A		B			A			A	A
Approach Delay		11.2			18.2			8.7			6.5	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		5	0		16			152			23	0
Queue Length 95th (ft)		19	3		53			266			m30	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		235	322		287			1200			1285	1249
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.07	0.06		0.36			0.67			0.84	0.03

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 25 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 8.0
 Intersection LOS: A
 Intersection Capacity Utilization 81.9%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	15	0	17	61	0	38	16	745	5	10	1010	34
Future Volume (veh/h)	15	0	17	61	0	38	16	745	5	10	1010	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1707	1778	1875	1846	1950
Adj Flow Rate, veh/h	16	0	10	64	0	25	17	784	5	11	1063	35
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	5	0	0	2	0
Cap, veh/h	287	0	163	200	3	39	71	1219	8	64	1354	1221
Arrive On Green	0.09	0.00	0.10	0.09	0.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1628	0	1586	941	26	378	13	1650	10	5	1832	1652
Grp Volume(v), veh/h	16	0	10	89	0	0	806	0	0	1074	0	35
Grp Sat Flow(s),veh/h/ln	1628	0	1586	1346	0	0	1672	0	0	1837	0	1652
Q Serve(g_s), s	0.0	0.0	0.3	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.3	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.72		0.28	0.02		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	260	0	163	219	0	0	1269	0	0	1388	0	1221
V/C Ratio(X)	0.06	0.00	0.06	0.41	0.00	0.00	0.63	0.00	0.00	0.77	0.00	0.03
Avail Cap(c_a), veh/h	356	0	278	324	0	0	1269	0	0	1388	0	1221
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.00	0.09
Uniform Delay (d), s/veh	24.8	0.0	24.3	26.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	1.2	0.0	0.0	2.4	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.2	2.3	0.0	0.0	1.5	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	0.0	24.5	27.8	0.0	0.0	2.4	0.0	0.0	0.4	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		26			89			806			1109	
Approach Delay, s/veh		24.8			27.8			2.4			0.4	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		49.3		10.7		49.3		10.7				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		39.0		9.5		39.0		9.5				
Max Q Clear Time (g_c+I1), s		2.0		2.5		2.0		6.0				
Green Ext Time (p_c), s		25.9		0.0		33.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				2.7								
HCM 6th LOS				A								

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	339	59	134	449	133	93	289	60	217	293	213
Future Volume (vph)	231	339	59	134	449	133	93	289	60	217	293	213
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%				4%
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1588	1791	1435	1512	1697	1577	1522	1781	0	1604	1640	1442
Flt Permitted	0.145			0.552			0.471			0.224		
Satd. Flow (perm)	242	1791	1435	879	1697	1577	755	1781	0	378	1640	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			159			8			220
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1028				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	5%	2%	3%	14%	7%	6%	1%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	349	61	138	463	137	96	360	0	224	302	220
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	23.0	68.0	68.0	45.0	45.0	45.0	15.0	32.0		20.0	37.0	37.0
Total Split (%)	19.2%	56.7%	56.7%	37.5%	37.5%	37.5%	12.5%	26.7%		16.7%	30.8%	30.8%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	57.5	57.5	57.5	35.6	35.6	35.6	39.8	31.1		50.2	36.3	36.3
Actuated g/C Ratio	0.48	0.48	0.48	0.30	0.30	0.30	0.33	0.26		0.42	0.30	0.30
v/c Ratio	0.80	0.41	0.08	0.53	0.92	0.24	0.31	0.77		0.75	0.61	0.37
Control Delay	42.3	21.1	0.9	42.4	65.1	3.9	26.6	54.2		32.4	35.0	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	42.3	21.1	0.9	42.4	65.1	3.9	26.6	54.2		32.4	35.0	7.2
LOS	D	C	A	D	E	A	C	D		C	C	A
Approach Delay		27.0			49.5			48.4			26.0	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	104	161	0	87	337	0	47	263		101	179	27
Queue Length 95th (ft)	#212	225	7	152	#502	32	88	#452		m138	m249	m43
Internal Link Dist (ft)		860			410			948			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
 PM Peak Hour

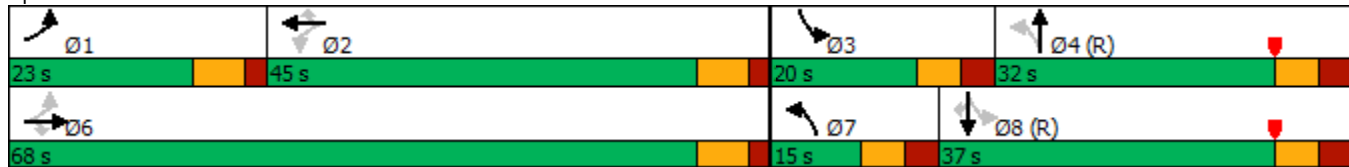


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	312	932	795	289	558	625	309	467		301	496	589
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.76	0.37	0.08	0.48	0.83	0.22	0.31	0.77		0.74	0.61	0.37

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 36.9 Intersection LOS: D
 Intersection Capacity Utilization 90.2% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	231	339	59	134	449	133	93	289	60	217	293	213
Future Volume (veh/h)	231	339	59	134	449	133	93	289	60	217	293	213
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1823	1823	1837	1724	1766	1822	1974	2156	2087	1697	1655	1655
Adj Flow Rate, veh/h	238	349	31	138	463	0	96	298	61	224	302	149
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	5	2	3	14	7	6	1	4	4
Cap, veh/h	300	825	705	323	502		367	495	101	379	561	476
Arrive On Green	0.12	0.45	0.45	0.28	0.28	0.00	0.06	0.28	0.28	0.12	0.34	0.34
Sat Flow, veh/h	1736	1823	1557	925	1766	1544	1880	1737	355	1616	1655	1402
Grp Volume(v), veh/h	238	349	31	138	463	0	96	0	359	224	302	149
Grp Sat Flow(s),veh/h/ln	1736	1823	1557	925	1766	1544	1880	0	2092	1616	1655	1402
Q Serve(g_s), s	10.9	15.6	1.3	15.1	30.5	0.0	4.2	0.0	17.8	11.2	17.7	9.4
Cycle Q Clear(g_c), s	10.9	15.6	1.3	15.1	30.5	0.0	4.2	0.0	17.8	11.2	17.7	9.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	300	825	705	323	502		367	0	596	379	561	476
V/C Ratio(X)	0.79	0.42	0.04	0.43	0.92		0.26	0.00	0.60	0.59	0.54	0.31
Avail Cap(c_a), veh/h	340	950	811	364	581		391	0	596	379	561	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	22.2	18.3	36.1	41.6	0.0	27.5	0.0	37.1	25.4	32.0	29.3
Incr Delay (d2), s/veh	10.9	0.1	0.0	0.3	17.6	0.0	0.4	0.0	4.5	2.4	3.7	1.7
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	8.9	10.5	0.8	6.0	21.6	0.0	3.5	0.0	15.1	7.8	11.9	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	22.4	18.4	36.5	59.3	0.0	27.9	0.0	41.6	27.8	35.7	31.0
LnGrp LOS	D	C	B	D	E		C	A	D	C	D	C
Approach Vol, veh/h		618			601			455			675	
Approach Delay, s/veh		28.6			54.0			38.7			32.1	
Approach LOS		C			D			D			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	20.2	39.6	20.0	40.2		59.8	13.5	46.7				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	16.5	38.5	13.0	25.0		61.5	8.0	30.0				
Max Q Clear Time (g_c+I1), s	13.4	33.0	13.7	19.8		18.1	6.7	20.2				
Green Ext Time (p_c), s	0.3	0.1	0.0	0.8		0.1	0.0	1.7				

Intersection Summary



















HCM 6th Ctrl Delay	38.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2024 Build
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	256	0	547	71	282	729	0
Future Volume (vph)	0	0	0	0	0	256	0	547	71	282	729	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%			-2%	
Storage Length (ft)	0		0	0		0	0		150	325		0
Storage Lanes	0		1	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1844	1567	1787	1881	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1844	1567	1787	1881	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		500			500			640			600	
Travel Time (s)		8.5			8.5			17.5			16.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	278	0	595	77	307	792	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 73.8% ICU Level of Service D

Analysis Period (min) 15

HCM 6th TWSC
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2024 Build
 PM Peak Hour

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↖	↗	↖	↖	↗
Traffic Vol, veh/h	0	0	0	0	0	256	0	547	71	282	729	0
Future Vol, veh/h	0	0	0	0	0	256	0	547	71	282	729	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	150	325	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	278	0	595	77	307	792	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	792	-	-	595	792	0	0	672	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.1	2.218	-	-	3	-	-
Pot Cap-1 Maneuver	0	0	389	0	0	531	829	-	-	757	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	389	-	-	531	829	-	-	757	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		19		0		3.6	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	829	-	-	-	531	757	-	-
HCM Lane V/C Ratio	-	-	-	-	0.524	0.405	-	-
HCM Control Delay (s)	0	-	-	0	19	13	-	-
HCM Lane LOS	A	-	-	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	3	2	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	447	448	77	150	326
Future Volume (vph)	169	447	448	77	150	326
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350			225	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1770	1881	1845	1583	1664	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1770	1881	1845	1583	1664	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	188	497	498	86	529	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.3% ICU Level of Service C
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	41.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	169	447	448	77	150	326
Future Vol, veh/h	169	447	448	77	150	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	225	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	3	2	2	2
Mvmt Flow	188	497	498	86	167	362

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	584	0	-	0	1371 498
Stage 1	-	-	-	-	498 -
Stage 2	-	-	-	-	873 -
Critical Hdwy	4.5	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	730	-	-	-	175 604
Stage 1	-	-	-	-	693 -
Stage 2	-	-	-	-	454 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	730	-	-	-	~ 130 604
Mov Cap-2 Maneuver	-	-	-	-	279 -
Stage 1	-	-	-	-	514 -
Stage 2	-	-	-	-	454 -

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	137
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	730	-	-	-	442
HCM Lane V/C Ratio	0.257	-	-	-	1.197
HCM Control Delay (s)	11.6	-	-	-	137
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1	-	-	-	20.5

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
29: SR 0230 & Ridge Run Rd

2024 Build
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	552	481	56	37	1
Future Volume (vph)	6	552	481	56	37	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1767	0	1670	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	1754	1828	1767	0	1670	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1319	
Travel Time (s)		33.5	12.4		25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	575	559	0	40	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.1% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	552	481	56	37	1
Future Vol, veh/h	6	552	481	56	37	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	2	0	0
Mvmt Flow	6	575	501	58	39	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	559	0	-	0	1117
Stage 1	-	-	-	-	530
Stage 2	-	-	-	-	587
Critical Hdwy	4.1	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	794	-	-	-	224
Stage 1	-	-	-	-	632
Stage 2	-	-	-	-	589
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	794	-	-	-	222
Mov Cap-2 Maneuver	-	-	-	-	378
Stage 1	-	-	-	-	627
Stage 2	-	-	-	-	589

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	794	-	-	-	381
HCM Lane V/C Ratio	0.008	-	-	-	0.104
HCM Control Delay (s)	9.6	-	-	-	15.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2024 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	84	81	76	4	51	65	32	294	6	95	349	54
Future Volume (vph)	84	81	76	4	51	65	32	294	6	95	349	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1389	0	0	1568	0	0	1671	0	0	1570	0
Flt Permitted		0.983			0.998			0.995			0.991	
Satd. Flow (perm)	0	1389	0	0	1568	0	0	1671	0	0	1570	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1146			1234			997			1028	
Travel Time (s)		22.3			24.0			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	251	0	0	125	0	0	345	0	0	519	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	72.9%
ICU Level of Service	C
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	35.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	84	81	76	4	51	65	32	294	6	95	349	54
Future Vol, veh/h	84	81	76	4	51	65	32	294	6	95	349	54
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	88	84	79	4	53	68	33	306	6	99	364	56
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20	13.1	22.3	56.5
HCM LOS	C	B	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	35%	3%	19%
Vol Thru, %	89%	34%	43%	70%
Vol Right, %	2%	32%	54%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	332	241	120	498
LT Vol	32	84	4	95
Through Vol	294	81	51	349
RT Vol	6	76	65	54
Lane Flow Rate	346	251	125	519
Geometry Grp	1	1	1	1
Degree of Util (X)	0.657	0.545	0.26	0.964
Departure Headway (Hd)	6.843	7.817	7.48	6.692
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	522	459	484	540
Service Time	4.94	5.916	5.48	4.776
HCM Lane V/C Ratio	0.663	0.547	0.258	0.961
HCM Control Delay	22.3	20	13.1	56.5
HCM Lane LOS	C	C	B	F
HCM 95th-tile Q	4.7	3.2	1	12.7

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2024 Build
SAT Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	672	82	147	580	88	142
Future Volume (vph)	672	82	147	580	88	142
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1837	0	1761	1958	1571	0
Flt Permitted			0.178		0.981	
Satd. Flow (perm)	1837	0	330	1958	1571	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	7					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	762	0	148	586	232	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	52.0		13.0	65.0	45.0	
Total Split (%)	47.3%		11.8%	59.1%	40.9%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effect Green (s)	61.4		75.4	74.2	25.4	
Actuated g/C Ratio	0.56		0.69	0.67	0.23	
v/c Ratio	0.74		0.44	0.44	0.64	
Control Delay	25.2		9.5	10.4	45.7	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	25.2		9.5	10.4	45.7	
LOS	C		A	B	D	
Approach Delay	25.2			10.2	45.7	
Approach LOS	C			B	D	
Queue Length 50th (ft)	383		36	198	149	
Queue Length 95th (ft)	#691		m60	m313	213	
Internal Link Dist (ft)	920			1120	920	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2024 Build
 SAT Peak Hour

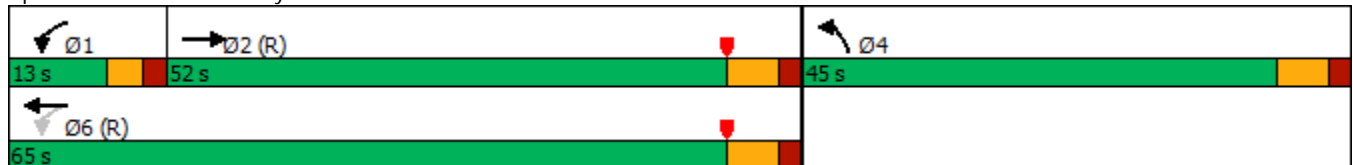


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)			150			
Base Capacity (vph)	1028		343	1320	568	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.74		0.43	0.44	0.41	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 97 (88%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 21.6
 Intersection LOS: C
 Intersection Capacity Utilization 77.5%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2024 Build
 SAT Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	672	82	147	580	88	142
Future Volume (veh/h)	672	82	147	580	88	142
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1765	1711	2024	2090	1875	1860
Adj Flow Rate, veh/h	679	81	148	586	89	143
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	0	0	1	0	1
Cap, veh/h	978	117	432	1510	116	186
Arrive On Green	0.63	0.62	0.04	0.48	0.18	0.17
Sat Flow, veh/h	1547	185	1927	2090	634	1018
Grp Volume(v), veh/h	0	760	148	586	233	0
Grp Sat Flow(s),veh/h/ln	0	1731	1927	2090	1659	0
Q Serve(g_s), s	0.0	31.7	2.7	19.6	14.7	0.0
Cycle Q Clear(g_c), s	0.0	31.7	2.7	19.6	14.7	0.0
Prop In Lane		0.11	1.00		0.38	0.61
Lane Grp Cap(c), veh/h	0	1094	432	1510	303	0
V/C Ratio(X)	0.00	0.69	0.34	0.39	0.77	0.00
Avail Cap(c_a), veh/h	0	1094	486	1510	600	0
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	13.3	11.9	12.9	43.0	0.0
Incr Delay (d2), s/veh	0.0	3.6	0.5	0.8	13.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	17.9	2.2	15.4	11.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	16.9	12.3	13.7	56.7	0.0
LnGrp LOS	A	B	B	B	E	A
Approach Vol, veh/h	760			734	233	
Approach Delay, s/veh	16.9			13.4	56.7	
Approach LOS	B			B	E	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.9	74.7		25.3		84.7
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	8.0	45.8		38.8		58.8
Max Q Clear Time (g_c+I1), s	4.7	33.7		16.7		21.6
Green Ext Time (p_c), s	0.1	9.2		2.4		16.3

Intersection Summary




















HCM 6th Ctrl Delay	20.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2024 Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	873	0	1	890	109	0	0	1	57	0	35
Future Volume (vph)	16	873	0	1	890	109	0	0	1	57	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	909	0	1	1041	0	0	1	0	59	36	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	69.9%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↷		↶	↷	
Traffic Vol, veh/h	16	873	0	1	890	109	0	0	1	57	0	35
Future Vol, veh/h	16	873	0	1	890	109	0	0	1	57	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	17	909	0	1	927	114	0	0	1	59	0	36

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1041	0	0	909	0	0	1947	1986	909	1930	1929	984
Stage 1	-	-	-	-	-	-	943	943	-	986	986	-
Stage 2	-	-	-	-	-	-	1004	1043	-	944	943	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	616	-	-	427	-	-	65	77	368	74	93	343
Stage 1	-	-	-	-	-	-	389	382	-	390	387	-
Stage 2	-	-	-	-	-	-	361	347	-	410	402	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	616	-	-	427	-	-	57	75	368	72	90	343
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	75	-	72	90	-
Stage 1	-	-	-	-	-	-	378	371	-	379	386	-
Stage 2	-	-	-	-	-	-	322	346	-	398	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	14.8	103.9
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	368	616	-	-	427	-	-	72	343
HCM Lane V/C Ratio	0.003	0.027	-	-	0.002	-	-	0.825	0.106
HCM Control Delay (s)	14.8	11	-	-	13.5	-	-	157.4	16.7
HCM Lane LOS		B	B	-	B	-	-	F	C
HCM 95th %tile Q(veh)		0	0.1	-	0	-	-	4	0.4

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	649	49	152	739	15	254	3	159	34	4	14
Future Volume (vph)	21	649	49	152	739	15	254	3	159	34	4	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1783	1584	1572	1697	1608	1694	1574	0	1761	1744	0
Flt Permitted	0.332			0.216			0.745			0.547		
Satd. Flow (perm)	577	1783	1584	357	1697	1573	1329	1574	0	1014	1744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83			29			167			15
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1060			1340			300				300
Travel Time (s)		18.1			22.8			8.2				8.2
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	683	52	160	778	16	267	170	0	36	19	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	57.0	57.0	57.0	22.0	79.0	79.0	31.0	31.0		31.0	31.0	
Total Split (%)	51.8%	51.8%	51.8%	20.0%	71.8%	71.8%	28.2%	28.2%		28.2%	28.2%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	59.2	59.2	59.2	75.6	74.3	74.3	25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.54	0.54	0.54	0.69	0.68	0.68	0.23	0.23		0.23	0.23	
v/c Ratio	0.07	0.71	0.06	0.44	0.68	0.01	0.89	0.35		0.16	0.05	
Control Delay	15.4	20.3	2.7	10.6	10.7	1.5	71.3	7.7		35.4	17.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	15.4	20.3	2.7	10.6	10.7	1.5	71.3	7.7		35.4	17.4	
LOS	B	C	A	B	B	A	E	A		D	B	
Approach Delay		18.9			10.5			46.6			29.2	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	6	196	0	27	168	0	181	2		20	2	
Queue Length 95th (ft)	m14	345	m5	72	273	m1	#326	56		49	22	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
SAT Peak Hour

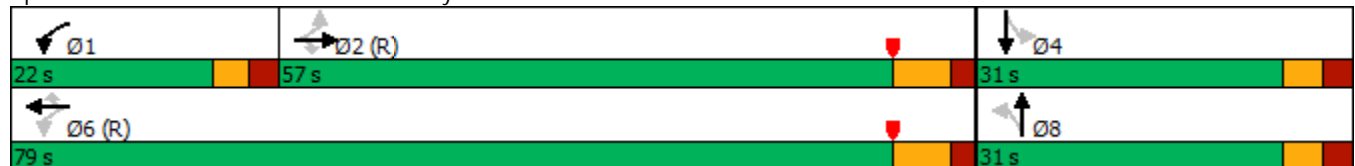


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	310	959	890	439	1146	1072	315	500		240	425	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.07	0.71	0.06	0.36	0.68	0.01	0.85	0.34		0.15	0.04	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 4 (4%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 21.0 Intersection LOS: C
 Intersection Capacity Utilization 89.6% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2024 Build
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	649	49	152	739	15	254	3	159	34	4	14
Future Volume (veh/h)	21	649	49	152	739	15	254	3	159	34	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2047	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	22	683	30	160	778	11	267	3	102	36	4	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	506	1192	1015	583	1203	1067	377	10	344	290	131	263
Arrive On Green	1.00	1.00	1.00	0.14	1.00	1.00	0.21	0.21	0.20	0.21	0.21	0.20
Sat Flow, veh/h	756	2047	1743	1666	1736	1540	1489	48	1642	1395	626	1253
Grp Volume(v), veh/h	22	683	30	160	778	11	267	0	105	36	0	12
Grp Sat Flow(s),veh/h/ln	756	2047	1743	1666	1736	1540	1489	0	1691	1395	0	1879
Q Serve(g_s), s	0.0	0.0	0.0	3.9	0.0	0.0	19.0	0.0	5.8	2.4	0.0	0.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.9	0.0	0.0	19.1	0.0	5.8	7.8	0.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.67
Lane Grp Cap(c), veh/h	506	1192	1015	583	1203	1067	377	0	354	290	0	394
V/C Ratio(X)	0.04	0.57	0.03	0.27	0.65	0.01	0.71	0.00	0.30	0.12	0.00	0.03
Avail Cap(c_a), veh/h	506	1192	1015	732	1203	1067	418	0	401	329	0	446
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.74	0.74	0.74	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.0	0.0	0.0	41.9	0.0	37.1	39.7	0.0	34.9
Incr Delay (d2), s/veh	0.2	2.0	0.1	0.2	2.0	0.0	4.9	0.0	0.5	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	1.2	0.0	2.0	1.2	0.0	12.0	0.0	4.5	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	2.0	0.1	6.2	2.0	0.0	46.8	0.0	37.5	39.9	0.0	34.9
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h		735			949			372				48
Approach Delay, s/veh		1.9			2.7			44.2				38.6
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.2	69.9		28.0		82.0		28.0				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	16.5	50.2		* 25		72.2		* 25				
Max Q Clear Time (g_c+I1), s	6.4	2.5		10.3		2.5		21.6				
Green Ext Time (p_c), s	0.3	0.8		0.1		1.0		0.5				

Intersection Summary

HCM 6th Ctrl Delay	10.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2024 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	596	12	4	722	66	9	3	10	61	38	127
Future Volume (vph)	106	596	12	4	722	66	9	3	10	61	38	127
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1742	0	1744	1818	1561	0	1765	0	1719	1573	0
Flt Permitted	0.254			0.416				0.601		0.742		
Satd. Flow (perm)	448	1742	0	764	1818	1561	0	1082	0	1342	1573	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				80		11			137	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	654	0	4	776	71	0	24	0	66	178	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	14.0	82.0		68.0	68.0	68.0	28.0	28.0		28.0	28.0	
Total Split (%)	12.7%	74.5%		61.8%	61.8%	61.8%	25.5%	25.5%		25.5%	25.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	89.0	88.1		75.5	75.5	75.5		11.9		11.9	11.9	
Actuated g/C Ratio	0.81	0.80		0.69	0.69	0.69		0.11		0.11	0.11	
v/c Ratio	0.25	0.47		0.01	0.62	0.06		0.19		0.46	0.61	
Control Delay	4.6	5.9		6.0	13.5	1.3		32.1		55.0	22.1	
Queue Delay	0.0	0.0		0.0	0.2	0.0		0.0		0.0	0.0	
Total Delay	4.6	5.9		6.0	13.7	1.3		32.1		55.0	22.1	
LOS	A	A		A	B	A		C		D	C	
Approach Delay		5.7			12.6			32.1			31.0	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	18	135		1	325	2		8		44	27	
Queue Length 95th (ft)	m32	234		m2	531	6		33		86	94	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2024 Build
 SAT Peak Hour

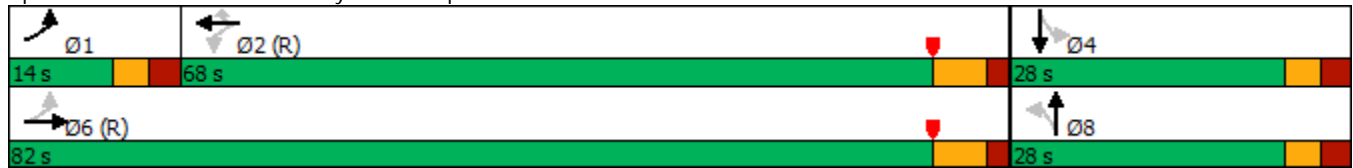


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	468	1395		524	1247	1095		238		285	442	
Starvation Cap Reductn	0	0		0	69	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.24	0.47		0.01	0.66	0.06		0.10		0.23	0.40	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 9 (8%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 12.4
 Intersection LOS: B
 Intersection Capacity Utilization 69.7%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2024 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	596	12	4	722	66	9	3	10	61	38	127
Future Volume (veh/h)	106	596	12	4	722	66	9	3	10	61	38	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1711	1949	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	114	641	11	4	776	58	10	3	7	66	41	66
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	580	1355	23	656	1406	1200	67	27	24	189	59	96
Arrive On Green	0.09	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1629	1663	29	813	1935	1652	187	291	257	1375	631	1016
Grp Volume(v), veh/h	114	0	652	4	776	58	20	0	0	66	0	107
Grp Sat Flow(s),veh/h/ln	1629	0	1692	813	1935	1652	735	0	0	1375	0	1647
Q Serve(g_s), s	1.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	6.9
Cycle Q Clear(g_c), s	1.7	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	5.4	0.0	6.9
Prop In Lane	1.00		0.02	1.00		1.00	0.50		0.35	1.00		0.62
Lane Grp Cap(c), veh/h	580	0	1378	656	1406	1200	112	0	0	189	0	155
V/C Ratio(X)	0.20	0.00	0.47	0.01	0.55	0.05	0.18	0.00	0.00	0.35	0.00	0.69
Avail Cap(c_a), veh/h	644	0	1378	656	1406	1200	283	0	0	352	0	350
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.00	0.67	0.86	0.86	0.86	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.4	0.0	0.0	0.0	0.0	0.0	46.2	0.0	0.0	47.6	0.0	48.6
Incr Delay (d2), s/veh	0.1	0.0	0.8	0.0	1.3	0.1	0.8	0.0	0.0	1.1	0.0	5.4
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.5	0.0	0.9	0.0	1.0	0.0	0.0	3.2	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.5	0.0	0.8	0.0	1.3	0.1	46.9	0.0	0.0	48.7	0.0	53.9
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		766			838			20				173
Approach Delay, s/veh		1.0			1.3			46.9				51.9
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.7	85.3		15.0		95.0		15.0				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	8.5	61.6		22.4		75.6		22.4				
Max Q Clear Time (g_c+I1), s	4.2	2.5		8.9		2.5		9.0				
Green Ext Time (p_c), s	0.1	1.1		0.5		0.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	574	23	20	605	13	66	23	17	15	20	74
Future Volume (vph)	54	574	23	20	605	13	66	23	17	15	20	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%				-4%
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1746	0	1620	1700	0	1541	1660	0	0	1821	0
Flt Permitted	0.378			0.390			0.538				0.952	
Satd. Flow (perm)	657	1746	0	665	1700	0	873	1660	0	0	1746	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			18				78
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	628	0	21	651	0	69	42	0	0	115	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	64.0	64.0		64.0	64.0		46.0	46.0		46.0	46.0	
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%	41.8%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	86.8	86.8		86.8	86.8		13.3	13.3				13.3
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.12	0.12				0.12
v/c Ratio	0.11	0.46		0.04	0.49		0.66	0.19				0.41
Control Delay	5.4	7.0		3.6	6.0		73.0	29.1				20.7
Queue Delay	0.0	0.1		0.0	0.1		0.0	0.0				0.0
Total Delay	5.4	7.1		3.6	6.0		73.0	29.1				20.7
LOS	A	A		A	A		E	C				C
Approach Delay		7.0			5.9			56.4				20.7
Approach LOS		A			A			E				C
Queue Length 50th (ft)	11	168		3	126		47	15				24
Queue Length 95th (ft)	28	221		10	246		91	46				73
Internal Link Dist (ft)		530			920			270				920

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2024 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	518	1377		524	1341		325	630			699	
Starvation Cap Reductn	0	120		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	55		0	0			2	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.11	0.50		0.04	0.51		0.21	0.07			0.16	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	45
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.0
Intersection LOS:	B
Intersection Capacity Utilization	69.1%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2024 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	574	23	20	605	13	66	23	17	15	20	74
Future Volume (veh/h)	54	574	23	20	605	13	66	23	17	15	20	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1736	1750	1912	1912	1912	1722	1750	1750	1949	2027	1949
Adj Flow Rate, veh/h	57	604	19	21	637	13	69	24	6	16	21	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	0	0	0	0	2	0	0	0	0	0
Cap, veh/h	606	1399	44	750	1560	32	170	100	25	62	50	60
Arrive On Green	1.00	1.00	1.00	0.84	0.84	0.83	0.07	0.07	0.07	0.07	0.07	0.07
Sat Flow, veh/h	720	1674	53	819	1867	38	1245	1351	338	287	681	811
Grp Volume(v), veh/h	57	0	623	21	0	650	69	0	30	68	0	0
Grp Sat Flow(s),veh/h/ln	720	0	1726	819	0	1905	1245	0	1689	1779	0	0
Q Serve(g_s), s	1.0	0.0	0.0	0.5	0.0	9.4	0.9	0.0	1.8	1.9	0.0	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0	0.5	0.0	9.4	4.9	0.0	1.8	4.0	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.02	1.00		0.20	0.24		0.46
Lane Grp Cap(c), veh/h	606	0	1443	750	0	1592	170	0	125	156	0	0
V/C Ratio(X)	0.09	0.00	0.43	0.03	0.00	0.41	0.41	0.00	0.24	0.44	0.00	0.00
Avail Cap(c_a), veh/h	606	0	1443	750	0	1592	541	0	630	675	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.00	0.88	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	1.5	0.0	2.3	49.3	0.0	48.1	49.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.8	0.1	0.0	0.8	1.6	0.0	1.0	1.9	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.6	0.1	0.0	3.6	3.4	0.0	1.4	3.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.8	0.0	0.8	1.6	0.0	3.0	50.9	0.0	49.1	51.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		680			671			99				68
Approach Delay, s/veh		0.8			3.0			50.3				51.2
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		96.8		13.2		96.8		13.2				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 58		40.0		* 58		40.0				
Max Q Clear Time (g_c+I1), s		2.0		6.0		11.4		6.9				
Green Ext Time (p_c), s		24.3		0.2		24.2		0.3				

Intersection Summary



















HCM 6th Ctrl Delay	7.3
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	426	1	59	265	138	3	0	154	27
Future Volume (vph)	0	0	0	426	1	59	265	138	3	0	154	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1640	1442	1574	1637	0	0	1740	1578
Flt Permitted					0.952		0.490					
Satd. Flow (perm)	0	0	0	0	1640	1442	812	1637	0	0	1740	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164		2				155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	4%	5%	2%	2%	1%	11%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	445	61	276	147	0	0	160	28
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				25.0	25.0	25.0	13.0	35.0			22.0	22.0
Total Split (%)				41.7%	41.7%	41.7%	21.7%	58.3%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					18.8	18.8	27.9	27.9			14.8	14.8
Actuated g/C Ratio					0.33	0.33	0.50	0.50			0.26	0.26
v/c Ratio					0.81	0.10	0.54	0.18			0.35	0.05
Control Delay					31.7	0.4	13.7	8.9			19.8	0.2
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					31.7	0.4	13.7	8.9			19.8	0.2
LOS					C	A	B	A			B	A
Approach Delay					28.0			12.0			16.9	
Approach LOS					C			B			B	
Queue Length 50th (ft)					130	0	56	27			45	0
Queue Length 95th (ft)					#282	0	102	54			89	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					601	633	511	879			529	587
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.74	0.10	0.54	0.17			0.30	0.05

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	56.2
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	20.1
Intersection LOS:	C
Intersection Capacity Utilization:	62.5%
ICU Level of Service:	B
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2024 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (veh/h)	0	0	0	426	1	59	265	138	3	0	154	27
Future Volume (veh/h)	0	0	0	426	1	59	265	138	3	0	154	27
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1846	1875	1875	1722	1707	1750	0	1860	1787
Adj Flow Rate, veh/h				444	1	0	276	144	3	0	160	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	0	4	5	2	0	1	11
Cap, veh/h				554	1		600	841	18	0	469	
Arrive On Green				0.29	0.31	0.00	0.16	0.50	0.49	0.00	0.25	0.00
Sat Flow, veh/h				1781	4	1589	1640	1667	35	0	1860	1514
Grp Volume(v), veh/h				445	0	0	276	0	147	0	160	0
Grp Sat Flow(s),veh/h/ln				1785	0	1589	1640	0	1701	0	1860	1514
Q Serve(g_s), s				11.9	0.0	0.0	5.8	0.0	2.4	0.0	3.6	0.0
Cycle Q Clear(g_c), s				11.9	0.0	0.0	5.8	0.0	2.4	0.0	3.6	0.0
Prop In Lane				1.00		1.00	1.00		0.02	0.00		1.00
Lane Grp Cap(c), veh/h				555	0		600	0	858	0	469	
V/C Ratio(X)				0.80	0.00		0.46	0.00	0.17	0.00	0.34	
Avail Cap(c_a), veh/h				710	0		600	0	991	0	614	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.8	0.0	0.0	9.9	0.0	6.9	0.0	15.8	0.0
Incr Delay (d2), s/veh				5.1	0.0	0.0	0.6	0.0	0.3	0.0	1.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				9.0	0.0	0.0	2.9	0.0	1.2	0.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				21.9	0.0	0.0	10.5	0.0	7.3	0.0	17.3	0.0
LnGrp LOS				C	A		B	A	A	A	B	
Approach Vol, veh/h					445			423			160	
Approach Delay, s/veh					21.9			9.3			17.3	
Approach LOS					C			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.0			13.0	18.0		20.5				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		19.5				
Max Q Clear Time (g_c+I1), s		4.4			7.8	5.6		13.9				
Green Ext Time (p_c), s		2.9			0.0	1.8		1.2				

Intersection Summary


















HCM 6th Ctrl Delay	16.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 Build
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	269	0	0	0	0	372	431	86	496	0
Future Volume (vph)	23	0	269	0	0	0	0	372	431	86	496	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1621	1554	0	0	0	0	1673	0	1762	1801	0
Flt Permitted		0.950								0.950		
Satd. Flow (perm)	0	1621	1554	0	0	0	0	1673	0	1762	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	0%	2%	2%	2%	2%	2%	4%	2%	0%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	289	0	0	0	0	863	0	92	533	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.1% ICU Level of Service C
Analysis Period (min)	15

HCM 6th TWSC
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2024 Build
 SAT Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↗	↕	
Traffic Vol, veh/h	23	0	269	0	0	0	0	372	431	86	496	0
Future Vol, veh/h	23	0	269	0	0	0	0	372	431	86	496	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	13	0	2	2	2	2	2	4	2	0	3	2
Mvmt Flow	25	0	289	0	0	0	0	400	463	92	533	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1117	1117	533	-	0	0	400	0	0
Stage 1	717	717	-	-	-	-	-	-	-
Stage 2	400	400	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.9	5.92	-	-	-	3.9	-	-
Critical Hdwy Stg 1	4.93	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.93	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.1	-	-	-	3	-	-
Pot Cap-1 Maneuver	233	252	603	0	-	-	915	-	0
Stage 1	583	492	-	0	-	-	-	-	0
Stage 2	794	647	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	209	0	603	-	-	-	915	-	-
Mov Cap-2 Maneuver	209	0	-	-	-	-	-	-	-
Stage 1	583	0	-	-	-	-	-	-	-
Stage 2	714	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	209	603	915	-
HCM Lane V/C Ratio	-	-	0.118	0.48	0.101	-
HCM Control Delay (s)	-	-	24.5	16.4	9.4	-
HCM Lane LOS	-	-	C	C	A	-
HCM 95th %tile Q(veh)	-	-	0.4	2.6	0.3	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2024 Build
 SAT Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	11	13	777	780	3
Future Volume (vph)	6	11	13	777	780	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1556	0	0	1800	1798	0
Flt Permitted	0.984			0.999		
Satd. Flow (perm)	1556	0	0	1800	1798	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	17%	0%	0%	3%	1%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	841	833	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	61.3% ICU Level of Service B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	11	13	777	780	3
Future Vol, veh/h	6	11	13	777	780	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	0	0	3	1	33
Mvmt Flow	6	12	14	827	830	3

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1687	832	833	0	-	0
Stage 1	832	-	-	-	-	-
Stage 2	855	-	-	-	-	-
Critical Hdwy	6.57	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.2	3.1	3	-	-	-
Pot Cap-1 Maneuver	100	388	675	-	-	-
Stage 1	439	-	-	-	-	-
Stage 2	428	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	96	388	675	-	-	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	422	-	-	-	-	-
Stage 2	428	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.3	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	675	-	187	-	-
HCM Lane V/C Ratio	0.02	-	0.097	-	-
HCM Control Delay (s)	10.4	0	26.3	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	23	75	11	21	32	50	619	8	19	603	179
Future Volume (vph)	151	23	75	11	21	32	50	619	8	19	603	179
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1662	0	1572	1636	0	1620	1712	0	1550	1701	0
Flt Permitted	0.720			0.690			0.236			0.337		
Satd. Flow (perm)	1228	1662	0	1142	1636	0	402	1712	0	550	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			34			2				42
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	0%	3%	0%	5%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	103	0	12	56	0	53	660	0	20	823	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	20.0	20.0		20.0	20.0		40.0	40.0		40.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.7	12.7		12.4	12.4		40.5	40.5		40.5	40.5	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.68	0.68		0.68	0.68	
v/c Ratio	0.61	0.25		0.05	0.15		0.20	0.57		0.05	0.71	
Control Delay	31.5	8.9		17.9	11.0		7.0	9.8		6.1	13.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.5	8.9		17.9	11.0		7.0	9.8		6.1	13.7	
LOS	C	A		B	B		A	A		A	B	
Approach Delay		22.6			12.3			9.6			13.5	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)	51	7		3	6		8	137		3	190	
Queue Length 95th (ft)	102	38		14	29		m18	324		11	#440	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 Build
SAT Peak Hour

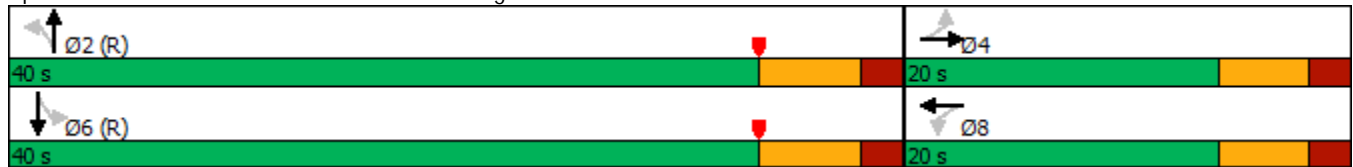


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	307	474		285	434		271	1156		371	1161	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.52	0.22		0.04	0.13		0.20	0.57		0.05	0.71	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 13.3
 Intersection LOS: B
 Intersection Capacity Utilization 69.2%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd



















2024 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	23	75	11	21	32	50	619	8	19	603	179
Future Volume (veh/h)	151	23	75	11	21	32	50	619	8	19	603	179
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1750	1820	1708	1912	1869	1912	1878	1935	1949
Adj Flow Rate, veh/h	159	24	52	12	22	20	53	652	7	20	635	154
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	0	0	3	0	3	0	5	1	0
Cap, veh/h	348	104	226	298	158	143	390	1191	13	377	971	235
Arrive On Green	0.18	0.18	0.16	0.18	0.18	0.16	0.21	0.21	0.21	0.65	0.65	0.63
Sat Flow, veh/h	1439	581	1258	1238	878	798	702	1846	20	778	1504	365
Grp Volume(v), veh/h	159	0	76	12	0	42	53	0	659	20	0	789
Grp Sat Flow(s),veh/h/ln	1439	0	1839	1238	0	1676	702	0	1866	778	0	1869
Q Serve(g_s), s	6.3	0.0	2.1	0.5	0.0	1.3	4.1	0.0	18.9	1.1	0.0	15.6
Cycle Q Clear(g_c), s	7.5	0.0	2.1	2.6	0.0	1.3	19.7	0.0	18.9	19.9	0.0	15.6
Prop In Lane	1.00		0.68	1.00		0.48	1.00		0.01	1.00		0.20
Lane Grp Cap(c), veh/h	348	0	330	298	0	301	390	0	1204	377	0	1207
V/C Ratio(X)	0.46	0.00	0.23	0.04	0.00	0.14	0.14	0.00	0.55	0.05	0.00	0.65
Avail Cap(c_a), veh/h	449	0	460	385	0	419	390	0	1204	377	0	1207
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.86	0.00	0.86	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	21.4	22.2	0.0	20.9	23.1	0.0	15.8	13.8	0.0	6.6
Incr Delay (d2), s/veh	0.9	0.0	0.4	0.1	0.0	0.2	0.6	0.0	1.5	0.3	0.0	2.8
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	3.7	0.0	1.6	0.3	0.0	0.9	1.4	0.0	14.2	0.3	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	21.7	22.3	0.0	21.1	23.7	0.0	17.3	14.1	0.0	9.4
LnGrp LOS	C	A	C	C	A	C	C	A	B	B	A	A
Approach Vol, veh/h		235			54			712				809
Approach Delay, s/veh		23.8			21.4			17.8				9.5
Approach LOS		C			C			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.2		15.8		44.2		15.8				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		33.5		14.0		33.5		14.0				
Max Q Clear Time (g_c+I1), s		20.9		9.5		17.6		4.6				
Green Ext Time (p_c), s		9.2		0.3		12.9		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				15.0								
HCM 6th LOS				B								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1	12	23	0	7	15	669	7	11	694	7
Future Volume (vph)	5	1	12	23	0	7	15	669	7	11	694	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1670	1581	0	1698	0	0	1671	0	0	1722	1648
Flt Permitted					0.986			0.982			0.989	
Satd. Flow (perm)	0	1740	1581	0	1739	0	0	1642	0	0	1705	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			2				45
Link Speed (mph)		25			25			40				40
Link Distance (ft)		750			1000			600				1240
Travel Time (s)		20.5			27.3			10.2				21.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	13	0	31	0	0	727	0	0	743	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	16.0	16.0	16.0	16.0	16.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	73.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		7.0	7.0		7.0			53.2			53.2	53.2
Actuated g/C Ratio		0.12	0.12		0.12			0.89			0.89	0.89
v/c Ratio		0.03	0.06		0.12			0.50			0.49	0.00
Control Delay		23.5	0.5		5.0			4.0			2.2	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		23.5	0.5		5.0			4.0			2.2	0.0
LOS		C	A		A			A			A	A
Approach Delay		7.8			5.0			4.0			2.2	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2	0		0			0			0	0
Queue Length 95th (ft)		11	0		12			184			14	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		333	347		377			1456			1512	1466
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.02	0.04		0.08			0.50			0.49	0.00

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 33 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.50
 Intersection Signal Delay: 3.2 Intersection LOS: A
 Intersection Capacity Utilization 66.7% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2024 Build
 SAT Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	5	1	12	23	0	7	15	669	7	11	694	7
Future Volume (veh/h)	5	1	12	23	0	7	15	669	7	11	694	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1736	1778	1875	1846	1950
Adj Flow Rate, veh/h	5	1	6	24	0	3	16	704	7	12	731	7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	171	12	69	161	0	6	72	1343	13	68	1457	1319
Arrive On Green	0.03	0.04	0.04	0.03	0.00	0.03	0.78	0.80	0.78	1.00	1.00	1.00
Sat Flow, veh/h	1397	279	1586	1109	0	139	13	1682	16	8	1825	1652
Grp Volume(v), veh/h	6	0	6	27	0	0	727	0	0	743	0	7
Grp Sat Flow(s),veh/h/ln	1676	0	1586	1248	0	0	1712	0	0	1833	0	1652
Q Serve(g_s), s	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.2	1.3	0.0	0.0	8.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.83		1.00	0.89		0.11	0.02		0.01	0.02		1.00
Lane Grp Cap(c), veh/h	155	0	69	147	0	0	1399	0	0	1494	0	1319
V/C Ratio(X)	0.04	0.00	0.09	0.18	0.00	0.00	0.52	0.00	0.00	0.50	0.00	0.01
Avail Cap(c_a), veh/h	365	0	304	359	0	0	1399	0	0	1494	0	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.65	0.00	0.65
Uniform Delay (d), s/veh	28.0	0.0	27.6	28.7	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.6	0.0	0.0	1.4	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.2	0.0	0.2	0.7	0.0	0.0	1.7	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.1	0.0	28.1	29.3	0.0	0.0	3.5	0.0	0.0	0.8	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		12			27			727			750	
Approach Delay, s/veh		28.1			29.3			3.5			0.8	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		52.9		7.1		52.9		7.1				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		38.0		10.5		38.0		10.5				
Max Q Clear Time (g_c+I1), s		10.9		2.2		2.0		3.3				
Green Ext Time (p_c), s		18.4		0.0		23.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay	2.8
HCM 6th LOS	A

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	358	55	125	442	135	70	176	67	125	138	133
Future Volume (vph)	218	358	55	125	442	135	70	176	67	125	138	133
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%				4%
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1573	1809	1435	1527	1731	1592	1736	1807	0	1558	1624	1499
Flt Permitted	0.163			0.544			0.667			0.473		
Satd. Flow (perm)	270	1809	1435	874	1731	1592	1219	1807	0	776	1624	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160			255			24			247
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1025				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	4%	0%	2%	0%	5%	0%	4%	5%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	365	56	128	451	138	71	248	0	128	141	136
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	13.5	37.5	37.5	24.0	24.0	24.0	14.0	23.5		14.0	23.5	23.5
Total Split (%)	18.0%	50.0%	50.0%	32.0%	32.0%	32.0%	18.7%	31.3%		18.7%	31.3%	31.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	32.6	32.6	32.6	18.9	18.9	18.9	20.1	14.2		20.3	14.3	14.3
Actuated g/C Ratio	0.47	0.47	0.47	0.27	0.27	0.27	0.29	0.21		0.29	0.21	0.21
v/c Ratio	0.79	0.43	0.07	0.54	0.96	0.22	0.17	0.64		0.40	0.42	0.27
Control Delay	38.4	16.1	0.2	34.7	62.2	0.8	14.8	31.3		18.5	28.9	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	38.4	16.1	0.2	34.7	62.2	0.8	14.8	31.3		18.5	28.9	1.3
LOS	D	B	A	C	E	A	B	C		B	C	A
Approach Delay		22.4			45.5			27.6				16.3
Approach LOS		C			D			C				B
Queue Length 50th (ft)	62	110	0	50	-211	0	19	92		36	55	0
Queue Length 95th (ft)	#181	190	0	#122	#405	0	43	162		71	105	0
Internal Link Dist (ft)		860			410			945			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
 SAT Peak Hour

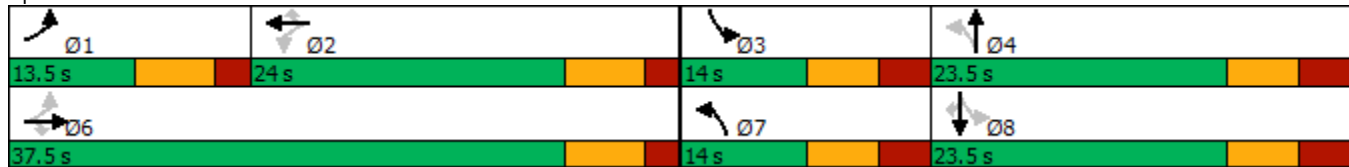


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	281	853	762	238	472	619	417	484		320	419	570
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.79	0.43	0.07	0.54	0.96	0.22	0.17	0.51		0.40	0.34	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 69.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 30.0
 Intersection LOS: C
 Intersection Capacity Utilization 77.9%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	358	55	125	442	135	70	176	67	125	138	133
Future Volume (veh/h)	218	358	55	125	442	135	70	176	67	125	138	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1738	1794	1837	2173	2186	2173	1655	1641	1711
Adj Flow Rate, veh/h	222	365	50	128	451	0	71	180	65	128	141	54
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	0	0	4	0	2	0	5	0	4	5	0
Cap, veh/h	334	866	734	352	489		421	252	91	335	342	302
Arrive On Green	0.12	0.47	0.47	0.27	0.27	0.00	0.06	0.16	0.15	0.11	0.21	0.21
Sat Flow, veh/h	1723	1837	1557	903	1794	1557	2069	1533	553	1576	1641	1450
Grp Volume(v), veh/h	222	365	50	128	451	0	71	0	245	128	141	54
Grp Sat Flow(s),veh/h/ln	1723	1837	1557	903	1794	1557	2069	0	2086	1576	1641	1450
Q Serve(g_s), s	5.8	8.9	1.2	8.2	16.6	0.0	1.9	0.0	7.6	4.4	5.1	2.1
Cycle Q Clear(g_c), s	5.8	8.9	1.2	8.2	16.6	0.0	1.9	0.0	7.6	4.4	5.1	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	334	866	734	352	489		421	0	343	335	342	302
V/C Ratio(X)	0.66	0.42	0.07	0.36	0.92		0.17	0.00	0.72	0.38	0.41	0.18
Avail Cap(c_a), veh/h	334	866	734	352	489		535	0	537	352	423	374
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	11.9	9.8	21.0	24.0	0.0	21.1	0.0	27.0	20.1	23.3	22.1
Incr Delay (d2), s/veh	4.9	0.1	0.0	0.2	22.8	0.0	0.2	0.0	2.8	0.7	0.8	0.3
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	4.1	5.3	0.6	2.8	14.2	0.0	1.6	0.0	7.1	2.7	3.4	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	12.0	9.8	21.2	46.8	0.0	21.2	0.0	29.8	20.8	24.1	22.4
LnGrp LOS	C	B	A	C	D		C	A	C	C	C	C
Approach Vol, veh/h		637			579			316			323	
Approach Delay, s/veh		14.9			41.1			27.9			22.5	
Approach LOS		B			D			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	13.5	24.0	13.3	17.2		37.5	10.3	20.2				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	7.0	17.5	7.0	16.5		31.0	7.0	16.5				
Max Q Clear Time (g_c+I1), s	8.3	19.1	6.9	9.6		11.4	4.4	7.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6		0.1	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	26.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2024 Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	268	0	425	71	281	397	0
Future Volume (vph)	0	0	0	0	0	268	0	425	71	281	397	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%				-2%
Storage Length (ft)	0		0	0		0	0		150	325		0
Storage Lanes	0		1	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1844	1567	1787	1863	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1844	1567	1787	1863	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		500			500			640			600	
Travel Time (s)		8.5			8.5			17.5			16.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	298	0	472	79	312	441	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM 6th TWSC
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2024 Build
 SAT Peak Hour

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↖	↗	↖	↖	
Traffic Vol, veh/h	0	0	0	0	0	268	0	425	71	281	397	0
Future Vol, veh/h	0	0	0	0	0	268	0	425	71	281	397	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	150	325	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	3	2
Mvmt Flow	0	0	0	0	0	298	0	472	79	312	441	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	441	-	-	472	441	0	0	551	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.1	2.218	-	-	3	-	-
Pot Cap-1 Maneuver	0	0	616	0	0	625	1119	-	-	824	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	616	-	-	625	1119	-	-	824	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		15.9		0		5	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1119	-	-	-	625	824	-
HCM Lane V/C Ratio	-	-	-	-	0.476	0.379	-
HCM Control Delay (s)	0	-	-	0	15.9	12	-
HCM Lane LOS	A	-	-	A	C	B	-
HCM 95th %tile Q(veh)	0	-	-	-	2.6	1.8	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	188	363	465	94	150	300
Future Volume (vph)	188	363	465	94	150	300
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350			225	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1770	1881	1881	1583	1668	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1770	1881	1881	1583	1668	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	403	517	104	500	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.7%
Analysis Period (min)	15
	ICU Level of Service C

Intersection						
Int Delay, s/veh	38.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	188	363	465	94	150	300
Future Vol, veh/h	188	363	465	94	150	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	225	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	1	2	2	2
Mvmt Flow	209	403	517	104	167	333

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	621	0	-	0	1338
Stage 1	-	-	-	-	517
Stage 2	-	-	-	-	821
Critical Hdwy	4.5	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	707	-	-	-	183
Stage 1	-	-	-	-	678
Stage 2	-	-	-	-	481
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	707	-	-	-	~ 129
Mov Cap-2 Maneuver	-	-	-	-	277
Stage 1	-	-	-	-	477
Stage 2	-	-	-	-	481

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	127.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	707	-	-	-	428
HCM Lane V/C Ratio	0.295	-	-	-	1.168
HCM Control Delay (s)	12.2	-	-	-	127.8
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1.2	-	-	-	18.9

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
29: Colebrook Rd & Harrisburg Ave

2024 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	46	49	32	15	32	60	19	218	7	37	220	42
Future Volume (vph)	46	49	32	15	32	60	19	218	7	37	220	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1676	0	0	1621	0	0	1774	0	0	1848	0
Flt Permitted		0.982			0.993			0.996			0.994	
Satd. Flow (perm)	0	1676	0	0	1621	0	0	1774	0	0	1848	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1010			1132			1000			1025	
Travel Time (s)		19.7			22.1			27.3			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	4%	0%	0%	3%	0%	5%	2%	0%	0%	2%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	112	0	0	254	0	0	312	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.9%
ICU Level of Service	A
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	46	49	32	15	32	60	19	218	7	37	220	42
Future Vol, veh/h	46	49	32	15	32	60	19	218	7	37	220	42
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	8	4	0	0	3	0	5	2	0	0	2	9
Mvmt Flow	48	51	33	16	33	63	20	227	7	39	229	44
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	9.3	11	11.5
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	36%	14%	12%
Vol Thru, %	89%	39%	30%	74%
Vol Right, %	3%	25%	56%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	244	127	107	299
LT Vol	19	46	15	37
Through Vol	218	49	32	220
RT Vol	7	32	60	42
Lane Flow Rate	254	132	111	311
Geometry Grp	1	1	1	1
Degree of Util (X)	0.361	0.205	0.163	0.424
Departure Headway (Hd)	5.108	5.57	5.253	4.9
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	707	644	682	738
Service Time	3.117	3.607	3.291	2.908
HCM Lane V/C Ratio	0.359	0.205	0.163	0.421
HCM Control Delay	11	10	9.3	11.5
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	1.6	0.8	0.6	2.1

Lanes, Volumes, Timings
32: SR 0230 & Ridge Run Rd

2024 Build
SAT Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	474	510	33	31	3
Future Volume (vph)	3	474	510	33	31	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1796	0	1658	0
Flt Permitted	0.950				0.956	
Satd. Flow (perm)	1754	1828	1796	0	1658	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1310	
Travel Time (s)		33.5	12.4		25.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	494	565	0	35	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.8% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑	↘		↙	
Traffic Vol, veh/h	3	474	510	33	31	3
Future Vol, veh/h	3	474	510	33	31	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	3	494	531	34	32	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	565	0	-	0	1048
Stage 1	-	-	-	-	548
Stage 2	-	-	-	-	500
Critical Hdwy	4.1	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	791	-	-	-	249
Stage 1	-	-	-	-	618
Stage 2	-	-	-	-	656
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	791	-	-	-	248
Mov Cap-2 Maneuver	-	-	-	-	403
Stage 1	-	-	-	-	616
Stage 2	-	-	-	-	656

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	791	-	-	-	413
HCM Lane V/C Ratio	0.004	-	-	-	0.086
HCM Control Delay (s)	9.6	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

APPENDIX L4

2024 BUILD WITH IMPROVEMENTS CONDITION ANALYSES

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2024 Build w/ Improvements
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	69	22	33	6	43	119	46	336	9	31	189	77
Future Volume (vph)	69	22	33	6	43	119	46	336	9	31	189	77
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1231	0	0	1456	0	0	1577	0	0	1435	0
Flt Permitted		0.803			0.985			0.932			0.936	
Satd. Flow (perm)	0	1016	0	0	1437	0	0	1479	0	0	1349	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			124			3			45	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1157			1404			999			1026	
Travel Time (s)		22.5			27.4			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	129	0	0	175	0	0	407	0	0	309	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)		10.9			10.9			22.6			22.6	
Actuated g/C Ratio		0.28			0.28			0.57			0.57	
v/c Ratio		0.43			0.36			0.48			0.39	
Control Delay		15.5			7.7			10.3			8.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.5			7.7			10.3			8.3	
LOS		B			A			B			A	
Approach Delay		15.5			7.7			10.3			8.3	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)		15			7			55			32	
Queue Length 95th (ft)		65			50			155			102	
Internal Link Dist (ft)		1077			1324			919			946	
Turn Bay Length (ft)												
Base Capacity (vph)		507			759			1233			1132	
Starvation Cap Reductn		0			0			0			0	

Lanes, Volumes, Timings
 33: Colebrook Rd & Harrisburg Ave

2024 Build w/ Improvements
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.25			0.23			0.33			0.27	

Intersection Summary	
Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	39.5
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.48
Intersection Signal Delay:	9.9
Intersection LOS:	A
Intersection Capacity Utilization	60.4%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 33: Colebrook Rd & Harrisburg Ave



HCM 6th Signalized Intersection Summary
33: Colebrook Rd & Harrisburg Ave

2024 Build w/ Improvements
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	69	22	33	6	43	119	46	336	9	31	189	77
Future Volume (veh/h)	69	22	33	6	43	119	46	336	9	31	189	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1155	1766	1539	1837	1738	1780	1570	1682	1794	1531	1773	1403
Adj Flow Rate, veh/h	72	23	34	6	45	124	48	350	9	32	197	80
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	48	5	21	0	7	4	16	8	0	32	15	41
Cap, veh/h	379	87	89	151	91	236	198	575	14	188	447	168
Arrive On Green	0.18	0.22	0.18	0.18	0.22	0.18	0.35	0.39	0.35	0.35	0.39	0.35
Sat Flow, veh/h	739	400	408	29	418	1085	105	1462	35	84	1137	427
Grp Volume(v), veh/h	129	0	0	175	0	0	407	0	0	309	0	0
Grp Sat Flow(s),veh/h/ln	1546	0	0	1531	0	0	1603	0	0	1648	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.0	2.7	0.0	0.0	5.4	0.0	0.0	3.6	0.0	0.0
Prop In Lane	0.56		0.26	0.03		0.71	0.12		0.02	0.10		0.26
Lane Grp Cap(c), veh/h	494	0	0	418	0	0	725	0	0	739	0	0
V/C Ratio(X)	0.26	0.00	0.00	0.42	0.00	0.00	0.56	0.00	0.00	0.42	0.00	0.00
Avail Cap(c_a), veh/h	1128	0	0	1155	0	0	2045	0	0	2073	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.9	0.0	0.0	9.2	0.0	0.0	6.4	0.0	0.0	6.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.6	0.0	0.0	1.2	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	0.0	0.0	9.9	0.0	0.0	7.1	0.0	0.0	6.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		129			175			407				309
Approach Delay, s/veh		9.2			9.9			7.1				6.3
Approach LOS		A			A			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.1		10.6		15.1		10.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		31.0		17.0		31.0		17.0				
Max Q Clear Time (g_c+I1), s		7.4		3.7		5.6		4.7				
Green Ext Time (p_c), s		1.7		0.3		1.4		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				7.6								
HCM 6th LOS				A								

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2024 Build w/ Improvements
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	84	81	76	4	51	65	32	294	6	95	349	54
Future Volume (vph)	84	81	76	4	51	65	32	294	6	95	349	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1316	0	0	1486	0	0	1583	0	0	1488	0
Flt Permitted		0.846			0.985			0.929			0.867	
Satd. Flow (perm)	0	1133	0	0	1466	0	0	1478	0	0	1302	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			68			3			19	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1146			1234			997			1028	
Travel Time (s)		22.3			24.0			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	251	0	0	125	0	0	345	0	0	519	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.0	22.0		22.0	22.0	
Total Split (s)	18.0	18.0		18.0	18.0		32.0	32.0		32.0	32.0	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%		64.0%	64.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)		12.2			12.2			25.0			25.0	
Actuated g/C Ratio		0.26			0.26			0.53			0.53	
v/c Ratio		0.77			0.29			0.44			0.74	
Control Delay		33.1			10.1			9.2			17.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		33.1			10.1			9.2			17.3	
LOS		C			B			A			B	
Approach Delay		33.1			10.1			9.2			17.3	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		50			12			53			97	
Queue Length 95th (ft)		#158			46			101			#252	
Internal Link Dist (ft)		1066			1154			917			948	
Turn Bay Length (ft)												
Base Capacity (vph)		344			453			853			758	
Starvation Cap Reductn		0			0			0			0	

Lanes, Volumes, Timings
 33: Colebrook Rd & Harrisburg Ave

2024 Build w/ Improvements
 PM Peak Hour

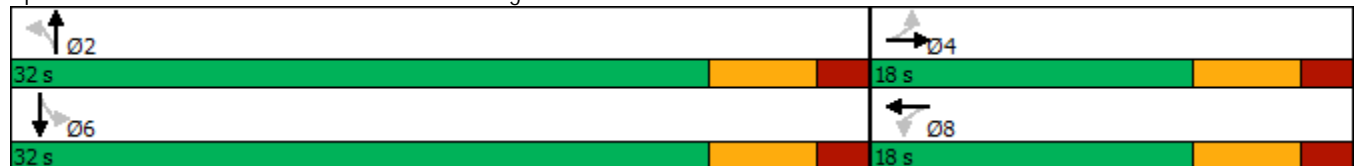


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.73			0.28			0.40			0.68	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	47.3
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	17.5
Intersection LOS:	B
Intersection Capacity Utilization	77.8%
ICU Level of Service	D
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 33: Colebrook Rd & Harrisburg Ave



HCM 6th Signalized Intersection Summary
33: Colebrook Rd & Harrisburg Ave

2024 Build w/ Improvements
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	84	81	76	4	51	65	32	294	6	95	349	54
Future Volume (veh/h)	84	81	76	4	51	65	32	294	6	95	349	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1155	1766	1539	1837	1738	1780	1570	1682	1794	1531	1773	1403
Adj Flow Rate, veh/h	88	84	79	4	53	68	33	306	6	99	364	56
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	48	5	21	0	7	4	16	8	0	32	15	41
Cap, veh/h	258	155	119	122	176	215	156	667	12	225	534	75
Arrive On Green	0.22	0.25	0.22	0.22	0.25	0.22	0.40	0.44	0.40	0.40	0.44	0.40
Sat Flow, veh/h	421	621	479	20	704	863	73	1530	28	207	1225	173
Grp Volume(v), veh/h	251	0	0	125	0	0	345	0	0	519	0	0
Grp Sat Flow(s),veh/h/ln	1521	0	0	1587	0	0	1631	0	0	1605	0	0
Q Serve(g_s), s	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	0.0	2.1	0.0	0.0	4.8	0.0	0.0	8.6	0.0	0.0
Prop In Lane	0.35		0.31	0.03		0.54	0.10		0.02	0.19		0.11
Lane Grp Cap(c), veh/h	485	0	0	463	0	0	784	0	0	784	0	0
V/C Ratio(X)	0.52	0.00	0.00	0.27	0.00	0.00	0.44	0.00	0.00	0.66	0.00	0.00
Avail Cap(c_a), veh/h	715	0	0	711	0	0	1420	0	0	1415	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.0	0.0	0.0	10.0	0.0	0.0	6.4	0.0	0.0	7.5	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	2.3	0.0	0.0	1.0	0.0	0.0	2.2	0.0	0.0	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	0.0	0.0	10.3	0.0	0.0	6.8	0.0	0.0	8.5	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		251			125			345				519
Approach Delay, s/veh		11.8			10.3			6.8				8.5
Approach LOS		B			B			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.9		12.9		18.9		12.9				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		26.0		12.0		26.0		12.0				
Max Q Clear Time (g_c+I1), s		6.8		6.8		10.6		4.1				
Green Ext Time (p_c), s		1.4		0.4		2.2		0.2				

Intersection Summary

HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Lanes, Volumes, Timings
29: Colebrook Rd & Harrisburg Ave

2024 Build w/ Improvements
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	46	49	32	15	32	60	19	218	7	37	220	42
Future Volume (vph)	46	49	32	15	32	60	19	218	7	37	220	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1588	0	0	1536	0	0	1681	0	0	1751	0
Flt Permitted		0.834			0.926			0.960			0.936	
Satd. Flow (perm)	0	1349	0	0	1432	0	0	1620	0	0	1649	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			63			3			17	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1010			1132			1000			1025	
Travel Time (s)		19.7			22.1			27.3			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	4%	0%	0%	3%	0%	5%	2%	0%	0%	2%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	112	0	0	254	0	0	312	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Total Split (s)	29.0	29.0		29.0	29.0		46.0	46.0		46.0	46.0	
Total Split (%)	38.7%	38.7%		38.7%	38.7%		61.3%	61.3%		61.3%	61.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)		9.3			9.2			17.9			17.9	
Actuated g/C Ratio		0.28			0.28			0.54			0.54	
v/c Ratio		0.34			0.25			0.29			0.35	
Control Delay		11.2			7.1			8.0			8.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.2			7.1			8.0			8.1	
LOS		B			A			A			A	
Approach Delay		11.2			7.1			8.0			8.1	
Approach LOS		B			A			A			A	
Queue Length 50th (ft)		13			6			27			33	
Queue Length 95th (ft)		48			32			72			86	
Internal Link Dist (ft)		930			1052			920			945	
Turn Bay Length (ft)												
Base Capacity (vph)		995			1066			1620			1649	
Starvation Cap Reductn		0			0			0			0	

Lanes, Volumes, Timings
 29: Colebrook Rd & Harrisburg Ave

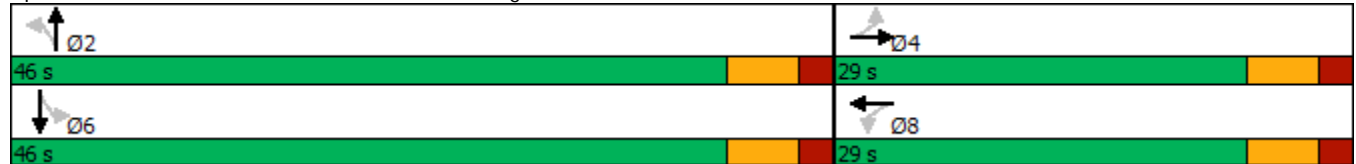
2024 Build w/ Improvements
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.13			0.11			0.16			0.19	

Intersection Summary	
Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	33.3
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.35
Intersection Signal Delay:	8.4
Intersection LOS:	A
Intersection Capacity Utilization	48.3%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 29: Colebrook Rd & Harrisburg Ave



HCM 6th Signalized Intersection Summary
 29: Colebrook Rd & Harrisburg Ave






















2024 Build w/ Improvements
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	46	49	32	15	32	60	19	218	7	37	220	42
Future Volume (veh/h)	46	49	32	15	32	60	19	218	7	37	220	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1724	1780	1837	1837	1795	1837	1724	1766	1794	1986	1958	1858
Adj Flow Rate, veh/h	48	51	33	16	33	62	20	227	7	39	229	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	4	0	0	3	0	5	2	0	0	2	9
Cap, veh/h	338	119	75	231	100	174	206	543	16	236	488	88
Arrive On Green	0.14	0.19	0.14	0.14	0.19	0.14	0.29	0.34	0.29	0.29	0.34	0.29
Sat Flow, veh/h	564	627	397	197	526	915	68	1595	47	135	1434	258
Grp Volume(v), veh/h	132	0	0	111	0	0	254	0	0	312	0	0
Grp Sat Flow(s),veh/h/ln	1588	0	0	1638	0	0	1711	0	0	1826	0	0
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	1.2	0.0	0.0	2.5	0.0	0.0	2.9	0.0	0.0
Prop In Lane	0.36		0.25	0.14		0.56	0.08		0.03	0.12		0.14
Lane Grp Cap(c), veh/h	458	0	0	428	0	0	684	0	0	726	0	0
V/C Ratio(X)	0.29	0.00	0.00	0.26	0.00	0.00	0.37	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1843	0	0	1875	0	0	3326	0	0	3536	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.9	0.0	0.0	7.8	0.0	0.0	5.5	0.0	0.0	5.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	0.5	0.0	0.0	0.9	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	0.0	0.0	8.1	0.0	0.0	5.8	0.0	0.0	6.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		132			111			254			312	
Approach Delay, s/veh		8.2			8.1			5.8			6.1	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.2		9.1		12.2		9.1				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		40.0		23.0		40.0		23.0				
Max Q Clear Time (g_c+I1), s		4.5		3.5		4.9		3.2				
Green Ext Time (p_c), s		1.0		0.4		1.3		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				6.6								
HCM 6th LOS				A								

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2024 Build w/ Improvements
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	33	95	9	40	35	78	706	13	49	951	319
Future Volume (vph)	218	33	95	9	40	35	78	706	13	49	951	319
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1670	0	1416	1704	0	1620	1694	0	1628	1678	0
Flt Permitted	0.706			0.671			0.096			0.306		
Satd. Flow (perm)	1204	1670	0	1000	1704	0	164	1694	0	524	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		100			37			4				65
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	11%	0%	0%	0%	4%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	229	135	0	9	79	0	82	757	0	52	1337	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	13.0	13.0		13.0	13.0		47.0	47.0		47.0	47.0	
Total Split (%)	21.7%	21.7%		21.7%	21.7%		78.3%	78.3%		78.3%	78.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	8.0	8.0		8.0	8.0		41.5	41.5		41.5	41.5	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.69	0.69		0.69	0.69	
v/c Ratio	1.43	0.44		0.07	0.31		0.73	0.65		0.14	1.13	
Control Delay	253.0	14.0		24.2	18.2		42.3	10.5		4.3	84.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	253.0	14.0		24.2	18.2		42.3	10.5		4.3	84.9	
LOS	F	B		C	B		D	B		A	F	
Approach Delay		164.4			18.8			13.6			81.9	
Approach LOS		F			B			B			F	
Queue Length 50th (ft)	~116	11		3	14		33	295		5	~577	
Queue Length 95th (ft)	#233	55		14	47		m#79	237		15	#808	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2024 Build w/ Improvements
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	160	309		133	259		113	1172		362	1180	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.43	0.44		0.07	0.31		0.73	0.65		0.14	1.13	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.43
 Intersection Signal Delay: 69.7
 Intersection LOS: E
 Intersection Capacity Utilization 101.5%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2024 Build w/ Improvements
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	33	95	9	40	35	78	706	13	49	951	319
Future Volume (veh/h)	218	33	95	9	40	35	78	706	13	49	951	319
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1595	1820	1750	1912	1855	1912	1949	1921	1935
Adj Flow Rate, veh/h	229	35	76	9	42	23	82	743	13	52	1001	325
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	11	0	0	0	4	0	0	2	1
Cap, veh/h	259	77	168	204	147	81	120	1257	22	407	960	312
Arrive On Green	0.13	0.13	0.12	0.13	0.13	0.12	0.46	0.46	0.45	0.69	0.69	0.68
Sat Flow, veh/h	1409	580	1259	1094	1105	605	423	1817	32	738	1389	451
Grp Volume(v), veh/h	229	0	111	9	0	65	82	0	756	52	0	1326
Grp Sat Flow(s),veh/h/ln	1409	0	1839	1094	0	1711	423	0	1849	738	0	1839
Q Serve(g_s), s	5.9	0.0	3.4	0.5	0.0	2.1	0.0	0.0	18.1	2.8	0.0	41.5
Cycle Q Clear(g_c), s	8.0	0.0	3.4	3.8	0.0	2.1	41.5	0.0	18.1	20.9	0.0	41.5
Prop In Lane	1.00		0.68	1.00		0.35	1.00		0.02	1.00		0.25
Lane Grp Cap(c), veh/h	259	0	245	204	0	228	120	0	1279	407	0	1272
V/C Ratio(X)	0.88	0.00	0.45	0.04	0.00	0.28	0.68	0.00	0.59	0.13	0.00	1.04
Avail Cap(c_a), veh/h	259	0	245	204	0	228	120	0	1279	407	0	1272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.69	0.00	0.69	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	24.3	25.8	0.0	23.6	36.8	0.0	9.8	12.0	0.0	9.4
Incr Delay (d2), s/veh	27.9	0.0	1.3	0.1	0.0	0.7	19.6	0.0	1.4	0.6	0.0	37.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	8.8	0.0	2.6	0.2	0.0	1.5	3.3	0.0	11.2	0.8	0.0	29.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.1	0.0	25.6	25.8	0.0	24.3	56.5	0.0	11.2	12.7	0.0	46.3
LnGrp LOS	E	A	C	C	A	C	E	A	B	B	A	F
Approach Vol, veh/h		340			74			838				1378
Approach Delay, s/veh		46.1			24.5			15.7				45.1
Approach LOS		D			C			B				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		47.0		13.0		47.0		13.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		40.5		7.0		40.5		7.0				
Max Q Clear Time (g_c+I1), s		20.1		10.0		43.5		5.8				
Green Ext Time (p_c), s		15.2		0.0		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				35.2								
HCM 6th LOS				D								

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build w/ Improvements
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	339	59	134	449	133	93	289	60	217	293	213
Future Volume (vph)	231	339	59	134	449	133	93	289	60	217	293	213
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1588	1791	1435	1512	1697	1577	1522	1781	0	1604	1640	1442
Flt Permitted	0.166			0.552			0.455			0.284		
Satd. Flow (perm)	277	1791	1435	879	1697	1577	729	1781	0	479	1640	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			159		8				220
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1028				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	5%	2%	3%	14%	7%	6%	1%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	349	61	138	463	137	96	360	0	224	302	220
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	19.0	71.0	71.0	52.0	52.0	52.0	14.0	32.0		17.0	35.0	35.0
Total Split (%)	15.8%	59.2%	59.2%	43.3%	43.3%	43.3%	11.7%	26.7%		14.2%	29.2%	29.2%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	56.4	56.4	56.4	37.4	37.4	37.4	43.0	35.1		49.2	38.2	38.2
Actuated g/C Ratio	0.47	0.47	0.47	0.31	0.31	0.31	0.36	0.29		0.41	0.32	0.32
v/c Ratio	0.86	0.41	0.08	0.50	0.88	0.23	0.31	0.68		0.75	0.58	0.36
Control Delay	48.9	21.6	0.9	32.4	49.1	1.8	26.5	46.3		32.1	33.8	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.9	21.6	0.9	32.4	49.1	1.8	26.5	46.3		32.1	33.8	7.3
LOS	D	C	A	C	D	A	C	D		C	C	A
Approach Delay		29.7			37.2			42.2			25.4	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	111	172	0	89	341	6	45	243		99	158	28
Queue Length 95th (ft)	#207	212	6	104	409	8	92	#452		m#141	m260	m43
Internal Link Dist (ft)		860			410			948			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build w/ Improvements
 PM Peak Hour

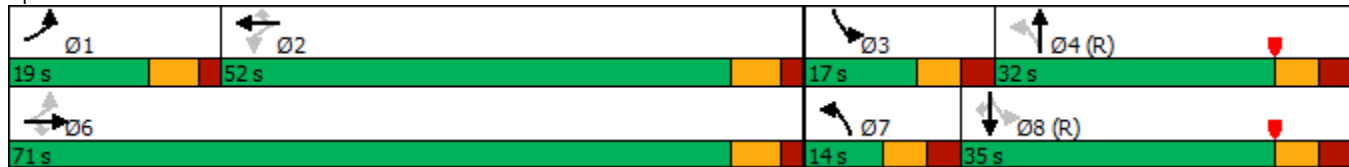


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	277	977	828	340	657	708	314	526		299	521	608
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.86	0.36	0.07	0.41	0.70	0.19	0.31	0.68		0.75	0.58	0.36

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 32.8
 Intersection LOS: C
 Intersection Capacity Utilization 90.2%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2024 Build w/ Improvements
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	231	339	59	134	449	133	93	289	60	217	293	213
Future Volume (veh/h)	231	339	59	134	449	133	93	289	60	217	293	213
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1823	1823	1837	1724	1766	1822	1974	2156	2087	1697	1655	1655
Adj Flow Rate, veh/h	238	349	31	138	463	0	96	298	61	224	302	149
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	5	2	3	14	7	6	1	4	4
Cap, veh/h	283	807	689	323	502		364	555	114	378	581	492
Arrive On Green	0.11	0.44	0.44	0.28	0.28	0.00	0.06	0.32	0.31	0.06	0.24	0.24
Sat Flow, veh/h	1736	1823	1557	925	1766	1544	1880	1737	355	1616	1655	1402
Grp Volume(v), veh/h	238	349	31	138	463	0	96	0	359	224	302	149
Grp Sat Flow(s),veh/h/ln	1736	1823	1557	925	1766	1544	1880	0	2092	1616	1655	1402
Q Serve(g_s), s	11.1	15.8	1.4	15.1	30.5	0.0	4.0	0.0	16.9	11.0	19.1	10.5
Cycle Q Clear(g_c), s	11.1	15.8	1.4	15.1	30.5	0.0	4.0	0.0	16.9	11.0	19.1	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	283	807	689	323	502		364	0	669	378	581	492
V/C Ratio(X)	0.84	0.43	0.04	0.43	0.92		0.26	0.00	0.54	0.59	0.52	0.30
Avail Cap(c_a), veh/h	283	995	850	418	684		376	0	669	378	581	492
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.90	0.00	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	23.0	19.0	36.1	41.6	0.0	25.4	0.0	33.6	26.4	37.1	33.8
Incr Delay (d2), s/veh	19.9	0.1	0.0	0.3	12.6	0.0	0.3	0.0	2.8	2.5	3.3	1.6
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	9.9	10.7	0.9	6.0	20.7	0.0	3.3	0.0	13.9	8.2	13.3	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	23.2	19.0	36.4	54.2	0.0	25.7	0.0	36.4	28.9	40.4	35.4
LnGrp LOS	D	C	B	D	D		C	A	D	C	D	D
Approach Vol, veh/h		618			601			455			675	
Approach Delay, s/veh		32.9			50.1			34.1			35.5	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	19.0	39.6	17.0	44.4		58.6	13.3	48.1				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	12.5	45.5	10.0	25.0		64.5	7.0	28.0				
Max Q Clear Time (g_c+I1), s	13.6	33.0	13.5	18.9		18.3	6.5	21.6				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.9		0.1	0.0	1.3				

Intersection Summary

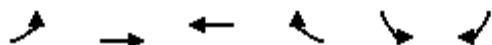
HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
23: SR 0230 & Norlanco Dr

2024 Build w/ Improvements
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	113	285	387	51	65	141
Future Volume (vph)	113	285	387	51	65	141
Ideal Flow (vphp)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	350			325	175	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1710	1651	1714	1500	1676	1500
Flt Permitted	0.415				0.950	
Satd. Flow (perm)	747	1651	1714	1500	1676	1500
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				57		157
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2697		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	9%	5%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	317	430	57	72	157
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	1	6	2		8	1
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	8	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	13.0	22.0	22.0	22.0	22.0	13.0
Total Split (s)	13.0	56.0	43.0	43.0	24.0	13.0
Total Split (%)	16.3%	70.0%	53.8%	53.8%	30.0%	16.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	62.3	63.3	49.1	49.1	10.0	19.9
Actuated g/C Ratio	0.78	0.79	0.61	0.61	0.12	0.25
v/c Ratio	0.19	0.24	0.41	0.06	0.34	0.32
Control Delay	3.7	3.8	11.1	3.0	35.7	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	3.8	11.1	3.0	35.7	5.4
LOS	A	A	B	A	D	A
Approach Delay		3.7	10.1		15.0	
Approach LOS		A	B		B	
Queue Length 50th (ft)	13	38	108	0	33	0
Queue Length 95th (ft)	31	77	204	16	69	38
Internal Link Dist (ft)		730	2617		420	
Turn Bay Length (ft)	350			325	175	
Base Capacity (vph)	685	1307	1052	943	398	497

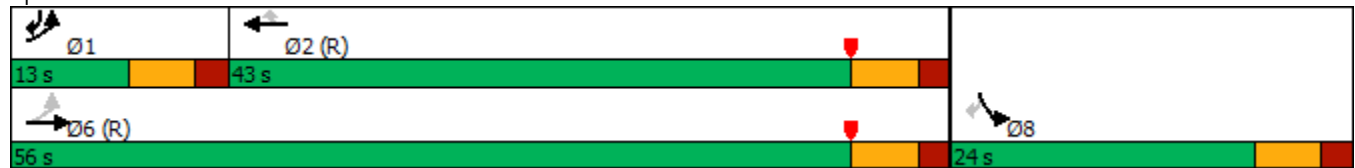


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.24	0.41	0.06	0.18	0.32

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.41
Intersection Signal Delay:	8.6
Intersection LOS:	A
Intersection Capacity Utilization	44.4%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 23: SR 0230 & Norlanco Dr



HCM 6th Signalized Intersection Summary
 23: SR 0230 & Norlanco Dr

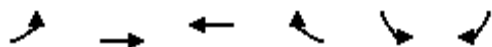
2024 Build w/ Improvements
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	113	285	387	51	65	141
Future Volume (veh/h)	113	285	387	51	65	141
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1800	1674	1730	1772	1772	1772
Adj Flow Rate, veh/h	126	317	430	57	72	157
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	9	5	2	2	2
Cap, veh/h	617	1232	1062	922	235	261
Arrive On Green	0.06	0.74	0.61	0.61	0.14	0.13
Sat Flow, veh/h	1714	1674	1730	1502	1688	1502
Grp Volume(v), veh/h	126	317	430	57	72	157
Grp Sat Flow(s),veh/h/ln	1714	1674	1730	1502	1688	1502
Q Serve(g_s), s	1.9	4.9	10.2	1.2	3.1	7.7
Cycle Q Clear(g_c), s	1.9	4.9	10.2	1.2	3.1	7.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	617	1232	1062	922	235	261
V/C Ratio(X)	0.20	0.26	0.40	0.06	0.31	0.60
Avail Cap(c_a), veh/h	687	1232	1062	922	401	408
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.0	3.4	7.9	6.2	31.0	30.5
Incr Delay (d2), s/veh	0.2	0.5	1.1	0.1	0.7	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.1	3.2	0.3	1.3	2.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.2	3.9	9.1	6.3	31.7	32.7
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		443	487		229	
Approach Delay, s/veh		4.3	8.8		32.4	
Approach LOS		A	A		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.8	54.1			63.9	16.1
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	7.0	37.0			50.0	18.0
Max Q Clear Time (g_c+I1), s	3.9	12.2			6.9	9.7
Green Ext Time (p_c), s	0.1	1.8			1.1	0.5
Intersection Summary						
HCM 6th Ctrl Delay			11.7			
HCM 6th LOS			B			

Lanes, Volumes, Timings
23: SR 0230 & Norlanco Dr

2024 Build w/ Improvements
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	447	448	77	150	326
Future Volume (vph)	169	447	448	77	150	326
Ideal Flow (vphp)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	350			225	175	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1676	1782	1748	1500	1676	1500
Flt Permitted	0.379				0.950	
Satd. Flow (perm)	669	1782	1748	1500	1676	1500
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				86		293
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	188	497	498	86	167	362
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	1	6	2		8	1
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	8	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	13.0	22.0	22.0	22.0	22.0	13.0
Total Split (s)	19.0	83.0	64.0	64.0	37.0	19.0
Total Split (%)	15.8%	69.2%	53.3%	53.3%	30.8%	15.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	91.5	91.5	75.4	75.4	18.5	33.6
Actuated g/C Ratio	0.76	0.76	0.63	0.63	0.15	0.28
v/c Ratio	0.31	0.37	0.45	0.09	0.65	0.57
Control Delay	4.5	4.8	14.7	2.9	58.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	4.8	14.7	2.9	58.9	10.7
LOS	A	A	B	A	E	B
Approach Delay		4.7	13.0		25.9	
Approach LOS		A	B		C	
Queue Length 50th (ft)	25	109	183	0	123	41
Queue Length 95th (ft)	m60	176	340	24	186	115
Internal Link Dist (ft)		730	2620		420	
Turn Bay Length (ft)	350			225	175	
Base Capacity (vph)	630	1359	1098	974	446	663



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.37	0.45	0.09	0.37	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 13.6
 Intersection LOS: B
 Intersection Capacity Utilization 56.0%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: SR 0230 & Norlanco Dr



HCM 6th Signalized Intersection Summary
23: SR 0230 & Norlanco Dr

2024 Build w/ Improvements
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Volume (veh/h)	169	447	448	77	150	326
Future Volume (veh/h)	169	447	448	77	150	326
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1772	1786	1758	1772	1772	1772
Adj Flow Rate, veh/h	188	497	498	86	167	362
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	1	3	2	2	2
Cap, veh/h	479	1190	967	826	423	463
Arrive On Green	0.15	1.00	0.55	0.55	0.25	0.24
Sat Flow, veh/h	1688	1786	1758	1502	1688	1502
Grp Volume(v), veh/h	188	497	498	86	167	362
Grp Sat Flow(s),veh/h/ln	1688	1786	1758	1502	1688	1502
Q Serve(g_s), s	5.7	0.0	21.3	3.3	9.9	26.4
Cycle Q Clear(g_c), s	5.7	0.0	21.3	3.3	9.9	26.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	479	1190	967	826	423	463
V/C Ratio(X)	0.39	0.42	0.51	0.10	0.40	0.78
Avail Cap(c_a), veh/h	550	1190	967	826	450	487
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.7	0.0	16.9	12.9	37.4	37.8
Incr Delay (d2), s/veh	0.5	1.1	2.0	0.3	0.6	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.0	0.6	13.2	2.0	7.6	16.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.2	1.1	18.9	13.1	38.0	45.6
LnGrp LOS	B	A	B	B	D	D
Approach Vol, veh/h		685	584		529	
Approach Delay, s/veh		3.9	18.0		43.2	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.9	71.0			85.0	35.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	13.0	58.0			77.0	31.0
Max Q Clear Time (g_c+I1), s	7.7	23.3			2.0	28.4
Green Ext Time (p_c), s	0.3	2.3			1.9	0.7
Intersection Summary						
HCM 6th Ctrl Delay			20.0			
HCM 6th LOS			C			

Lanes, Volumes, Timings
23: SR 0230 & Norlanco Dr

2024 Build w/ Improvements
SAT Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	188	363	465	94	150	300
Future Volume (vph)	188	363	465	94	150	300
Ideal Flow (vphp)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	350			225	175	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1676	1782	1782	1500	1676	1500
Flt Permitted	0.300				0.950	
Satd. Flow (perm)	529	1782	1782	1500	1676	1500
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				104		236
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	403	517	104	167	333
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	1	6	2		8	1
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	8	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	13.0	20.0	20.0	20.0	20.0	13.0
Total Split (s)	15.0	53.0	38.0	38.0	22.0	15.0
Total Split (%)	20.0%	70.7%	50.7%	50.7%	29.3%	20.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	51.5	51.5	37.0	37.0	13.5	28.0
Actuated g/C Ratio	0.69	0.69	0.49	0.49	0.18	0.37
v/c Ratio	0.41	0.33	0.59	0.13	0.56	0.47
Control Delay	7.3	6.1	18.2	3.4	34.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	6.1	18.2	3.4	34.7	7.2
LOS	A	A	B	A	C	A
Approach Delay		6.5	15.7		16.4	
Approach LOS		A	B		B	
Queue Length 50th (ft)	30	65	166	0	71	29
Queue Length 95th (ft)	61	122	287	25	123	81
Internal Link Dist (ft)		730	2620		420	
Turn Bay Length (ft)	350			225	175	
Base Capacity (vph)	520	1224	879	792	379	719

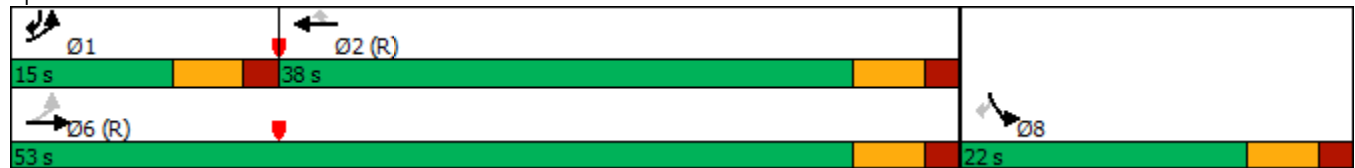


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.33	0.59	0.13	0.44	0.46

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization	58.1%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 23: SR 0230 & Norlanco Dr



HCM 6th Signalized Intersection Summary
23: SR 0230 & Norlanco Dr

2024 Build w/ Improvements
SAT Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕	↑	↑	↕	↕	↕
Traffic Volume (veh/h)	188	363	465	94	150	300
Future Volume (veh/h)	188	363	465	94	150	300
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1772	1786	1786	1772	1772	1772
Adj Flow Rate, veh/h	209	403	517	104	167	333
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	1	1	2	2	2
Cap, veh/h	460	1143	849	714	383	487
Arrive On Green	0.10	0.64	0.48	0.48	0.23	0.23
Sat Flow, veh/h	1688	1786	1786	1502	1688	1502
Grp Volume(v), veh/h	209	403	517	104	167	333
Grp Sat Flow(s),veh/h/ln	1688	1786	1786	1502	1688	1502
Q Serve(g_s), s	4.2	7.9	16.0	2.9	6.4	14.4
Cycle Q Clear(g_c), s	4.2	7.9	16.0	2.9	6.4	14.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	460	1143	849	714	383	487
V/C Ratio(X)	0.45	0.35	0.61	0.15	0.44	0.68
Avail Cap(c_a), veh/h	520	1143	849	714	383	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	6.3	14.5	11.1	24.9	22.0
Incr Delay (d2), s/veh	0.7	0.9	3.2	0.4	0.8	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	4.2	10.2	1.6	4.6	9.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.5	7.1	17.8	11.5	25.7	25.9
LnGrp LOS	B	A	B	B	C	C
Approach Vol, veh/h		612	621		500	
Approach Delay, s/veh		8.3	16.7		25.8	
Approach LOS		A	B		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.3	40.7			53.0	22.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	9.0	32.0			47.0	16.0
Max Q Clear Time (g_c+I1), s	6.2	18.0			9.9	16.4
Green Ext Time (p_c), s	0.2	2.1			1.5	0.0
Intersection Summary						
HCM 6th Ctrl Delay			16.4			
HCM 6th LOS			B			

APPENDIX L5

2029 NO BUILD CONDITION ANALYSES

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2029 No Build
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	411	80	82	366	146	142
Future Volume (vph)	411	80	82	366	146	142
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1681	0	1662	1766	1534	0
Flt Permitted			0.249		0.975	
Satd. Flow (perm)	1681	0	436	1766	1534	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	17					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)						2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	12%	6%	12%	4%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	546	0	91	407	320	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	34.0		12.0	46.0	24.0	
Total Split (%)	48.6%		17.1%	65.7%	34.3%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	31.6		42.4	41.2	18.4	
Actuated g/C Ratio	0.45		0.61	0.59	0.26	
v/c Ratio	0.71		0.23	0.39	0.79	
Control Delay	23.1		5.3	6.4	40.6	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	23.1		5.3	6.4	40.6	
LOS	C		A	A	D	
Approach Delay	23.1			6.2	40.6	
Approach LOS	C			A	D	
Queue Length 50th (ft)	191		12	57	127	
Queue Length 95th (ft)	#353		m22	81	#250	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2029 No Build
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	769		403	1038	411	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.71		0.23	0.39	0.78	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 61 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 21.1
 Intersection LOS: C
 Intersection Capacity Utilization 62.6%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
3: Maytown Rd & SR 0230

2029 No Build
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	411	80	82	366	146	142
Future Volume (veh/h)	411	80	82	366	146	142
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1648	1542	1938	1927	1818	1846
Adj Flow Rate, veh/h	457	83	91	407	162	158
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	9	12	6	12	4	2
Cap, veh/h	652	118	432	1178	197	193
Arrive On Green	0.48	0.47	0.15	1.00	0.24	0.23
Sat Flow, veh/h	1357	246	1846	1927	822	801
Grp Volume(v), veh/h	0	540	91	407	321	0
Grp Sat Flow(s),veh/h/ln	0	1603	1846	1927	1628	0
Q Serve(g_s), s	0.0	18.5	1.5	0.0	13.1	0.0
Cycle Q Clear(g_c), s	0.0	18.5	1.5	0.0	13.1	0.0
Prop In Lane		0.15	1.00		0.50	0.49
Lane Grp Cap(c), veh/h	0	770	432	1178	391	0
V/C Ratio(X)	0.00	0.70	0.21	0.35	0.82	0.00
Avail Cap(c_a), veh/h	0	770	508	1178	437	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.3	8.9	0.0	25.4	0.0
Incr Delay (d2), s/veh	0.0	5.3	0.2	0.8	15.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	11.1	0.8	0.5	10.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	19.6	9.2	0.8	41.0	0.0
LnGrp LOS	A	B	A	A	D	A
Approach Vol, veh/h	540			498	321	
Approach Delay, s/veh	19.6			2.3	41.0	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.1	38.8		22.0		48.0
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	27.8		17.8		39.8
Max Q Clear Time (g_c+I1), s	3.5	20.5		15.1		2.0
Green Ext Time (p_c), s	0.1	4.6		0.8		10.5

Intersection Summary




















HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2029 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	582	1	0	544	42	0	0	2	42	0	35
Future Volume (vph)	26	582	1	0	544	42	0	0	2	42	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	8%	7%	0%	0%	9%	10%	0%	0%	50%	0%	0%	18%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	655	0	0	658	0	0	2	0	47	39	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.0%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	26	582	1	0	544	42	0	0	2	42	0	35
Future Vol, veh/h	26	582	1	0	544	42	0	0	2	42	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	8	7	0	0	9	10	0	0	50	0	0	18
Mvmt Flow	29	654	1	0	611	47	0	0	2	47	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	658	0	0	655	0	0	1368	1371	656	1350	1348	636
Stage 1	-	-	-	-	-	-	713	713	-	635	635	-
Stage 2	-	-	-	-	-	-	655	658	-	715	713	-
Critical Hdwy	3.9	-	-	5.5	-	-	6.7	6.1	6.5	6.5	5.9	6.1
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3.1	-	-	3	-	-	3	4	3.6	3	4	3.462
Pot Cap-1 Maneuver	746	-	-	572	-	-	158	172	417	175	191	473
Stage 1	-	-	-	-	-	-	515	475	-	586	529	-
Stage 2	-	-	-	-	-	-	552	500	-	534	494	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	746	-	-	572	-	-	140	165	417	169	184	473
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	165	-	169	184	-
Stage 1	-	-	-	-	-	-	495	456	-	563	529	-
Stage 2	-	-	-	-	-	-	506	500	-	510	475	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	13.7	24.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	417	746	-	-	572	-	-	169	473
HCM Lane V/C Ratio	0.005	0.039	-	-	-	-	-	0.279	0.083
HCM Control Delay (s)	13.7	10	-	-	0	-	-	34.4	13.3
HCM Lane LOS		B	B	-	A	-	-	D	B
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	1.1	0.3

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (vph)	3	491	45	64	474	6	104	2	73	4	3	2
Future Volume (vph)	3	491	45	64	474	6	104	2	73	4	3	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1667	1552	1541	1558	1608	1645	1516	0	1761	1842	0
Flt Permitted	0.468			0.330			0.754			0.703		
Satd. Flow (perm)	814	1667	1552	535	1558	1608	1302	1516	0	1303	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			45		81			2	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	2%	2%	10%	0%	3%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	546	50	71	527	7	116	83	0	4	5	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	40.0	40.0	40.0	13.0	53.0	53.0	17.0	17.0		17.0	17.0	
Total Split (%)	57.1%	57.1%	57.1%	18.6%	75.7%	75.7%	24.3%	24.3%		24.3%	24.3%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	42.2	42.2	42.2	52.2	52.1	52.1	10.8	10.8		10.7	10.7	
Actuated g/C Ratio	0.60	0.60	0.60	0.75	0.74	0.74	0.15	0.15		0.15	0.15	
v/c Ratio	0.01	0.54	0.05	0.14	0.45	0.01	0.58	0.27		0.02	0.02	
Control Delay	6.7	8.8	0.1	1.6	3.1	0.0	39.1	9.7		24.5	21.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.7	8.8	0.1	1.6	3.1	0.0	39.1	9.7		24.5	21.0	
LOS	A	A	A	A	A	A	D	A		C	C	
Approach Delay		8.1			2.9			26.8			22.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	84	0	7	61	0	46	1		1	1	
Queue Length 95th (ft)	m1	m117	m0	2	11	m0	95	35		9	10	

Lanes, Volumes, Timings
 7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
 AM Peak Hour

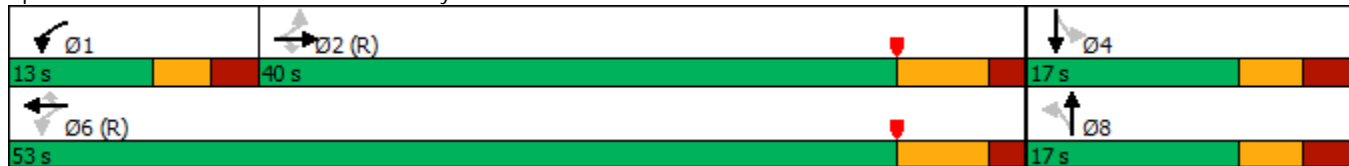


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	491	1005	988	521	1159	1208	225	329		225	320	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.01	0.54	0.05	0.14	0.45	0.01	0.52	0.25		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 29 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 8.6
 Intersection LOS: A
 Intersection Capacity Utilization 65.3%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	3	491	45	64	474	6	104	2	73	4	3	2
Future Volume (veh/h)	3	491	45	64	474	6	104	2	73	4	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	1947	2032	1722	1609	1820	1944	1986	1929	2024	2104	2024
Adj Flow Rate, veh/h	3	546	34	71	527	6	116	2	43	4	3	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	8	2	2	10	0	3	0	4	0	0	0
Cap, veh/h	686	1183	1047	654	1165	1116	283	9	199	259	145	97
Arrive On Green	1.00	1.00	1.00	0.10	1.00	1.00	0.12	0.12	0.11	0.12	0.12	0.11
Sat Flow, veh/h	960	1947	1722	1640	1609	1542	1461	75	1612	1467	1176	784
Grp Volume(v), veh/h	3	546	34	71	527	6	116	0	45	4	0	5
Grp Sat Flow(s),veh/h/ln	960	1947	1722	1640	1609	1542	1461	0	1687	1467	0	1959
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	5.3	0.0	1.7	0.2	0.0	0.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	0.0	0.0	5.3	0.0	1.7	1.4	0.0	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.40
Lane Grp Cap(c), veh/h	686	1183	1047	654	1165	1116	283	0	208	259	0	242
V/C Ratio(X)	0.00	0.46	0.03	0.11	0.45	0.01	0.41	0.00	0.22	0.02	0.00	0.02
Avail Cap(c_a), veh/h	686	1183	1047	768	1165	1116	355	0	292	331	0	339
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.3	0.0	0.0	29.2	0.0	28.1	28.0	0.0	27.1
Incr Delay (d2), s/veh	0.0	1.3	0.1	0.1	1.2	0.0	0.9	0.0	0.5	0.0	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.8	0.0	0.3	0.7	0.0	3.4	0.0	1.3	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.3	0.1	3.3	1.2	0.0	30.2	0.0	28.6	28.1	0.0	27.2
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		583			604			161				9
Approach Delay, s/veh		1.2			1.4			29.7				27.6
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.1	48.3		13.5		56.5		13.5				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	33.2		* 11		46.2		* 11				
Max Q Clear Time (g_c+I1), s	3.5	2.5		3.9		2.5		7.8				
Green Ext Time (p_c), s	0.0	0.7		0.0		0.6		0.1				

Intersection Summary

HCM 6th Ctrl Delay	4.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2029 No Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	416	14	5	510	13	9	0	15	6	0	8
Future Volume (vph)	26	416	14	5	510	13	9	0	15	6	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1659	0	1744	1654	1445	0	1727	0	1719	1501	0
Flt Permitted	0.386			0.497				0.870				
Satd. Flow (perm)	681	1659	0	912	1654	1415	0	1530	0	1809	1501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				126		139			406	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	6%	0%	0%	11%	8%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	462	0	5	548	14	0	26	0	6	9	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	56.0		45.0	45.0	45.0	14.0	14.0		14.0	14.0	
Total Split (%)	15.7%	80.0%		64.3%	64.3%	64.3%	20.0%	20.0%		20.0%	20.0%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	60.6	62.9		58.5	58.5	58.5		7.0		7.1	7.1	
Actuated g/C Ratio	0.87	0.90		0.84	0.84	0.84		0.10		0.10	0.10	
v/c Ratio	0.04	0.31		0.01	0.40	0.01		0.09		0.03	0.02	
Control Delay	0.9	2.3		4.0	5.1	0.0		0.7		28.5	0.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	0.9	2.3		4.0	5.1	0.0		0.7		28.5	0.0	
LOS	A	A		A	A	A		A		C	A	
Approach Delay		2.2			5.0			0.7			11.4	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)	0	0		0	0	0		0		2	0	
Queue Length 95th (ft)	m2	66		m2	167	m0		0		13	0	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2029 No Build
 AM Peak Hour

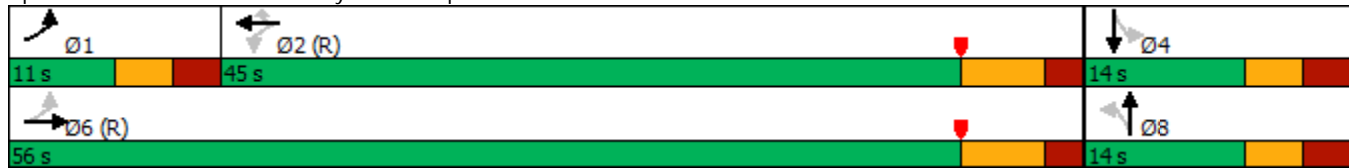


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	681	1492		763	1383	1204		325		242	553	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.04	0.31		0.01	0.40	0.01		0.08		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 7 (10%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.40
 Intersection Signal Delay: 3.7
 Intersection LOS: A
 Intersection Capacity Utilization 44.8%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2029 No Build
 AM Peak Hour






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↕		↖	↗	
Traffic Volume (veh/h)	26	416	14	5	510	13	9	0	15	6	0	8
Future Volume (veh/h)	26	416	14	5	510	13	9	0	15	6	0	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1626	1711	1949	1793	1835	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	28	447	15	5	548	14	10	0	15	6	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	6	0	0	11	8	0	0	0	0	0	0
Cap, veh/h	716	1282	43	803	1295	1123	88	0	24	161	70	0
Arrive On Green	0.06	1.00	1.00	1.00	1.00	1.00	0.02	0.00	0.02	0.04	0.00	0.00
Sat Flow, veh/h	1629	1564	52	969	1793	1554	418	0	626	1360	1837	0
Grp Volume(v), veh/h	28	0	462	5	548	14	25	0	0	6	0	0
Grp Sat Flow(s),veh/h/ln	1629	0	1617	969	1793	1554	1044	0	0	1360	1837	0
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		0.03	1.00		1.00	0.40		0.60	1.00		0.00
Lane Grp Cap(c), veh/h	716	0	1325	803	1295	1123	97	0	0	161	70	0
V/C Ratio(X)	0.04	0.00	0.35	0.01	0.42	0.01	0.26	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	814	0	1325	803	1295	1123	241	0	0	292	247	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.00	0.83	0.92	0.92	0.92	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.6	0.0	0.0	0.0	0.0	0.0	33.9	0.0	0.0	32.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	0.9	0.0	1.4	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.4	0.0	0.6	0.0	0.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.6	0.0	0.6	0.0	0.9	0.0	35.3	0.0	0.0	32.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	C	A	A
Approach Vol, veh/h		490			567			25				6
Approach Delay, s/veh		0.7			0.9			35.3				32.6
Approach LOS		A			A			D				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.8	56.0		7.3		62.7		7.3				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	38.6		8.4		49.6		8.4				
Max Q Clear Time (g_c+I1), s	2.8	2.5		2.7		2.5		3.7				
Green Ext Time (p_c), s	0.0	0.7		0.0		0.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	1.8
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	386	1	10	412	25	60	27	36	29	16	47
Future Volume (vph)	38	386	1	10	412	25	60	27	36	29	16	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1684	1685	0	1246	1591	0	1248	1497	0	0	1795	0
Flt Permitted	0.473			0.508			0.759				0.870	
Satd. Flow (perm)	839	1685	0	666	1591	0	997	1497	0	0	1584	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					7			39				51
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	100%	30%	6%	10%	26%	4%	9%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	416	0	11	470	0	65	68	0	0	99	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	45.0	45.0		45.0	45.0		25.0	25.0		25.0	25.0	
Total Split (%)	64.3%	64.3%		64.3%	64.3%		35.7%	35.7%		35.7%	35.7%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	52.3	52.3		52.3	52.3		11.1	11.1				11.1
Actuated g/C Ratio	0.75	0.75		0.75	0.75		0.16	0.16				0.16
v/c Ratio	0.07	0.33		0.02	0.39		0.41	0.25				0.34
Control Delay	1.1	1.4		4.5	6.0		33.2	15.3				16.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	1.1	1.4		4.5	6.0		33.2	15.3				16.8
LOS	A	A		A	A		C	B				B
Approach Delay		1.4			6.0			24.0				16.8
Approach LOS		A			A			C				B
Queue Length 50th (ft)	1	7		1	68		26	11				18
Queue Length 95th (ft)	3	17		7	151		56	40				52

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 No Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	626	1258		497	1190		284	455			489	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.07	0.33		0.02	0.39		0.23	0.15			0.20	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.41
 Intersection Signal Delay: 7.1
 Intersection LOS: A
 Intersection Capacity Utilization 53.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
13: Sheaffer Rd & SR 0230

2029 No Build
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	386	1	10	412	25	60	27	36	29	16	47
Future Volume (veh/h)	38	386	1	10	412	25	60	27	36	29	16	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1680	346	1485	1826	1770	1385	1694	1623	1949	2027	1864
Adj Flow Rate, veh/h	41	415	0	11	443	26	65	29	17	31	17	33
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	5	100	30	6	10	26	4	9	0	0	6
Cap, veh/h	687	1276	0	689	1298	76	218	98	58	114	45	60
Arrive On Green	1.00	1.00	0.00	0.76	0.76	0.75	0.10	0.10	0.08	0.08	0.10	0.08
Sat Flow, veh/h	865	1680	0	771	1708	100	1000	999	585	431	455	609
Grp Volume(v), veh/h	41	415	0	11	0	469	65	0	46	81	0	0
Grp Sat Flow(s),veh/h/ln	865	1680	0	771	0	1808	1000	0	1584	1496	0	0
Q Serve(g_s), s	0.4	0.0	0.0	0.2	0.0	5.9	0.0	0.0	1.9	2.0	0.0	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	0.2	0.0	5.9	3.3	0.0	1.9	3.9	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.06	1.00		0.37	0.38		0.41
Lane Grp Cap(c), veh/h	687	1276	0	689	0	1374	218	0	156	197	0	0
V/C Ratio(X)	0.06	0.33	0.00	0.02	0.00	0.34	0.30	0.00	0.29	0.41	0.00	0.00
Avail Cap(c_a), veh/h	687	1276	0	689	0	1374	405	0	453	507	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.0	0.0	2.0	0.0	2.7	29.9	0.0	29.5	30.6	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.7	0.0	0.0	0.0	0.7	0.8	0.0	1.0	1.4	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.4	0.0	0.0	0.0	2.0	1.9	0.0	1.3	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.5	0.7	0.0	2.1	0.0	3.4	30.7	0.0	30.5	32.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	A
Approach Vol, veh/h		456			480			111				81
Approach Delay, s/veh		0.6			3.4			30.6				32.0
Approach LOS		A			A			C				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.1		11.9		58.1		11.9				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 39		19.0		* 39		19.0				
Max Q Clear Time (g_c+I1), s		2.0		5.9		7.9		5.3				
Green Ext Time (p_c), s		11.9		0.2		13.2		0.3				

Intersection Summary

HCM 6th Ctrl Delay	7.0
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	330	0	90	535	140	0	0	191	57
Future Volume (vph)	0	0	0	330	0	90	535	140	0	0	191	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1546	1145	1544	1424	0	0	1528	1523
Flt Permitted					0.950		0.472					
Satd. Flow (perm)	0	0	0	0	1546	1145	767	1424	0	0	1528	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	8%	0%	26%	6%	21%	2%	2%	15%	15%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	344	94	557	146	0	0	199	59
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				21.0	21.0	21.0	17.0	39.0			22.0	22.0
Total Split (%)				35.0%	35.0%	35.0%	28.3%	65.0%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					15.7	15.7	32.6	32.6			15.6	15.6
Actuated g/C Ratio					0.27	0.27	0.56	0.56			0.27	0.27
v/c Ratio					0.82	0.22	0.94	0.18			0.48	0.11
Control Delay					38.8	2.1	38.4	7.0			22.6	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					38.8	2.1	38.4	7.0			22.6	0.4
LOS					D	A	D	A			C	A
Approach Delay					30.9			31.9			17.5	
Approach LOS					C			C			B	
Queue Length 50th (ft)					115	0	121	23			59	0
Queue Length 95th (ft)					#241	9	#371	46			113	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
 AM Peak Hour

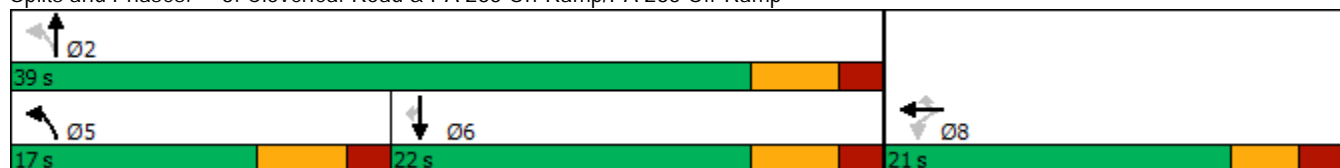


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					441	443	594	837			449	557
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.78	0.21	0.94	0.17			0.44	0.11

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 57.9
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 28.9
 Intersection LOS: C
 Intersection Capacity Utilization 88.6%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	0	0	0	330	0	90	535	140	0	0	191	57
Future Volume (veh/h)	0	0	0	330	0	90	535	140	0	0	191	57
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1761	1875	1505	1693	1483	0	0	1661	1728
Adj Flow Rate, veh/h				344	0	0	557	146	0	0	199	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				8	0	26	6	21	0	0	15	15
Cap, veh/h				444	0		660	846	0	0	411	
Arrive On Green				0.23	0.00	0.00	0.23	0.57	0.00	0.00	0.25	0.00
Sat Flow, veh/h				1785	0	1275	1613	1483	0	0	1661	1464
Grp Volume(v), veh/h				344	0	0	557	146	0	0	199	0
Grp Sat Flow(s),veh/h/ln				1785	0	1275	1613	1483	0	0	1661	1464
Q Serve(g_s), s				9.5	0.0	0.0	12.0	2.5	0.0	0.0	5.4	0.0
Cycle Q Clear(g_c), s				9.5	0.0	0.0	12.0	2.5	0.0	0.0	5.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				444	0		660	846	0	0	411	
V/C Ratio(X)				0.78	0.00		0.84	0.17	0.00	0.00	0.48	
Avail Cap(c_a), veh/h				560	0		660	959	0	0	537	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				18.9	0.0	0.0	11.3	5.4	0.0	0.0	16.9	0.0
Incr Delay (d2), s/veh				5.3	0.0	0.0	9.7	0.3	0.0	0.0	3.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				7.7	0.0	0.0	8.6	1.0	0.0	0.0	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.1	0.0	0.0	21.1	5.7	0.0	0.0	20.1	0.0
LnGrp LOS				C	A		C	A	A	A	C	
Approach Vol, veh/h					344			703			199	
Approach Delay, s/veh					24.1			17.9			20.1	
Approach LOS					C			B			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		35.0			17.0	18.0		17.6				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		33.0			11.0	16.0		15.5				
Max Q Clear Time (g_c+I1), s		4.5			14.0	7.4		11.5				
Green Ext Time (p_c), s		3.1			0.0	2.0		0.7				

Intersection Summary


















HCM 6th Ctrl Delay	20.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 No Build
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	2	243	0	0	0	0	643	579	109	404	0
Future Volume (vph)	32	2	243	0	0	0	0	643	579	109	404	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1600	1454	0	0	0	0	1628	0	1588	1686	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1600	1454	0	0	0	0	1628	0	1588	1686	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	16%	0%	9%	2%	2%	2%	2%	9%	4%	11%	10%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	259	0	0	0	0	1300	0	116	430	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	88.6%
Analysis Period (min)	15
	ICU Level of Service E

HCM 6th TWSC
6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 No Build
AM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↘	↕	
Traffic Vol, veh/h	32	2	243	0	0	0	0	643	579	109	404	0
Future Vol, veh/h	32	2	243	0	0	0	0	643	579	109	404	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	16	0	9	2	2	2	2	9	4	11	10	2
Mvmt Flow	34	2	259	0	0	0	0	684	616	116	430	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1346	1346	430	-	0	0	684	0	0
Stage 1	662	662	-	-	-	-	-	-	-
Stage 2	684	684	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.99	-	-	-	4	-	-
Critical Hdwy Stg 1	4.96	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.96	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.2	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	160	191	662	0	-	-	719	-	0
Stage 1	612	516	-	0	-	-	-	-	0
Stage 2	599	506	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	134	0	662	-	-	-	719	-	-
Mov Cap-2 Maneuver	134	0	-	-	-	-	-	-	-
Stage 1	612	0	-	-	-	-	-	-	-
Stage 2	503	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.3	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	134	662	719	-
HCM Lane V/C Ratio	-	-	0.27	0.39	0.161	-
HCM Control Delay (s)	-	-	41.5	13.9	11	-
HCM Lane LOS	-	-	E	B	B	-
HCM 95th %tile Q(veh)	-	-	1	1.9	0.6	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 No Build
 AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	25	0	1205	638	5
Future Volume (vph)	6	25	0	1205	638	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1622	0	0	1734	1653	0
Flt Permitted	0.990					
Satd. Flow (perm)	1622	0	0	1734	1653	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	7%	10%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	0	0	1339	715	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	73.4% ICU Level of Service D
Analysis Period (min)	15

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 No Build
 AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	25	0	1205	638	5
Future Vol, veh/h	6	25	0	1205	638	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	7	10	0
Mvmt Flow	7	28	0	1339	709	6






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2051	712	715	0	-	0
Stage 1	712	-	-	-	-	-
Stage 2	1339	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	65	456	734	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	65	456	734	-	-	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	267	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	734	-	211	-	-
HCM Lane V/C Ratio	-	-	0.163	-	-
HCM Control Delay (s)	0	-	25.4	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	20	90	8	13	76	32	783	8	10	513	153
Future Volume (vph)	345	20	90	8	13	76	32	783	8	10	513	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1604	1578	0	1391	1564	0	1500	1615	0	1628	1575	0
Flt Permitted	0.694			0.679			0.231			0.136		
Satd. Flow (perm)	1172	1578	0	993	1564	0	365	1615	0	233	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		100			84			1				35
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	5%	13%	8%	1%	8%	9%	25%	0%	10%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	383	122	0	9	98	0	36	879	0	11	740	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	25.0	25.0		25.0	25.0		45.0	45.0		45.0	45.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		64.3%	64.3%		64.3%	64.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	20.0	20.0		20.0	20.0		39.5	39.5		39.5	39.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.56	0.56		0.56	0.56	
v/c Ratio	1.15	0.23		0.03	0.19		0.18	0.96		0.08	0.82	
Control Delay	123.0	7.6		18.6	7.4		8.2	34.6		8.9	21.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	123.0	7.6		18.6	7.4		8.2	34.6		8.9	21.5	
LOS	F	A		B	A		A	C		A	C	
Approach Delay		95.1			8.4			33.6			21.3	
Approach LOS		F			A			C			C	
Queue Length 50th (ft)	~198	7		3	4		4	338		2	224	
Queue Length 95th (ft)	#354	42		13	36		m10	#592		9	#455	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

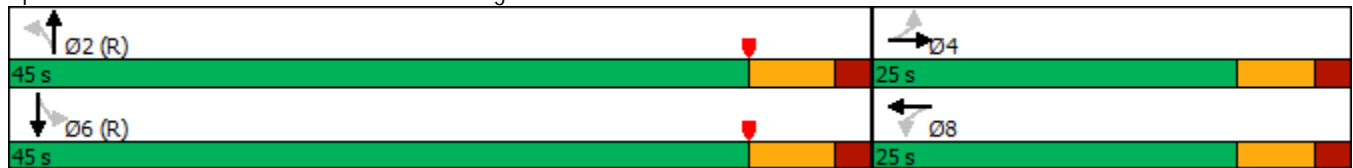
2029 No Build
 AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		920			920			1160			2095	
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	334	522		283	506		205	911		131	904	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.15	0.23		0.03	0.19		0.18	0.96		0.08	0.82	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.15
 Intersection Signal Delay: 42.0 Intersection LOS: D
 Intersection Capacity Utilization 79.6% ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd



















2029 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	20	90	8	13	76	32	783	8	10	513	153
Future Volume (veh/h)	345	20	90	8	13	76	32	783	8	10	513	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	1915	1567	1703	1736	1798	1784	1556	1949	1807	1878
Adj Flow Rate, veh/h	383	22	100	9	14	84	36	870	9	11	570	170
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	5	13	8	1	8	9	25	0	10	5
Cap, veh/h	420	93	421	350	60	361	268	994	10	474	754	225
Arrive On Green	0.29	0.29	0.27	0.29	0.29	0.27	1.00	1.00	1.00	0.56	0.56	0.55
Sat Flow, veh/h	1356	324	1473	1062	210	1263	691	1762	18	658	1336	399
Grp Volume(v), veh/h	383	0	122	9	0	98	36	0	879	11	0	740
Grp Sat Flow(s),veh/h/ln	1356	0	1797	1062	0	1473	691	0	1781	658	0	1735
Q Serve(g_s), s	16.4	0.0	3.7	0.5	0.0	3.6	2.3	0.0	0.0	0.5	0.0	22.8
Cycle Q Clear(g_c), s	20.0	0.0	3.7	4.1	0.0	3.6	25.1	0.0	0.0	0.5	0.0	22.8
Prop In Lane	1.00		0.82	1.00		0.86	1.00		0.01	1.00		0.23
Lane Grp Cap(c), veh/h	420	0	514	350	0	421	268	0	1005	474	0	979
V/C Ratio(X)	0.91	0.00	0.24	0.03	0.00	0.23	0.13	0.00	0.87	0.02	0.00	0.76
Avail Cap(c_a), veh/h	420	0	514	350	0	421	268	0	1005	474	0	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.73	0.00	0.73	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	19.5	20.8	0.0	19.5	7.2	0.0	0.0	6.8	0.0	11.7
Incr Delay (d2), s/veh	23.7	0.0	0.2	0.0	0.0	0.3	0.8	0.0	8.0	0.1	0.0	5.4
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	13.9	0.0	2.6	0.2	0.0	2.1	0.5	0.0	4.0	0.1	0.0	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.0	0.0	19.7	20.8	0.0	19.8	8.0	0.0	8.0	6.8	0.0	17.1
LnGrp LOS	D	A	B	C	A	B	A	A	A	A	A	B
Approach Vol, veh/h		505			107			915				751
Approach Delay, s/veh		44.2			19.8			8.0				17.0
Approach LOS		D			B			A				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		25.0		45.0		25.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		38.5		19.0		38.5		19.0				
Max Q Clear Time (g_c+I1), s		2.0		22.0		24.8		6.1				
Green Ext Time (p_c), s		28.4		0.0		10.9		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				19.5								
HCM 6th LOS				B								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	0	17	17	1	9	2	787	7	25	564	7
Future Volume (vph)	36	0	17	17	1	9	2	787	7	25	564	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1686	0	0	1561	0	0	1615	1648
Flt Permitted		0.739			0.783			0.999			0.955	
Satd. Flow (perm)	0	1286	1581	0	1362	0	0	1559	0	0	1545	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		9			1				39
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	50%	10%	29%	0%	9%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	18	0	28	0	0	829	0	0	614	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		6			6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	17.0	17.0	17.0	17.0	17.0		53.0	53.0		53.0	53.0	53.0
Total Split (%)	24.3%	24.3%	24.3%	24.3%	24.3%		75.7%	75.7%		75.7%	75.7%	75.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.7	8.7		8.6			58.4			58.4	58.4
Actuated g/C Ratio		0.12	0.12		0.12			0.83			0.83	0.83
v/c Ratio		0.24	0.08		0.16			0.64			0.48	0.01
Control Delay		30.5	2.8		22.5			7.7			8.3	0.4
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		30.5	2.8		22.5			7.7			8.3	0.4
LOS		C	A		C			A			A	A
Approach Delay		21.6			22.5			7.7			8.2	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		15	0		7			148			173	0
Queue Length 95th (ft)		40	5		28			338			m261	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 No Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		229	320		250			1300			1288	1380
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.17	0.06		0.11			0.64			0.48	0.01

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	63 (90%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	8.7
Intersection LOS:	A
Intersection Capacity Utilization	69.7%
ICU Level of Service	C
Analysis Period (min)	15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

























2029 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (veh/h)	36	0	17	17	1	9	2	787	7	25	564	7
Future Volume (veh/h)	36	0	17	17	1	9	2	787	7	25	564	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1076	1637	1371	1875	1747	1950
Adj Flow Rate, veh/h	38	0	18	18	1	9	2	820	7	26	588	7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	50	10	29	0	9	0
Cap, veh/h	208	0	104	120	9	21	52	1294	11	79	1325	1319
Arrive On Green	0.05	0.00	0.07	0.05	0.07	0.05	0.78	0.80	0.78	1.00	1.00	1.00
Sat Flow, veh/h	1599	0	1586	549	133	323	1	1620	14	31	1659	1652
Grp Volume(v), veh/h	38	0	18	28	0	0	829	0	0	614	0	7
Grp Sat Flow(s),veh/h/ln	1599	0	1586	1004	0	0	1634	0	0	1690	0	1652
Q Serve(g_s), s	0.0	0.0	0.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.8	2.4	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.64		0.32	0.00		0.01	0.04		1.00
Lane Grp Cap(c), veh/h	185	0	104	136	0	0	1333	0	0	1379	0	1319
V/C Ratio(X)	0.21	0.00	0.17	0.21	0.00	0.00	0.62	0.00	0.00	0.45	0.00	0.01
Avail Cap(c_a), veh/h	338	0	283	302	0	0	1333	0	0	1379	0	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.48	0.00	0.48
Uniform Delay (d), s/veh	31.7	0.0	30.9	32.4	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.8	0.7	0.0	0.0	2.2	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	1.2	0.0	0.5	0.9	0.0	0.0	4.0	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.3	0.0	31.7	33.1	0.0	0.0	5.1	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		56			28			829			621	
Approach Delay, s/veh		32.1			33.1			5.1			0.5	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		60.9		9.1		60.9		9.1				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		47.0		11.5		47.0		11.5				
Max Q Clear Time (g_c+I1), s		16.8		3.5		2.0		4.4				
Green Ext Time (p_c), s		22.5		0.1		21.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.7									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	195	38	3	178	204	74	370	11	109	232	212
Future Volume (vph)	270	195	38	3	178	204	74	370	11	109	232	212
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1485	1660	1113	1194	1649	1561	1637	1718	0	1500	1509	1388
Flt Permitted	0.418			0.628			0.534			0.274		
Satd. Flow (perm)	653	1660	1088	788	1649	1561	920	1718	0	432	1509	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			239		2				232
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1026				640
Travel Time (s)		14.2			7.4			28.0				10.9
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	9%	29%	33%	5%	4%	6%	13%	18%	8%	13%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	287	207	40	3	189	217	79	406	0	116	247	226
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	15.0	38.5	38.5	23.5	23.5	23.5	14.0	27.5		14.0	27.5	27.5
Total Split (%)	18.8%	48.1%	48.1%	29.4%	29.4%	29.4%	17.5%	34.4%		17.5%	34.4%	34.4%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	29.8	29.8	29.8	14.5	14.5	14.5	26.3	20.3		26.4	20.4	20.4
Actuated g/C Ratio	0.41	0.41	0.41	0.20	0.20	0.20	0.36	0.28		0.36	0.28	0.28
v/c Ratio	0.76	0.30	0.07	0.02	0.57	0.43	0.19	0.84		0.42	0.58	0.41
Control Delay	33.3	17.5	0.3	25.0	35.5	6.0	13.6	43.4		17.8	30.2	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	33.3	17.5	0.3	25.0	35.5	6.0	13.6	43.4		17.8	30.2	5.8
LOS	C	B	A	C	D	A	B	D		B	C	A
Approach Delay		24.7			19.8			38.6			18.4	
Approach LOS		C			B			D			B	
Queue Length 50th (ft)	101	67	0	1	83	0	19	175		29	97	0
Queue Length 95th (ft)	#211	117	0	8	147	43	47	#354		66	184	48

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		860			410			946			560	
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	380	770	585	199	417	573	415	520		278	457	582
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.76	0.27	0.07	0.02	0.45	0.38	0.19	0.78		0.42	0.54	0.39

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	72.4
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	25.2
Intersection LOS:	C
Intersection Capacity Utilization	72.6%
ICU Level of Service	C
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230

Ø1	Ø2	Ø3	Ø4
15 s	23.5 s	14 s	27.5 s
Ø5	Ø7	Ø7	Ø8
38.5 s	14 s	14 s	27.5 s

HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	↘
Traffic Volume (veh/h)	270	195	38	3	178	204	74	370	11	109	232	212
Future Volume (veh/h)	270	195	38	3	178	204	74	370	11	109	232	212
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1724	1709	1425	1331	1724	1808	2087	2067	1917	1598	1528	1598
Adj Flow Rate, veh/h	287	207	27	3	189	0	79	394	10	116	247	196
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	9	29	33	5	4	6	13	18	8	13	8
Cap, veh/h	430	696	491	259	327		375	487	12	305	417	369
Arrive On Green	0.14	0.41	0.41	0.19	0.19	0.00	0.07	0.24	0.23	0.10	0.27	0.27
Sat Flow, veh/h	1641	1709	1206	814	1724	1532	1988	2007	51	1522	1528	1352
Grp Volume(v), veh/h	287	207	27	3	189	0	79	0	404	116	247	196
Grp Sat Flow(s),veh/h/ln	1641	1709	1206	814	1724	1532	1988	0	2058	1522	1528	1352
Q Serve(g_s), s	9.3	5.6	0.9	0.2	6.9	0.0	2.0	0.0	12.7	3.8	9.7	8.5
Cycle Q Clear(g_c), s	9.3	5.6	0.9	0.2	6.9	0.0	2.0	0.0	12.7	3.8	9.7	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	430	696	491	259	327		375	0	500	305	417	369
V/C Ratio(X)	0.67	0.30	0.05	0.01	0.58		0.21	0.00	0.81	0.38	0.59	0.53
Avail Cap(c_a), veh/h	430	819	578	317	450		475	0	642	336	477	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	13.8	12.4	22.7	25.4	0.0	17.6	0.0	24.6	17.6	21.7	21.3
Incr Delay (d2), s/veh	3.9	0.1	0.0	0.0	0.6	0.0	0.3	0.0	6.0	0.8	1.5	1.2
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	6.2	3.3	0.4	0.1	4.7	0.0	1.6	0.0	11.0	2.2	5.9	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	13.9	12.4	22.7	26.0	0.0	17.9	0.0	30.6	18.4	23.2	22.5
LnGrp LOS	C	B	B	C	C		B	A	C	B	C	C
Approach Vol, veh/h		521			192			483			559	
Approach Delay, s/veh		18.1			26.0			28.5			22.0	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	18.6	12.6	22.7		33.6	10.5	24.8				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	8.5	17.0	7.0	20.5		32.0	7.0	20.5				
Max Q Clear Time (g_c+I1), s	11.8	9.4	6.3	14.7		8.1	4.5	12.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0		0.1	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 29: SR 0230 & Ridge Run Rd

2029 No Build
 AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	288	387	24	26	3
Future Volume (vph)	3	288	387	24	26	3
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1318	1693	1723	0	1554	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1318	1693	1723	0	1554	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2697	1003		1286	
Travel Time (s)		33.4	12.4		25.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	33%	9%	5%	9%	4%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	316	451	0	32	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.8% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	288	387	24	26	3
Future Vol, veh/h	3	288	387	24	26	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	9	5	9	4	33
Mvmt Flow	3	316	425	26	29	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	451	0	-	0	760 438
Stage 1	-	-	-	-	438 -
Stage 2	-	-	-	-	322 -
Critical Hdwy	4.4	-	-	-	6.84 6.7
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	3.3	-	-	-	3 3.4
Pot Cap-1 Maneuver	768	-	-	-	382 572
Stage 1	-	-	-	-	704 -
Stage 2	-	-	-	-	812 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	768	-	-	-	380 572
Mov Cap-2 Maneuver	-	-	-	-	515 -
Stage 1	-	-	-	-	701 -
Stage 2	-	-	-	-	812 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	768	-	-	-	520
HCM Lane V/C Ratio	0.004	-	-	-	0.061
HCM Control Delay (s)	9.7	-	-	-	12.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2029 No Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	64	23	34	6	44	114	47	311	9	26	171	74
Future Volume (vph)	64	23	34	6	44	114	47	311	9	26	171	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1307	0	0	1540	0	0	1664	0	0	1508	0
Flt Permitted		0.974			0.998			0.994			0.995	
Satd. Flow (perm)	0	1307	0	0	1540	0	0	1664	0	0	1508	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1157			1404			999			1026	
Travel Time (s)		22.5			27.4			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	0	0	171	0	0	382	0	0	282	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.7%
ICU Level of Service	A
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	64	23	34	6	44	114	47	311	9	26	171	74
Future Vol, veh/h	64	23	34	6	44	114	47	311	9	26	171	74
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	67	24	35	6	46	119	49	324	9	27	178	77
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.2	10.8	16.6	13.9
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	53%	4%	10%
Vol Thru, %	85%	19%	27%	63%
Vol Right, %	2%	28%	70%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	367	121	164	271
LT Vol	47	64	6	26
Through Vol	311	23	44	171
RT Vol	9	34	114	74
Lane Flow Rate	382	126	171	282
Geometry Grp	1	1	1	1
Degree of Util (X)	0.595	0.241	0.269	0.46
Departure Headway (Hd)	5.601	6.89	5.663	5.866
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	642	518	630	613
Service Time	3.656	4.967	3.735	3.925
HCM Lane V/C Ratio	0.595	0.243	0.271	0.46
HCM Control Delay	16.6	12.2	10.8	13.9
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	3.9	0.9	1.1	2.4

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2029 No Build
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	670	88	197	502	126	128
Future Volume (vph)	670	88	197	502	126	128
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1799	0	1744	1958	1583	0
Flt Permitted			0.096		0.976	
Satd. Flow (perm)	1799	0	176	1958	1583	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	12					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	0%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	833	0	216	552	279	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	46.0		12.0	58.0	22.0	
Total Split (%)	57.5%		15.0%	72.5%	27.5%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	40.8		54.0	52.8	16.8	
Actuated g/C Ratio	0.51		0.68	0.66	0.21	
v/c Ratio	0.90		0.79	0.43	0.84	
Control Delay	33.0		29.7	7.5	54.3	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	33.0		29.7	7.5	54.3	
LOS	C		C	A	D	
Approach Delay	33.0			13.7	54.3	
Approach LOS	C			B	D	
Queue Length 50th (ft)	352		40	124	135	
Queue Length 95th (ft)	#606		m#87	m154	#265	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2029 No Build
 PM Peak Hour

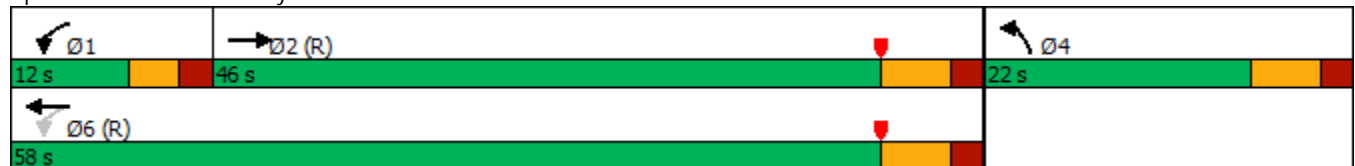


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	923		275	1292	332	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.90		0.79	0.43	0.84	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 5 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 28.3
 Intersection LOS: C
 Intersection Capacity Utilization 82.0%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2029 No Build
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→		↵	↑	↵	
Traffic Volume (veh/h)	670	88	197	502	126	128
Future Volume (veh/h)	670	88	197	502	126	128
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1735	1711	2009	2090	1860	1860
Adj Flow Rate, veh/h	736	88	216	552	138	141
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	0	1	1	1	1
Cap, veh/h	811	97	321	1397	166	169
Arrive On Green	0.53	0.52	0.17	1.00	0.20	0.19
Sat Flow, veh/h	1521	182	1914	2090	822	840
Grp Volume(v), veh/h	0	824	216	552	280	0
Grp Sat Flow(s),veh/h/ln	0	1702	1914	2090	1668	0
Q Serve(g_s), s	0.0	35.0	3.8	0.0	12.9	0.0
Cycle Q Clear(g_c), s	0.0	35.0	3.8	0.0	12.9	0.0
Prop In Lane		0.11	1.00		0.49	0.50
Lane Grp Cap(c), veh/h	0	908	321	1397	336	0
V/C Ratio(X)	0.00	0.91	0.67	0.40	0.83	0.00
Avail Cap(c_a), veh/h	0	908	350	1397	350	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	16.9	15.3	0.0	30.9	0.0
Incr Delay (d2), s/veh	0.0	14.4	4.5	0.8	19.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	21.7	4.0	0.6	11.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	31.3	19.8	0.8	50.4	0.0
LnGrp LOS	A	C	B	A	D	A
Approach Vol, veh/h	824			768	280	
Approach Delay, s/veh	31.3			6.2	50.4	
Approach LOS	C			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.8	47.9		21.3		58.7
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	39.8		15.8		51.8
Max Q Clear Time (g_c+I1), s	5.8	37.0		14.9		2.0
Green Ext Time (p_c), s	0.1	2.4		0.2		17.2

Intersection Summary




















HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2029 No Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	832	0	0	980	87	1	0	2	30	0	49
Future Volume (vph)	28	832	0	0	980	87	1	0	2	30	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Flt Permitted	0.950							0.984		0.950		
Satd. Flow (perm)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	8%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	895	0	0	1148	0	0	3	0	32	53	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	68.0%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	28	832	0	0	980	87	1	0	2	30	0	49
Future Vol, veh/h	28	832	0	0	980	87	1	0	2	30	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	2	0	0	1	0	0	0	0	0	0	4
Mvmt Flow	30	895	0	0	1054	94	1	0	2	32	0	53

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1148	0	0	895	0	0	2084	2103	895	2057	2056	1102
Stage 1	-	-	-	-	-	-	955	955	-	1101	1101	-
Stage 2	-	-	-	-	-	-	1129	1148	-	956	955	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	573	-	-	434	-	-	52	66	375	61	79	295
Stage 1	-	-	-	-	-	-	384	377	-	341	349	-
Stage 2	-	-	-	-	-	-	310	313	-	404	398	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	573	-	-	434	-	-	41	63	375	58	75	295
Mov Cap-2 Maneuver	-	-	-	-	-	-	41	63	-	58	75	-
Stage 1	-	-	-	-	-	-	364	357	-	323	349	-
Stage 2	-	-	-	-	-	-	254	313	-	381	377	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	41.8	60.5
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	101	573	-	-	434	-	-	58	295
HCM Lane V/C Ratio	0.032	0.053	-	-	-	-	-	0.556	0.179
HCM Control Delay (s)	41.8	11.6	-	-	0	-	-	126.9	19.8
HCM Lane LOS	E	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	2.2	0.6

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	630	38	155	772	18	275	3	119	24	8	17
Future Volume (vph)	15	630	38	155	772	18	275	3	119	24	8	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1766	1584	1572	1697	1608	1694	1576	0	1761	1742	0
Flt Permitted	0.310			0.187			0.740			0.676		
Satd. Flow (perm)	539	1766	1550	309	1697	1608	1314	1576	0	1253	1742	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			40			124			18
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)			1				2					2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	656	40	161	804	19	286	127	0	25	26	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	43.0	43.0	43.0	13.0	56.0	56.0	24.0	24.0		24.0	24.0	
Total Split (%)	53.8%	53.8%	53.8%	16.3%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	37.5	37.5	37.5	51.6	50.3	50.3	19.0	19.0		19.0	19.0	
Actuated g/C Ratio	0.47	0.47	0.47	0.64	0.63	0.63	0.24	0.24		0.24	0.24	
v/c Ratio	0.06	0.79	0.05	0.49	0.75	0.02	0.92	0.27		0.08	0.06	
Control Delay	11.7	18.0	0.2	10.1	7.3	0.1	66.4	7.1		24.7	14.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.7	18.0	0.2	10.1	7.3	0.1	66.4	7.1		24.7	14.0	
LOS	B	B	A	B	A	A	E	A		C	B	
Approach Delay		16.9			7.6			48.2			19.2	
Approach LOS		B			A			D			B	
Queue Length 50th (ft)	3	124	0	4	26	0	140	1		10	3	
Queue Length 95th (ft)	m5	m183	m0	m34	62	m0	#284	42		29	22	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
PM Peak Hour

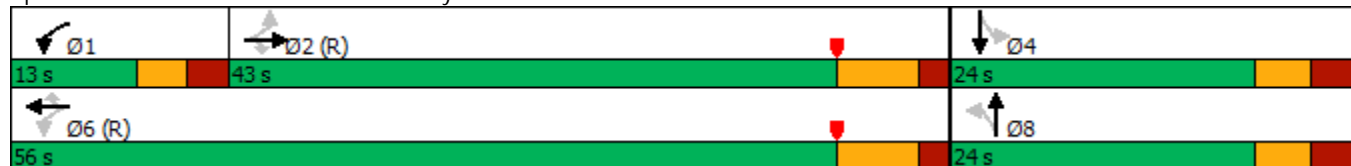


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	252	828	787	333	1066	1025	313	470		299	429	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.79	0.05	0.48	0.75	0.02	0.91	0.27		0.08	0.06	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 33 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 18.7
 Intersection LOS: B
 Intersection Capacity Utilization 91.9%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
 7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	15	630	38	155	772	18	275	3	119	24	8	17
Future Volume (veh/h)	15	630	38	155	772	18	275	3	119	24	8	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2032	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	16	656	25	161	804	16	286	3	84	25	8	15
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	451	997	856	569	1097	975	429	14	381	370	153	287
Arrive On Green	0.98	0.98	0.98	0.17	1.00	1.00	0.23	0.23	0.22	0.23	0.23	0.22
Sat Flow, veh/h	735	2032	1745	1666	1736	1542	1468	58	1627	1413	653	1224
Grp Volume(v), veh/h	16	656	25	161	804	16	286	0	87	25	0	23
Grp Sat Flow(s),veh/h/ln	735	2032	1745	1666	1736	1542	1468	0	1685	1413	0	1878
Q Serve(g_s), s	0.0	1.3	0.0	3.4	0.0	0.0	14.9	0.0	3.4	1.2	0.0	0.8
Cycle Q Clear(g_c), s	0.0	1.3	0.0	3.4	0.0	0.0	15.2	0.0	3.4	4.0	0.0	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.65
Lane Grp Cap(c), veh/h	451	997	856	569	1097	975	429	0	394	370	0	439
V/C Ratio(X)	0.04	0.66	0.03	0.28	0.73	0.02	0.67	0.00	0.22	0.07	0.00	0.05
Avail Cap(c_a), veh/h	451	997	856	604	1097	975	436	0	402	376	0	448
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.4	0.4	0.4	6.3	0.0	0.0	29.4	0.0	25.2	26.2	0.0	24.0
Incr Delay (d2), s/veh	0.1	3.4	0.1	0.2	3.1	0.0	3.8	0.0	0.3	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	2.0	0.0	1.6	1.7	0.0	9.4	0.0	2.5	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.5	3.8	0.4	6.5	3.1	0.0	33.2	0.0	25.4	26.3	0.0	24.1
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		697			981			373				48
Approach Delay, s/veh		3.6			3.6			31.4				25.2
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.3	45.1		23.6		56.4		23.6				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	36.2		* 18		49.2		* 18				
Max Q Clear Time (g_c+I1), s	5.9	3.8		6.5		2.5		17.7				
Green Ext Time (p_c), s	0.1	0.8		0.1		1.0		0.1				

Intersection Summary												
HCM 6th Ctrl Delay				9.0								
HCM 6th LOS				A								

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2029 No Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	454	1	10	777	75	9	2	1	43	3	115
Future Volume (vph)	87	454	1	10	777	75	9	2	1	43	3	115
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1729	0	1586	1818	1561	0	1831	0	1719	1506	0
Flt Permitted	0.216			0.490				0.712		0.750		
Satd. Flow (perm)	381	1729	0	818	1818	1561	0	1347	0	1357	1506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						110		1				121
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1340			610			200				300
Travel Time (s)		22.8			10.4			5.5				8.2
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	10%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	479	0	11	818	79	0	12	0	45	124	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8				4
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	62.0		51.0	51.0	51.0	18.0	18.0		18.0	18.0	
Total Split (%)	13.8%	77.5%		63.8%	63.8%	63.8%	22.5%	22.5%		22.5%	22.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	63.9	64.1		55.3	55.3	55.3		9.3		9.3	9.3	
Actuated g/C Ratio	0.80	0.80		0.69	0.69	0.69		0.12		0.12	0.12	
v/c Ratio	0.22	0.35		0.02	0.65	0.07		0.08		0.29	0.44	
Control Delay	3.6	6.0		4.7	11.7	0.6		29.9		36.2	12.1	
Queue Delay	0.0	0.0		0.0	0.1	0.0		0.0		0.0	0.0	
Total Delay	3.6	6.0		4.7	11.9	0.6		29.9		36.2	12.1	
LOS	A	A		A	B	A		C		D	B	
Approach Delay		5.6			10.8			29.9			18.6	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	10	131		1	310	0		5		21	1	
Queue Length 95th (ft)	m17	m207		m2	407	m1		19		50	46	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2029 No Build
 PM Peak Hour

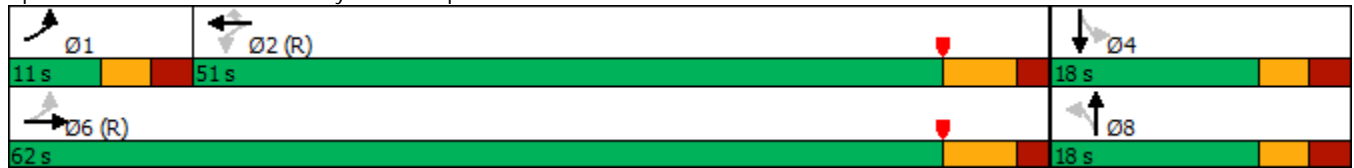


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	409	1384		565	1255	1112		226		227	352	
Starvation Cap Reductn	0	0		0	41	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.22	0.35		0.02	0.67	0.07		0.05		0.20	0.35	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 11 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 9.9
 Intersection LOS: A
 Intersection Capacity Utilization 68.2%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2029 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↕		↖	↗	
Traffic Volume (veh/h)	87	454	1	10	777	75	9	2	1	43	3	115
Future Volume (veh/h)	87	454	1	10	777	75	9	2	1	43	3	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1683	1711	1807	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	92	478	1	11	818	70	9	2	0	45	3	65
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	10	1	0	0	0	0	0	0	0
Cap, veh/h	569	1338	3	699	1333	1138	113	19	0	210	5	115
Arrive On Green	0.10	1.00	1.00	1.00	1.00	1.00	0.07	0.08	0.00	0.08	0.08	0.07
Sat Flow, veh/h	1629	1678	4	885	1935	1652	396	245	0	1376	68	1476
Grp Volume(v), veh/h	92	0	479	11	818	70	11	0	0	45	0	68
Grp Sat Flow(s),veh/h/ln	1629	0	1682	885	1935	1652	641	0	0	1376	0	1544
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4
Cycle Q Clear(g_c), s	1.1	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	2.0	0.0	3.4
Prop In Lane	1.00		0.00	1.00		1.00	0.82		0.00	1.00		0.96
Lane Grp Cap(c), veh/h	569	0	1341	699	1333	1138	124	0	0	210	0	120
V/C Ratio(X)	0.16	0.00	0.36	0.02	0.61	0.06	0.09	0.00	0.00	0.21	0.00	0.57
Avail Cap(c_a), veh/h	617	0	1341	699	1333	1138	249	0	0	334	0	259
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.00	0.55	0.74	0.74	0.74	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.1	0.0	0.0	0.0	0.0	0.0	34.7	0.0	0.0	34.9	0.0	36.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	1.6	0.1	0.3	0.0	0.0	0.5	0.0	4.1
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.3	0.0	1.0	0.0	0.4	0.0	0.0	1.5	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.2	0.0	0.4	0.0	1.6	0.1	35.0	0.0	0.0	35.4	0.0	40.2
LnGrp LOS	A	A	A	A	A	A	C	A	A	D	A	D
Approach Vol, veh/h		571			899			11				113
Approach Delay, s/veh		0.7			1.4			35.0				38.3
Approach LOS		A			A			C				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.7	60.5		10.8		69.2		10.8				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	44.6		12.4		55.6		12.4				
Max Q Clear Time (g_c+I1), s	3.6	2.5		5.4		2.5		5.4				
Green Ext Time (p_c), s	0.0	1.1		0.2		0.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	4.0
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 No Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	401	22	42	663	33	94	36	30	34	45	96
Future Volume (vph)	63	401	22	42	663	33	94	36	30	34	45	96
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1708	0	1573	1677	0	1572	1603	0	0	1801	0
Flt Permitted	0.307			0.478			0.514				0.921	
Satd. Flow (perm)	534	1708	0	791	1677	0	850	1603	0	0	1675	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			32				83
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	3%	0%	3%	1%	0%	0%	3%	3%	0%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	445	0	44	733	0	99	70	0	0	184	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4		4
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0		3.0
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0		13.0
Total Split (s)	48.0	48.0		48.0	48.0		32.0	32.0		32.0		32.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%		40.0%
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0		4.0
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0				-1.0
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0				5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None		None
Act Effect Green (s)	56.0	56.0		56.0	56.0		14.1	14.1				14.1
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.18	0.18				0.18
v/c Ratio	0.18	0.37		0.08	0.62		0.66	0.23				0.51
Control Delay	1.7	1.5		5.6	10.5		50.5	17.8				20.4
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0				0.0
Total Delay	1.7	1.5		5.6	10.6		50.5	17.8				20.4
LOS	A	A		A	B		D	B				C
Approach Delay		1.5			10.3			37.0				20.4
Approach LOS		A			B			D				C
Queue Length 50th (ft)	1	8		6	161		47	16				45
Queue Length 95th (ft)	3	9		21	353		89	45				94

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 No Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	373	1197		553	1175		286	562				620
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	38		0	0				1
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.18	0.37		0.08	0.64		0.35	0.12				0.30

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.5
Intersection LOS:	B
Intersection Capacity Utilization	83.9%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2029 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	401	22	42	663	33	94	36	30	34	45	96
Future Volume (veh/h)	63	401	22	42	663	33	94	36	30	34	45	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1708	1750	1869	1898	1912	1750	1708	1708	1949	1997	1921
Adj Flow Rate, veh/h	66	422	22	44	698	33	99	38	14	36	47	80
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	0	3	1	0	0	3	3	0	2	2
Cap, veh/h	471	1187	62	787	1327	63	235	164	60	93	84	118
Arrive On Green	1.00	1.00	1.00	0.74	0.74	0.73	0.14	0.14	0.13	0.13	0.14	0.13
Sat Flow, veh/h	667	1609	84	945	1797	85	1180	1189	438	272	611	851
Grp Volume(v), veh/h	66	0	444	44	0	731	99	0	52	163	0	0
Grp Sat Flow(s),veh/h/ln	667	0	1692	945	0	1882	1180	0	1627	1735	0	0
Q Serve(g_s), s	2.1	0.0	0.0	1.0	0.0	13.3	0.4	0.0	2.3	4.4	0.0	0.0
Cycle Q Clear(g_c), s	15.4	0.0	0.0	1.0	0.0	13.3	7.6	0.0	2.3	7.2	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.27	0.22		0.49
Lane Grp Cap(c), veh/h	471	0	1249	787	0	1389	235	0	225	273	0	0
V/C Ratio(X)	0.14	0.00	0.36	0.06	0.00	0.53	0.42	0.00	0.23	0.60	0.00	0.00
Avail Cap(c_a), veh/h	471	0	1249	787	0	1389	471	0	549	611	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.7	0.0	0.0	2.9	0.0	4.5	33.0	0.0	30.8	33.1	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.8	0.1	0.0	1.4	1.2	0.0	0.5	2.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.2	0.0	0.5	0.3	0.0	6.4	3.3	0.0	1.6	5.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.3	0.0	0.8	3.0	0.0	5.9	34.2	0.0	31.3	35.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	D	A	A
Approach Vol, veh/h		510			775			151				163
Approach Delay, s/veh		1.0			5.8			33.2				35.2
Approach LOS		A			A			C				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		64.0		16.0		64.0		16.0				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 42		26.0		* 42		26.0				
Max Q Clear Time (g_c+I1), s		2.0		9.2		15.3		9.6				
Green Ext Time (p_c), s		13.0		0.5		18.7		0.4				

Intersection Summary

HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	579	0	125	281	146	0	0	231	48
Future Volume (vph)	0	0	0	579	0	125	281	146	0	0	231	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1653	1414	1589	1511	0	0	1658	1637
Flt Permitted					0.950		0.392					
Satd. Flow (perm)	0	0	0	0	1653	1414	656	1511	0	0	1658	1637
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						151						143
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	1%	0%	2%	3%	14%	2%	2%	6%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	609	132	296	154	0	0	243	51
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				30.0	30.0	30.0	13.0	35.0			22.0	22.0
Total Split (%)				46.2%	46.2%	46.2%	20.0%	53.8%			33.8%	33.8%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					25.1	25.1	28.9	28.9			15.9	15.9
Actuated g/C Ratio					0.40	0.40	0.46	0.46			0.25	0.25
v/c Ratio					0.93	0.20	0.71	0.22			0.59	0.10
Control Delay					44.0	3.0	23.8	11.6			27.5	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					44.0	3.0	23.8	11.6			27.5	0.4
LOS				D	A	C	B				C	A
Approach Delay					36.7			19.6			22.8	
Approach LOS					D			B			C	
Queue Length 50th (ft)					225	0	74	35			83	0
Queue Length 95th (ft)					#420	24	#149	68			149	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
 PM Peak Hour

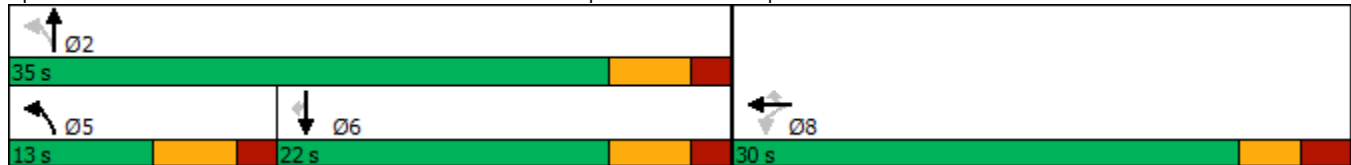


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					664	658	416	714			444	543
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.92	0.20	0.71	0.22			0.55	0.09

Intersection Summary

Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 63.5
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 28.8
 Intersection LOS: C
 Intersection Capacity Utilization 124.6%
 ICU Level of Service H
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↶	↷	↶	↷			↶	↷
Traffic Volume (veh/h)	0	0	0	579	0	125	281	146	0	0	231	48
Future Volume (veh/h)	0	0	0	579	0	125	281	146	0	0	231	48
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1860	1875	1846	1736	1581	0	0	1789	1846
Adj Flow Rate, veh/h				609	0	0	296	154	0	0	243	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	0	2	3	14	0	0	6	7
Cap, veh/h				699	0		457	705	0	0	399	
Arrive On Green				0.37	0.00	0.00	0.14	0.45	0.00	0.00	0.22	0.00
Sat Flow, veh/h				1785	0	1564	1653	1581	0	0	1789	1564
Grp Volume(v), veh/h				609	0	0	296	154	0	0	243	0
Grp Sat Flow(s),veh/h/ln				1785	0	1564	1653	1581	0	0	1789	1564
Q Serve(g_s), s				18.5	0.0	0.0	7.7	3.5	0.0	0.0	7.1	0.0
Cycle Q Clear(g_c), s				18.5	0.0	0.0	7.7	3.5	0.0	0.0	7.1	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				699	0		457	705	0	0	399	
V/C Ratio(X)				0.87	0.00		0.65	0.22	0.00	0.00	0.61	
Avail Cap(c_a), veh/h				781	0		457	813	0	0	522	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.9	0.0	0.0	14.0	9.9	0.0	0.0	20.4	0.0
Incr Delay (d2), s/veh				9.8	0.0	0.0	3.2	0.6	0.0	0.0	5.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				13.6	0.0	0.0	4.9	1.9	0.0	0.0	5.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				26.7	0.0	0.0	17.2	10.5	0.0	0.0	25.7	0.0
LnGrp LOS				C	A		B	B	A	A	C	
Approach Vol, veh/h					609			450			243	
Approach Delay, s/veh					26.7			14.9			25.7	
Approach LOS					C			B			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.0			13.0	18.0		27.3				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		24.5				
Max Q Clear Time (g_c+I1), s		5.5			9.7	9.1		20.5				
Green Ext Time (p_c), s		3.0			0.0	2.1		1.3				

Intersection Summary


















HCM 6th Ctrl Delay	22.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 No Build
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	3	508	0	0	0	0	387	444	100	718	0
Future Volume (vph)	44	3	508	0	0	0	0	387	444	100	718	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1563	1569	0	0	0	0	1665	0	1663	1801	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1563	1569	0	0	0	0	1665	0	1663	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	19%	0%	1%	2%	2%	2%	2%	5%	2%	6%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	524	0	0	0	0	857	0	103	740	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	124.6%
Analysis Period (min)	15
	ICU Level of Service H

HCM 6th TWSC
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 No Build
 PM Peak Hour

Intersection												
Int Delay, s/veh	26.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↗	↕	
Traffic Vol, veh/h	44	3	508	0	0	0	0	387	444	100	718	0
Future Vol, veh/h	44	3	508	0	0	0	0	387	444	100	718	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	19	0	1	2	2	2	2	5	2	6	3	2
Mvmt Flow	45	3	524	0	0	0	0	399	458	103	740	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1345	1345	740	-	0	0	399	0	0
Stage 1	946	946	-	-	-	-	-	-	-
Stage 2	399	399	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.91	-	-	-	4	-	-
Critical Hdwy Stg 1	4.99	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.99	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	158	191	~ 466	0	-	-	881	-	0
Stage 1	448	401	-	0	-	-	-	-	0
Stage 2	769	647	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	140	0	~ 466	-	-	-	881	-	-
Mov Cap-2 Maneuver	140	0	-	-	-	-	-	-	-
Stage 1	448	0	-	-	-	-	-	-	-
Stage 2	679	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	103.5	0	1.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	140	466	881	-
HCM Lane V/C Ratio	-	-	0.346	1.124	0.117	-
HCM Control Delay (s)	-	-	43.7	109	9.6	-
HCM Lane LOS	-	-	E	F	A	-
HCM 95th %tile Q(veh)	-	-	1.4	18.1	0.4	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 No Build
 PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	9	8	816	1198	10
Future Volume (vph)	3	9	8	816	1198	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1631	0	0	1801	1781	0
Flt Permitted	0.988					
Satd. Flow (perm)	1631	0	0	1801	1781	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	0	849	1245	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	73.7% ICU Level of Service D
Analysis Period (min)	15

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 No Build
 PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	9	8	816	1198	10
Future Vol, veh/h	3	9	8	816	1198	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	3	9	8	841	1235	10






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2097	1240	1245	0	-	0
Stage 1	1240	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	61	223	501	-	-	-
Stage 1	300	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	59	223	501	-	-	-
Mov Cap-2 Maneuver	59	-	-	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.1	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	501	-	132	-	-
HCM Lane V/C Ratio	0.016	-	0.094	-	-
HCM Control Delay (s)	12.3	0	35.1	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 No Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	34	79	9	42	36	60	570	14	50	834	327
Future Volume (vph)	224	34	79	9	42	36	60	570	14	50	834	327
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1683	0	1416	1704	0	1620	1693	0	1628	1672	0
Flt Permitted	0.704			0.681			0.107			0.361		
Satd. Flow (perm)	1200	1683	0	1015	1704	0	182	1693	0	619	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		83			38			4				63
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	11%	0%	0%	0%	4%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	236	119	0	9	82	0	63	615	0	53	1222	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	17.0	17.0		17.0	17.0		43.0	43.0		43.0	43.0	
Total Split (%)	28.3%	28.3%		28.3%	28.3%		71.7%	71.7%		71.7%	71.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.0	12.0		12.0	12.0		37.5	37.5		37.5	37.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.62	0.62		0.62	0.62	
v/c Ratio	0.98	0.30		0.04	0.22		0.56	0.58		0.14	1.14	
Control Delay	83.8	10.9		20.2	14.4		32.2	13.1		5.7	92.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.8	10.9		20.2	14.4		32.2	13.1		5.7	92.0	
LOS	F	B		C	B		C	B		A	F	
Approach Delay		59.4			14.9			14.9			88.4	
Approach LOS		E			B			B			F	
Queue Length 50th (ft)	86	11		3	13		26	253		7	~530	
Queue Length 95th (ft)	#209	48		13	44		m#43	300		19	#754	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2029 No Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	240	403		203	371		113	1059		386	1068	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.98	0.30		0.04	0.22		0.56	0.58		0.14	1.14	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 60.5
 Intersection LOS: E
 Intersection Capacity Utilization 95.9%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
11: Cloverleaf Rd & Schwanger Rd



















2029 No Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	34	79	9	42	36	60	570	14	50	834	327
Future Volume (veh/h)	224	34	79	9	42	36	60	570	14	50	834	327
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1595	1820	1750	1912	1855	1912	1949	1921	1935
Adj Flow Rate, veh/h	236	36	59	9	44	24	63	600	14	53	878	333
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	11	0	0	0	4	0	0	2	1
Cap, veh/h	354	141	231	294	221	121	120	1128	26	397	829	315
Arrive On Green	0.20	0.20	0.18	0.20	0.20	0.18	0.21	0.21	0.20	0.63	0.63	0.61
Sat Flow, veh/h	1406	704	1154	1110	1107	604	472	1805	42	842	1327	503
Grp Volume(v), veh/h	236	0	95	9	0	68	63	0	614	53	0	1211
Grp Sat Flow(s),veh/h/ln	1406	0	1858	1110	0	1711	472	0	1847	842	0	1830
Q Serve(g_s), s	10.0	0.0	2.6	0.4	0.0	2.0	0.0	0.0	17.8	2.7	0.0	37.5
Cycle Q Clear(g_c), s	12.0	0.0	2.6	3.0	0.0	2.0	37.5	0.0	17.8	20.5	0.0	37.5
Prop In Lane	1.00		0.62	1.00		0.35	1.00		0.02	1.00		0.27
Lane Grp Cap(c), veh/h	354	0	372	294	0	342	120	0	1155	397	0	1144
V/C Ratio(X)	0.67	0.00	0.26	0.03	0.00	0.20	0.52	0.00	0.53	0.13	0.00	1.06
Avail Cap(c_a), veh/h	354	0	372	294	0	342	120	0	1155	397	0	1144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.83	0.00	0.83	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	20.5	21.5	0.0	20.1	42.6	0.0	16.0	14.4	0.0	11.4
Incr Delay (d2), s/veh	4.7	0.0	0.4	0.0	0.0	0.3	13.0	0.0	1.5	0.7	0.0	43.6
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	6.3	0.0	1.9	0.2	0.0	1.4	2.5	0.0	13.2	0.9	0.0	32.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	20.9	21.6	0.0	20.4	55.5	0.0	17.4	15.1	0.0	55.0
LnGrp LOS	C	A	C	C	A	C	E	A	B	B	A	F
Approach Vol, veh/h		331			77			677			1264	
Approach Delay, s/veh		27.2			20.6			21.0			53.4	
Approach LOS		C			C			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		17.0		43.0		17.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		36.5		11.0		36.5		11.0				
Max Q Clear Time (g_c+I1), s		19.8		14.0		39.5		5.0				
Green Ext Time (p_c), s		10.9		0.0		0.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				39.3								
HCM 6th LOS				D								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 No Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	18	63	0	40	17	590	5	10	877	35
Future Volume (vph)	15	0	18	63	0	40	17	590	5	10	877	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1670	0	0	1640	0	0	1722	1648
Flt Permitted		0.762			0.804			0.970			0.993	
Satd. Flow (perm)	0	1326	1581	0	1384	0	0	1592	0	0	1711	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			1				45
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	19	0	108	0	0	644	0	0	934	37
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		6			6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	15.0	15.0	15.0	15.0	15.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	75.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.7	8.7		8.7			45.0			45.0	45.0
Actuated g/C Ratio		0.14	0.14		0.14			0.75			0.75	0.75
v/c Ratio		0.08	0.07		0.44			0.54			0.73	0.03
Control Delay		22.1	1.7		18.8			8.3			3.9	0.1
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		22.1	1.7		18.8			8.3			3.9	0.1
LOS		C	A		B			A			A	A
Approach Delay		11.0			18.8			8.3			3.7	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		5	0		17			232			22	0
Queue Length 95th (ft)		19	4		55			204			m29	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 No Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		232	322		287			1195			1284	1248
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.07	0.06		0.38			0.54			0.73	0.03

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 25 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 6.5
 Intersection LOS: A
 Intersection Capacity Utilization 74.2%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

























2029 No Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (veh/h)	15	0	18	63	0	40	17	590	5	10	877	35
Future Volume (veh/h)	15	0	18	63	0	40	17	590	5	10	877	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1707	1778	1875	1846	1950
Adj Flow Rate, veh/h	16	0	11	66	0	27	18	621	5	11	923	36
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	5	0	0	2	0
Cap, veh/h	290	0	168	201	4	42	74	1206	10	65	1349	1216
Arrive On Green	0.09	0.00	0.11	0.09	0.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1607	0	1586	931	33	395	17	1638	13	6	1832	1652
Grp Volume(v), veh/h	16	0	11	93	0	0	644	0	0	934	0	36
Grp Sat Flow(s),veh/h/ln	1607	0	1586	1360	0	0	1668	0	0	1838	0	1652
Q Serve(g_s), s	0.0	0.0	0.4	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.4	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.71		0.29	0.03		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	263	0	168	223	0	0	1262	0	0	1383	0	1216
V/C Ratio(X)	0.06	0.00	0.07	0.42	0.00	0.00	0.51	0.00	0.00	0.68	0.00	0.03
Avail Cap(c_a), veh/h	355	0	278	324	0	0	1262	0	0	1383	0	1216
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.00	0.09
Uniform Delay (d), s/veh	24.7	0.0	24.2	26.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	1.2	0.0	0.0	1.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.3	2.4	0.0	0.0	0.9	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	24.3	27.7	0.0	0.0	1.5	0.0	0.0	0.2	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		27			93			644				970
Approach Delay, s/veh		24.6			27.7			1.5				0.2
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		49.2		10.8		49.2		10.8				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		39.0		9.5		39.0		9.5				
Max Q Clear Time (g_c+I1), s		2.0		2.5		2.0		6.1				
Green Ext Time (p_c), s		20.2		0.0		29.7		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				2.5								
HCM 6th LOS				A								

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	291	60	23	307	136	96	287	18	223	358	296
Future Volume (vph)	222	291	60	23	307	136	96	287	18	223	358	296
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%				4%
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1588	1791	1435	1512	1697	1577	1522	1810	0	1604	1640	1442
Flt Permitted	0.219			0.577			0.425			0.369		
Satd. Flow (perm)	366	1791	1435	919	1697	1577	681	1810	0	623	1640	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			159			2			305
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1028				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	5%	2%	3%	14%	7%	6%	1%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	229	300	62	24	316	140	99	315	0	230	369	305
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	23.0	68.0	68.0	45.0	45.0	45.0	15.0	32.0		20.0	37.0	37.0
Total Split (%)	19.2%	56.7%	56.7%	37.5%	37.5%	37.5%	12.5%	26.7%		16.7%	30.8%	30.8%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	49.0	49.0	49.0	26.8	26.8	26.8	48.6	39.9		58.3	44.8	44.8
Actuated g/C Ratio	0.41	0.41	0.41	0.22	0.22	0.22	0.40	0.33		0.49	0.37	0.37
v/c Ratio	0.72	0.41	0.10	0.12	0.83	0.29	0.29	0.52		0.56	0.60	0.42
Control Delay	36.4	25.9	1.2	35.3	62.7	5.1	21.6	38.3		19.7	30.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	36.4	25.9	1.2	35.3	62.7	5.1	21.6	38.3		19.7	30.3	6.8
LOS	D	C	A	D	E	A	C	D		B	C	A
Approach Delay		27.4			44.5			34.3			19.6	
Approach LOS		C			D			C			B	
Queue Length 50th (ft)	119	161	0	15	235	0	41	198		100	179	38
Queue Length 95th (ft)	160	205	8	36	312	36	85	326		m157	#380	78
Internal Link Dist (ft)		860			410			948			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
 PM Peak Hour

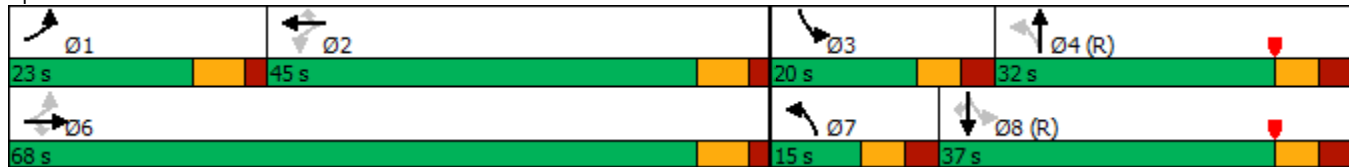


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	327	932	795	302	558	625	340	603		419	612	729
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.70	0.32	0.08	0.08	0.57	0.22	0.29	0.52		0.55	0.60	0.42

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 29.1
 Intersection LOS: C
 Intersection Capacity Utilization 79.3%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	291	60	23	307	136	96	287	18	223	358	296
Future Volume (veh/h)	222	291	60	23	307	136	96	287	18	223	358	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1823	1823	1837	1724	1766	1822	1974	2156	2087	1697	1655	1655
Adj Flow Rate, veh/h	229	300	32	24	316	0	99	296	18	230	369	234
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	5	2	3	14	7	6	1	4	4
Cap, veh/h	315	690	589	256	359		409	728	44	492	689	584
Arrive On Green	0.13	0.38	0.38	0.20	0.20	0.00	0.06	0.36	0.35	0.15	0.55	0.55
Sat Flow, veh/h	1736	1823	1557	966	1766	1544	1880	2012	122	1616	1655	1402
Grp Volume(v), veh/h	229	300	32	24	316	0	99	0	314	230	369	234
Grp Sat Flow(s),veh/h/ln	1736	1823	1557	966	1766	1544	1880	0	2134	1616	1655	1402
Q Serve(g_s), s	11.8	14.7	1.6	2.4	20.8	0.0	3.9	0.0	13.2	10.2	17.0	11.5
Cycle Q Clear(g_c), s	11.8	14.7	1.6	2.4	20.8	0.0	3.9	0.0	13.2	10.2	17.0	11.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	315	690	589	256	359		409	0	772	492	689	584
V/C Ratio(X)	0.73	0.44	0.05	0.09	0.88		0.24	0.00	0.41	0.47	0.54	0.40
Avail Cap(c_a), veh/h	344	950	811	378	581		438	0	772	496	689	584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	27.8	23.7	39.0	46.4	0.0	21.7	0.0	28.7	18.2	19.4	18.2
Incr Delay (d2), s/veh	6.9	0.2	0.0	0.1	5.3	0.0	0.3	0.0	1.6	0.7	3.0	2.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	9.1	10.3	1.0	1.0	14.4	0.0	3.2	0.0	11.6	6.3	10.1	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	27.9	23.7	39.1	51.7	0.0	22.0	0.0	30.3	18.9	22.4	20.3
LnGrp LOS	D	C	C	D	D		C	A	C	B	C	C
Approach Vol, veh/h		561			340			413			833	
Approach Delay, s/veh		32.0			50.8			28.3			20.8	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	21.0	29.9	19.7	49.4		50.9	13.2	55.9				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	16.5	38.5	13.0	25.0		61.5	8.0	30.0				
Max Q Clear Time (g_c+I1), s	14.3	23.3	12.7	15.2		17.2	6.4	19.5				
Green Ext Time (p_c), s	0.2	0.1	0.0	1.0		0.1	0.0	2.5				

Intersection Summary

HCM 6th Ctrl Delay	29.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
29: SR 0230 & Ridge Run Rd

2029 No Build
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	489	420	57	39	1
Future Volume (vph)	6	489	420	57	39	1
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1763	0	1668	0
Flt Permitted	0.950				0.953	
Satd. Flow (perm)	1754	1828	1763	0	1668	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1319	
Travel Time (s)		33.5	12.4		25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	509	497	0	42	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.7% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	489	420	57	39	1
Future Vol, veh/h	6	489	420	57	39	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	2	0	0
Mvmt Flow	6	509	438	59	41	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	497	0	-	0	989
Stage 1	-	-	-	-	468
Stage 2	-	-	-	-	521
Critical Hdwy	4.1	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	832	-	-	-	272
Stage 1	-	-	-	-	682
Stage 2	-	-	-	-	639
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	832	-	-	-	270
Mov Cap-2 Maneuver	-	-	-	-	423
Stage 1	-	-	-	-	677
Stage 2	-	-	-	-	639

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	832	-	-	-	426
HCM Lane V/C Ratio	0.008	-	-	-	0.098
HCM Control Delay (s)	9.4	-	-	-	14.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2029 No Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	79	83	78	4	52	56	33	265	6	87	319	48
Future Volume (vph)	79	83	78	4	52	56	33	265	6	87	319	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1396	0	0	1575	0	0	1668	0	0	1571	0
Flt Permitted		0.984			0.998			0.995			0.990	
Satd. Flow (perm)	0	1396	0	0	1575	0	0	1668	0	0	1571	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1146			1234			997			1028	
Travel Time (s)		22.3			24.0			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	249	0	0	116	0	0	316	0	0	473	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	67.0% ICU Level of Service C
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	25.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	79	83	78	4	52	56	33	265	6	87	319	48
Future Vol, veh/h	79	83	78	4	52	56	33	265	6	87	319	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	82	86	81	4	54	58	34	276	6	91	332	50
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.3	12.1	18.4	36.5
HCM LOS	C	B	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	33%	4%	19%
Vol Thru, %	87%	35%	46%	70%
Vol Right, %	2%	33%	50%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	304	240	112	454
LT Vol	33	79	4	87
Through Vol	265	83	52	319
RT Vol	6	78	56	48
Lane Flow Rate	317	250	117	473
Geometry Grp	1	1	1	1
Degree of Util (X)	0.579	0.517	0.226	0.853
Departure Headway (Hd)	6.587	7.446	6.983	6.49
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	548	483	511	558
Service Time	4.647	5.508	5.062	4.54
HCM Lane V/C Ratio	0.578	0.518	0.229	0.848
HCM Control Delay	18.4	18.3	12.1	36.5
HCM Lane LOS	C	C	B	E
HCM 95th-tile Q	3.7	2.9	0.9	9.1

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2029 No Build
SAT Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	
Traffic Volume (vph)	629	84	133	535	91	128
Future Volume (vph)	629	84	133	535	91	128
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1835	0	1761	1958	1577	0
Flt Permitted			0.212		0.980	
Satd. Flow (perm)	1835	0	393	1958	1577	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	8					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	720	0	134	540	221	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	52.0		13.0	65.0	45.0	
Total Split (%)	47.3%		11.8%	59.1%	40.9%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effect Green (s)	62.4		76.2	75.0	24.6	
Actuated g/C Ratio	0.57		0.69	0.68	0.22	
v/c Ratio	0.69		0.35	0.40	0.63	
Control Delay	22.5		7.6	8.7	45.9	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	22.5		7.6	8.7	45.9	
LOS	C		A	A	D	
Approach Delay	22.5			8.5	45.9	
Approach LOS	C			A	D	
Queue Length 50th (ft)	342		32	168	142	
Queue Length 95th (ft)	570		m48	m250	205	
Internal Link Dist (ft)	920			1120	920	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2029 No Build
 SAT Peak Hour

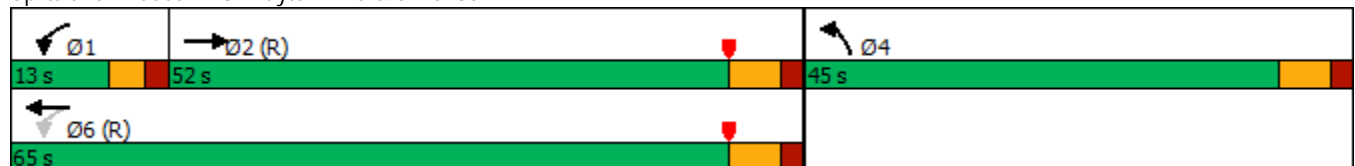


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)			150			
Base Capacity (vph)	1043		384	1335	570	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.69		0.35	0.40	0.39	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 97 (88%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 19.9
 Intersection LOS: B
 Intersection Capacity Utilization 73.7%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
3: Maytown Rd & SR 0230

2029 No Build
SAT Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (veh/h)	629	84	133	535	91	128
Future Volume (veh/h)	629	84	133	535	91	128
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1765	1711	2024	2090	1875	1860
Adj Flow Rate, veh/h	635	83	134	540	92	129
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	0	0	1	0	1
Cap, veh/h	979	128	474	1526	121	170
Arrive On Green	0.64	0.63	0.05	0.73	0.18	0.17
Sat Flow, veh/h	1529	200	1927	2090	690	968
Grp Volume(v), veh/h	0	718	134	540	222	0
Grp Sat Flow(s),veh/h/ln	0	1729	1927	2090	1666	0
Q Serve(g_s), s	0.0	28.2	2.4	10.3	14.0	0.0
Cycle Q Clear(g_c), s	0.0	28.2	2.4	10.3	14.0	0.0
Prop In Lane		0.12	1.00		0.41	0.58
Lane Grp Cap(c), veh/h	0	1107	474	1526	292	0
V/C Ratio(X)	0.00	0.65	0.28	0.35	0.76	0.00
Avail Cap(c_a), veh/h	0	1107	528	1526	603	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.2	9.9	5.4	43.5	0.0
Incr Delay (d2), s/veh	0.0	3.0	0.3	0.6	13.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	16.0	1.6	7.2	11.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	15.2	10.2	6.0	57.1	0.0
LnGrp LOS	A	B	B	A	E	A
Approach Vol, veh/h	718			674	222	
Approach Delay, s/veh	15.2			6.9	57.1	
Approach LOS	B			A	E	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.9	75.6		24.5		85.5
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	8.0	45.8		38.8		58.8
Max Q Clear Time (g_c+I1), s	4.4	30.2		16.0		12.3
Green Ext Time (p_c), s	0.1	11.0		2.3		16.2

Intersection Summary




















HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2029 No Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	818	0	1	836	103	0	0	1	49	0	36
Future Volume (vph)	17	818	0	1	836	103	0	0	1	49	0	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	852	0	1	978	0	0	1	0	51	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	66.3%
Analysis Period (min)	15
	ICU Level of Service C

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	17	818	0	1	836	103	0	0	1	49	0	36
Future Vol, veh/h	17	818	0	1	836	103	0	0	1	49	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	18	852	0	1	871	107	0	0	1	51	0	38

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	978	0	0	852	0	0	1834	1868	852	1816	1815	925
Stage 1	-	-	-	-	-	-	888	888	-	927	927	-
Stage 2	-	-	-	-	-	-	946	980	-	889	888	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	642	-	-	456	-	-	77	90	396	88	107	370
Stage 1	-	-	-	-	-	-	416	402	-	418	408	-
Stage 2	-	-	-	-	-	-	388	369	-	437	423	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	642	-	-	456	-	-	68	87	396	86	104	370
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	87	-	86	104	-
Stage 1	-	-	-	-	-	-	404	391	-	406	407	-
Stage 2	-	-	-	-	-	-	348	368	-	424	411	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			14.1			61.6		
HCM LOS							B			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	396	642	-	-	456	-	-	86	370
HCM Lane V/C Ratio	0.003	0.028	-	-	0.002	-	-	0.594	0.101
HCM Control Delay (s)	14.1	10.8	-	-	12.9	-	-	95.2	15.8
HCM Lane LOS		B	B	-	-	B	-	F	C
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	2.7	0.3

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	577	50	156	672	16	262	3	164	35	4	15
Future Volume (vph)	22	577	50	156	672	16	262	3	164	35	4	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1783	1584	1572	1697	1608	1694	1574	0	1761	1740	0
Flt Permitted	0.381			0.265			0.744			0.536		
Satd. Flow (perm)	662	1783	1584	439	1697	1573	1327	1574	0	994	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83			29			173			16
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	607	53	164	707	17	276	176	0	37	20	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	57.0	57.0	57.0	22.0	79.0	79.0	31.0	31.0		31.0	31.0	
Total Split (%)	51.8%	51.8%	51.8%	20.0%	71.8%	71.8%	28.2%	28.2%		28.2%	28.2%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	58.9	58.9	58.9	75.4	74.1	74.1	25.2	25.2		25.2	25.2	
Actuated g/C Ratio	0.54	0.54	0.54	0.69	0.67	0.67	0.23	0.23		0.23	0.23	
v/c Ratio	0.06	0.64	0.06	0.40	0.62	0.02	0.91	0.36		0.16	0.05	
Control Delay	14.6	18.1	2.5	7.9	9.4	1.0	75.1	7.6		35.6	16.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.6	18.1	2.5	7.9	9.4	1.0	75.1	7.6		35.6	16.9	
LOS	B	B	A	A	A	A	E	A		D	B	
Approach Delay		16.8			9.0			48.8			29.0	
Approach LOS		B			A			D			C	
Queue Length 50th (ft)	6	173	0	27	155	0	189	2		21	2	
Queue Length 95th (ft)	m15	305	m6	47	227	m1	#341	57		50	22	

Lanes, Volumes, Timings
 7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	354	954	886	481	1143	1068	314	505		235	425	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.64	0.06	0.34	0.62	0.02	0.88	0.35		0.16	0.05	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 4 (4%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 20.8
 Intersection LOS: C
 Intersection Capacity Utilization 86.3%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 No Build
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	577	50	156	672	16	262	3	164	35	4	15
Future Volume (veh/h)	22	577	50	156	672	16	262	3	164	35	4	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2047	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	23	607	31	164	707	12	276	3	108	37	4	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	529	1176	1002	610	1193	1058	385	10	354	294	124	279
Arrive On Green	1.00	1.00	1.00	0.14	1.00	1.00	0.22	0.22	0.21	0.22	0.22	0.21
Sat Flow, veh/h	807	2047	1743	1666	1736	1540	1488	46	1645	1387	576	1296
Grp Volume(v), veh/h	23	607	31	164	707	12	276	0	111	37	0	13
Grp Sat Flow(s),veh/h/ln	807	2047	1743	1666	1736	1540	1488	0	1690	1387	0	1871
Q Serve(g_s), s	0.0	0.0	0.0	4.1	0.0	0.0	19.7	0.0	6.1	2.5	0.0	0.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	4.1	0.0	0.0	19.8	0.0	6.1	8.1	0.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.69
Lane Grp Cap(c), veh/h	529	1176	1002	610	1193	1058	385	0	364	294	0	403
V/C Ratio(X)	0.04	0.52	0.03	0.27	0.59	0.01	0.72	0.00	0.30	0.13	0.00	0.03
Avail Cap(c_a), veh/h	529	1176	1002	755	1193	1058	417	0	401	324	0	444
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.2	0.0	0.0	41.7	0.0	36.7	39.4	0.0	34.4
Incr Delay (d2), s/veh	0.2	1.6	0.1	0.2	1.7	0.0	5.4	0.0	0.5	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	1.0	0.0	2.1	1.0	0.0	12.4	0.0	4.7	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	1.6	0.1	6.4	1.7	0.0	47.0	0.0	37.1	39.6	0.0	34.4
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h		661			883			387				50
Approach Delay, s/veh		1.5			2.6			44.2				38.3
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.4	69.0		28.6		81.4		28.6				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	16.5	50.2		* 25		72.2		* 25				
Max Q Clear Time (g_c+I1), s	6.6	2.5		10.6		2.5		22.3				
Green Ext Time (p_c), s	0.3	0.7		0.1		0.8		0.4				

Intersection Summary

HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2029 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	522	13	4	654	68	9	3	10	63	40	130
Future Volume (vph)	109	522	13	4	654	68	9	3	10	63	40	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1740	0	1744	1818	1561	0	1765	0	1719	1574	0
Flt Permitted	0.291			0.448				0.601		0.742		
Satd. Flow (perm)	513	1740	0	823	1818	1561	0	1082	0	1342	1574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				80		11			135	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	575	0	4	703	73	0	24	0	68	183	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	14.0	82.0		68.0	68.0	68.0	28.0	28.0		28.0	28.0	
Total Split (%)	12.7%	74.5%		61.8%	61.8%	61.8%	25.5%	25.5%		25.5%	25.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	88.7	87.8		75.2	75.2	75.2		12.2		12.2	12.2	
Actuated g/C Ratio	0.81	0.80		0.68	0.68	0.68		0.11		0.11	0.11	
v/c Ratio	0.23	0.41		0.01	0.57	0.07		0.19		0.46	0.62	
Control Delay	4.1	5.1		6.5	13.1	1.8		31.7		54.7	23.6	
Queue Delay	0.0	0.0		0.0	0.2	0.0		0.0		0.0	0.0	
Total Delay	4.1	5.1		6.5	13.4	1.8		31.7		54.7	23.6	
LOS	A	A		A	B	A		C		D	C	
Approach Delay		4.9			12.3			31.7			32.0	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	16	90		1	287	2		8		46	32	
Queue Length 95th (ft)	m31	188		m3	468	9		33		87	98	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2029 No Build
 SAT Peak Hour

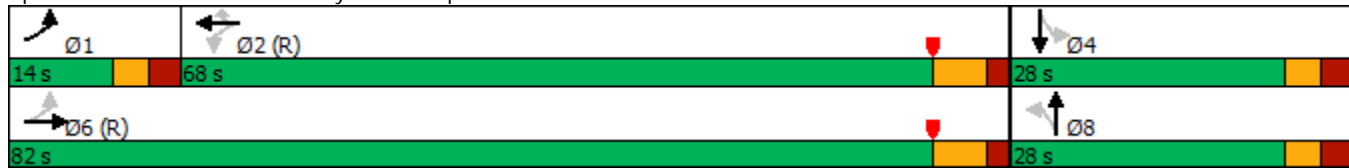


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120				220
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	514	1390		562	1242	1091		238		285	441	
Starvation Cap Reductn	0	0		0	117	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.23	0.41		0.01	0.62	0.07		0.10		0.24	0.41	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 9 (8%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 12.5
 Intersection LOS: B
 Intersection Capacity Utilization 65.9%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2029 No Build
 SAT Peak Hour






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	522	13	4	654	68	9	3	10	63	40	130
Future Volume (veh/h)	109	522	13	4	654	68	9	3	10	63	40	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1711	1949	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	117	561	12	4	703	60	10	3	7	68	43	69
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	609	1343	29	698	1399	1194	67	27	24	192	62	99
Arrive On Green	0.10	1.00	1.00	1.00	1.00	1.00	0.09	0.10	0.09	0.10	0.10	0.09
Sat Flow, veh/h	1629	1655	35	875	1935	1652	182	282	250	1375	633	1015
Grp Volume(v), veh/h	117	0	573	4	703	60	20	0	0	68	0	112
Grp Sat Flow(s),veh/h/ln	1629	0	1690	875	1935	1652	713	0	0	1375	0	1648
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	7.3
Cycle Q Clear(g_c), s	1.8	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0	5.7	0.0	7.3
Prop In Lane	1.00		0.02	1.00		1.00	0.50		0.35	1.00		0.62
Lane Grp Cap(c), veh/h	609	0	1372	698	1399	1194	112	0	0	192	0	160
V/C Ratio(X)	0.19	0.00	0.42	0.01	0.50	0.05	0.18	0.00	0.00	0.35	0.00	0.70
Avail Cap(c_a), veh/h	671	0	1372	698	1399	1194	279	0	0	350	0	351
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.00	0.76	0.89	0.89	0.89	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.4	0.0	0.0	0.0	0.0	0.0	45.9	0.0	0.0	47.4	0.0	48.4
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	1.2	0.1	0.8	0.0	0.0	1.1	0.0	5.4
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.7	0.0	0.5	0.0	0.8	0.0	1.0	0.0	0.0	3.3	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.5	0.0	0.7	0.0	1.2	0.1	46.6	0.0	0.0	48.5	0.0	53.8
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		690			767			20				180
Approach Delay, s/veh		1.0			1.1			46.6				51.8
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.8	84.9		15.3		94.7		15.3				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	8.5	61.6		22.4		75.6		22.4				
Max Q Clear Time (g_c+I1), s	4.3	2.5		9.3		2.5		9.3				
Green Ext Time (p_c), s	0.1	0.9		0.5		0.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 No Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	499	24	21	534	14	68	24	18	16	21	76
Future Volume (vph)	55	499	24	21	534	14	68	24	18	16	21	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1744	0	1620	1698	0	1541	1658	0	0	1823	0
Flt Permitted	0.415			0.429			0.531				0.950	
Satd. Flow (perm)	721	1744	0	732	1698	0	861	1658	0	0	1744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			19				80
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	550	0	22	577	0	72	44	0	0	119	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	64.0	64.0		64.0	64.0		46.0	46.0		46.0	46.0	
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%	41.8%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	86.4	86.4		86.4	86.4		13.7	13.7				13.7
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.12	0.12				0.12
v/c Ratio	0.10	0.40		0.04	0.43		0.67	0.20				0.41
Control Delay	5.5	6.7		3.7	5.6		74.1	28.6				20.6
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0				0.0
Total Delay	5.5	6.8		3.7	5.6		74.1	28.6				20.6
LOS	A	A		A	A		E	C				C
Approach Delay		6.7			5.5			56.9				20.6
Approach LOS		A			A			E				C
Queue Length 50th (ft)	11	154		3	106		49	16				25
Queue Length 95th (ft)	30	206		11	209		95	47				75
Internal Link Dist (ft)		530			920			270				920

Lanes, Volumes, Timings
 13: Sheaffer Rd & SR 0230

2029 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	566	1370		574	1333		320	629			700	
Starvation Cap Reductn	0	190		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	19		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.10	0.47		0.04	0.44		0.23	0.07			0.17	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	11.4
Intersection LOS:	B
Intersection Capacity Utilization	69.1%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2029 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	499	24	21	534	14	68	24	18	16	21	76
Future Volume (veh/h)	55	499	24	21	534	14	68	24	18	16	21	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1736	1750	1912	1912	1912	1722	1750	1750	1949	2027	1949
Adj Flow Rate, veh/h	58	525	20	22	562	14	72	25	7	17	22	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	0	0	0	0	2	0	0	0	0	0
Cap, veh/h	650	1381	53	798	1544	38	173	103	29	63	53	64
Arrive On Green	1.00	1.00	1.00	0.83	0.83	0.82	0.08	0.08	0.07	0.07	0.08	0.07
Sat Flow, veh/h	771	1661	63	881	1857	46	1242	1315	368	286	677	815
Grp Volume(v), veh/h	58	0	545	22	0	576	72	0	32	72	0	0
Grp Sat Flow(s),veh/h/ln	771	0	1724	881	0	1903	1242	0	1683	1778	0	0
Q Serve(g_s), s	0.8	0.0	0.0	0.5	0.0	8.0	1.1	0.0	2.0	1.9	0.0	0.0
Cycle Q Clear(g_c), s	8.8	0.0	0.0	0.5	0.0	8.0	5.3	0.0	2.0	4.2	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.02	1.00		0.22	0.24		0.46
Lane Grp Cap(c), veh/h	650	0	1434	798	0	1583	173	0	132	164	0	0
V/C Ratio(X)	0.09	0.00	0.38	0.03	0.00	0.36	0.42	0.00	0.24	0.44	0.00	0.00
Avail Cap(c_a), veh/h	650	0	1434	798	0	1583	538	0	627	675	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.00	0.91	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.4	0.0	0.0	1.6	0.0	2.2	49.1	0.0	47.7	49.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.1	0.0	0.6	1.6	0.0	0.9	1.9	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.5	0.1	0.0	3.2	3.6	0.0	1.5	3.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	0.0	0.7	1.7	0.0	2.9	50.7	0.0	48.7	50.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		603			598			104				72
Approach Delay, s/veh		0.7			2.8			50.1				50.8
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		96.4		13.6		96.4		13.6				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 58		40.0		* 58		40.0				
Max Q Clear Time (g_c+I1), s		2.0		6.2		10.0		7.3				
Green Ext Time (p_c), s		19.9		0.2		20.9		0.3				

Intersection Summary



















HCM 6th Ctrl Delay	8.0
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	346	1	60	211	116	0	0	130	28
Future Volume (vph)	0	0	0	346	1	60	211	116	0	0	130	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1642	1442	1574	1641	0	0	1740	1578
Flt Permitted					0.953		0.496					
Satd. Flow (perm)	0	0	0	0	1642	1442	822	1641	0	0	1740	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	4%	5%	2%	2%	1%	11%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	361	63	220	121	0	0	135	29
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				25.0	25.0	25.0	13.0	35.0			22.0	22.0
Total Split (%)				41.7%	41.7%	41.7%	21.7%	58.3%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					16.7	16.7	27.3	27.3			14.2	14.2
Actuated g/C Ratio					0.31	0.31	0.51	0.51			0.26	0.26
v/c Ratio					0.71	0.11	0.41	0.14			0.29	0.05
Control Delay					24.8	0.4	11.0	8.5			18.7	0.2
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					24.8	0.4	11.0	8.5			18.7	0.2
LOS					C	A	B	A			B	A
Approach Delay					21.2			10.1			15.5	
Approach LOS					C			B			B	
Queue Length 50th (ft)					95	0	38	19			35	0
Queue Length 95th (ft)					189	0	80	46			77	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					633	656	531	925			556	610
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.57	0.10	0.41	0.13			0.24	0.05

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	53.6
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	16.1
Intersection LOS:	B
Intersection Capacity Utilization	55.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↖	↗	↖	↗			↖	↗
Traffic Volume (veh/h)	0	0	0	346	1	60	211	116	0	0	130	28
Future Volume (veh/h)	0	0	0	346	1	60	211	116	0	0	130	28
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1846	1875	1875	1722	1707	0	0	1860	1787
Adj Flow Rate, veh/h				360	1	0	220	121	0	0	135	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	0	4	5	0	0	1	11
Cap, veh/h				483	1		654	908	0	0	502	
Arrive On Green				0.25	0.27	0.00	0.16	0.53	0.00	0.00	0.27	0.00
Sat Flow, veh/h				1781	5	1589	1640	1707	0	0	1860	1514
Grp Volume(v), veh/h				361	0	0	220	121	0	0	135	0
Grp Sat Flow(s),veh/h/ln				1785	0	1589	1640	1707	0	0	1860	1514
Q Serve(g_s), s				9.0	0.0	0.0	4.0	1.7	0.0	0.0	2.8	0.0
Cycle Q Clear(g_c), s				9.0	0.0	0.0	4.0	1.7	0.0	0.0	2.8	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				485	0		654	908	0	0	502	
V/C Ratio(X)				0.74	0.00		0.34	0.13	0.00	0.00	0.27	
Avail Cap(c_a), veh/h				759	0		667	1062	0	0	656	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.5	0.0	0.0	8.1	5.7	0.0	0.0	13.9	0.0
Incr Delay (d2), s/veh				2.3	0.0	0.0	0.3	0.2	0.0	0.0	1.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				6.6	0.0	0.0	1.8	0.8	0.0	0.0	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				18.8	0.0	0.0	8.4	5.9	0.0	0.0	14.9	0.0
LnGrp LOS				B	A		A	A	A	A	B	
Approach Vol, veh/h					361			341			135	
Approach Delay, s/veh					18.8			7.5			14.9	
Approach LOS					B			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.6			12.6	18.0		17.6				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		19.5				
Max Q Clear Time (g_c+I1), s		3.7			6.0	4.8		11.0				
Green Ext Time (p_c), s		2.3			0.1	1.5		1.2				

Intersection Summary


















HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 No Build
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	0	214	0	0	0	0	294	355	89	390	0
Future Volume (vph)	24	0	214	0	0	0	0	294	355	89	390	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1621	1554	0	0	0	0	1669	0	1762	1801	0
Flt Permitted		0.950								0.950		
Satd. Flow (perm)	0	1621	1554	0	0	0	0	1669	0	1762	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	0%	2%	2%	2%	2%	2%	4%	2%	0%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	230	0	0	0	0	698	0	96	419	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	55.5%
Analysis Period (min)	15
	ICU Level of Service B

HCM 6th TWSC
6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 No Build
SAT Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	24	0	214	0	0	0	0	294	355	89	390	0
Future Vol, veh/h	24	0	214	0	0	0	0	294	355	89	390	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	13	0	2	2	2	2	2	4	2	0	3	2
Mvmt Flow	26	0	230	0	0	0	0	316	382	96	419	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	927	927	419	-	0	0	316	0	0
Stage 1	611	611	-	-	-	-	-	-	-
Stage 2	316	316	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.9	5.92	-	-	-	3.9	-	-
Critical Hdwy Stg 1	4.93	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.93	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.1	-	-	-	3	-	-
Pot Cap-1 Maneuver	308	316	695	0	-	-	969	-	0
Stage 1	647	540	-	0	-	-	-	-	0
Stage 2	861	694	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	278	0	695	-	-	-	969	-	-
Mov Cap-2 Maneuver	278	0	-	-	-	-	-	-	-
Stage 1	647	0	-	-	-	-	-	-	-
Stage 2	776	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	278	695	969	-
HCM Lane V/C Ratio	-	-	0.093	0.331	0.099	-
HCM Control Delay (s)	-	-	19.3	12.7	9.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	1.4	0.3	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 No Build
 SAT Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	11	14	621	619	3
Future Volume (vph)	6	11	14	621	619	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1556	0	0	1800	1796	0
Flt Permitted	0.984			0.999		
Satd. Flow (perm)	1556	0	0	1800	1796	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	17%	0%	0%	3%	1%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	676	662	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.9% ICU Level of Service A
Analysis Period (min)	15

HCM 6th TWSC
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 No Build
 SAT Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	11	14	621	619	3
Future Vol, veh/h	6	11	14	621	619	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	0	0	3	1	33
Mvmt Flow	6	12	15	661	659	3






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1352	661	662	0	-	0
Stage 1	661	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Critical Hdwy	6.57	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.2	3.1	3	-	-	-
Pot Cap-1 Maneuver	164	488	762	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	159	488	762	-	-	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	517	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	762	-	282	-	-
HCM Lane V/C Ratio	0.02	-	0.064	-	-
HCM Control Delay (s)	9.8	0	18.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 No Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	24	54	11	22	33	30	459	8	20	437	185
Future Volume (vph)	155	24	54	11	22	33	30	459	8	20	437	185
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1685	0	1572	1636	0	1620	1712	0	1550	1683	0
Flt Permitted	0.719			0.704			0.339			0.450		
Satd. Flow (perm)	1226	1685	0	1165	1636	0	578	1712	0	734	1683	0
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		57			35			2			60	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1000			1000			1240			2175	
Travel Time (s)		19.5			19.5			21.1			37.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	0%	3%	0%	5%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	163	82	0	12	58	0	32	491	0	21	655	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	20.0	20.0		20.0	20.0		40.0	40.0		40.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.8	12.8		12.5	12.5		40.4	40.4		40.4	40.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.67	0.67		0.67	0.67	
v/c Ratio	0.62	0.20		0.05	0.16		0.08	0.43		0.04	0.57	
Control Delay	32.0	9.8		17.9	11.1		5.5	8.1		5.9	9.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.0	9.8		17.9	11.1		5.5	8.1		5.9	9.3	
LOS	C	A		B	B		A	A		A	A	
Approach Delay		24.6			12.2			7.9			9.2	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)	52	7		3	7		4	89		3	122	
Queue Length 95th (ft)	104	35		14	30		m15	205		11	230	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2029 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	306	464		291	435		389	1154		495	1154	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.53	0.18		0.04	0.13		0.08	0.43		0.04	0.57	

Intersection Summary






















Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 11.4 Intersection LOS: B
 Intersection Capacity Utilization 60.7% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2029 No Build
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	24	54	11	22	33	30	459	8	20	437	185
Future Volume (veh/h)	155	24	54	11	22	33	30	459	8	20	437	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1750	1820	1708	1912	1869	1912	1878	1935	1949
Adj Flow Rate, veh/h	163	25	30	12	23	21	32	483	7	21	460	161
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	0	0	3	0	3	0	5	1	0
Cap, veh/h	350	156	187	319	160	146	498	1181	17	499	880	308
Arrive On Green	0.18	0.18	0.17	0.18	0.18	0.17	0.21	0.21	0.21	0.64	0.64	0.63
Sat Flow, veh/h	1436	855	1026	1262	876	800	821	1838	27	910	1369	479
Grp Volume(v), veh/h	163	0	55	12	0	44	32	0	490	21	0	621
Grp Sat Flow(s),veh/h/ln	1436	0	1881	1262	0	1676	821	0	1864	910	0	1849
Q Serve(g_s), s	6.5	0.0	1.5	0.5	0.0	1.3	2.0	0.0	13.6	0.8	0.0	10.9
Cycle Q Clear(g_c), s	7.8	0.0	1.5	2.0	0.0	1.3	12.9	0.0	13.6	14.4	0.0	10.9
Prop In Lane	1.00		0.55	1.00		0.48	1.00		0.01	1.00		0.26
Lane Grp Cap(c), veh/h	350	0	343	319	0	306	498	0	1198	499	0	1188
V/C Ratio(X)	0.47	0.00	0.16	0.04	0.00	0.14	0.06	0.00	0.41	0.04	0.00	0.52
Avail Cap(c_a), veh/h	447	0	470	404	0	419	498	0	1198	499	0	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	20.9	21.5	0.0	20.8	18.2	0.0	13.8	10.5	0.0	5.9
Incr Delay (d2), s/veh	1.0	0.0	0.2	0.0	0.0	0.2	0.2	0.0	1.0	0.2	0.0	1.6
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	3.8	0.0	1.1	0.2	0.0	0.9	0.8	0.0	10.9	0.3	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	21.1	21.5	0.0	21.0	18.5	0.0	14.8	10.6	0.0	7.5
LnGrp LOS	C	A	C	C	A	C	B	A	B	B	A	A
Approach Vol, veh/h		218			56			522			642	
Approach Delay, s/veh		23.9			21.1			15.0			7.6	
Approach LOS		C			C			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.1		15.9		44.1		15.9				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		33.5		14.0		33.5		14.0				
Max Q Clear Time (g_c+I1), s		15.6		9.8		12.9		4.0				
Green Ext Time (p_c), s		9.4		0.3		13.3		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				13.3								
HCM 6th LOS				B								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (vph)	5	1	13	24	0	7	16	488	7	11	508	7
Future Volume (vph)	5	1	13	24	0	7	16	488	7	11	508	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1670	1581	0	1696	0	0	1668	0	0	1722	1648
Flt Permitted					0.990			0.981			0.988	
Satd. Flow (perm)	0	1740	1581	0	1746	0	0	1639	0	0	1703	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			2				45
Link Speed (mph)		25			25			40				40
Link Distance (ft)		750			1000			600				1240
Travel Time (s)		20.5			27.3			10.2				21.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	14	0	32	0	0	538	0	0	547	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	16.0	16.0	16.0	16.0	16.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	73.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		7.0	7.0		7.0			53.2			53.2	53.2
Actuated g/C Ratio		0.12	0.12		0.12			0.89			0.89	0.89
v/c Ratio		0.03	0.06		0.13			0.37			0.36	0.00
Control Delay		23.5	0.5		5.2			3.0			1.5	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		23.5	0.5		5.2			3.0			1.5	0.0
LOS		C	A		A			A			A	A
Approach Delay		7.4			5.2			3.0			1.5	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2	0		0			0			0	0
Queue Length 95th (ft)		11	0		13			110			13	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 No Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		333	347		379			1453			1509	1466
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.02	0.04		0.08			0.37			0.36	0.00

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 33 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.37
 Intersection Signal Delay: 2.4 Intersection LOS: A
 Intersection Capacity Utilization 57.7% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	5	1	13	24	0	7	16	488	7	11	508	7
Future Volume (veh/h)	5	1	13	24	0	7	16	488	7	11	508	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1736	1778	1875	1846	1950
Adj Flow Rate, veh/h	5	1	7	25	0	3	17	514	7	12	535	7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	172	12	71	164	0	6	77	1329	18	70	1452	1317
Arrive On Green	0.03	0.04	0.04	0.03	0.00	0.03	0.78	0.80	0.78	1.00	1.00	1.00
Sat Flow, veh/h	1393	279	1586	1121	0	134	19	1668	22	11	1822	1652
Grp Volume(v), veh/h	6	0	7	28	0	0	538	0	0	547	0	7
Grp Sat Flow(s),veh/h/ln	1672	0	1586	1255	0	0	1709	0	0	1833	0	1652
Q Serve(g_s), s	0.0	0.0	0.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.3	1.4	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.83		1.00	0.89		0.11	0.03		0.01	0.02		1.00
Lane Grp Cap(c), veh/h	157	0	71	149	0	0	1396	0	0	1492	0	1317
V/C Ratio(X)	0.04	0.00	0.10	0.19	0.00	0.00	0.39	0.00	0.00	0.37	0.00	0.01
Avail Cap(c_a), veh/h	365	0	304	359	0	0	1396	0	0	1492	0	1317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.81	0.00	0.81
Uniform Delay (d), s/veh	27.9	0.0	27.5	28.6	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.6	0.0	0.0	0.8	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.2	0.0	0.2	0.8	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	28.1	29.2	0.0	0.0	2.6	0.0	0.0	0.6	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		13			28			538			554	
Approach Delay, s/veh		28.0			29.2			2.6			0.6	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		52.8		7.2		52.8		7.2				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		38.0		10.5		38.0		10.5				
Max Q Clear Time (g_c+I1), s		7.6		2.3		2.0		3.4				
Green Ext Time (p_c), s		14.6		0.0		16.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			2.6									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	296	56	27	318	139	72	168	15	129	177	185
Future Volume (vph)	208	296	56	27	318	139	72	168	15	129	177	185
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%				4%
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1573	1809	1435	1527	1731	1592	1736	1845	0	1558	1624	1499
Flt Permitted	0.282			0.576			0.643			0.624		
Satd. Flow (perm)	467	1809	1435	926	1731	1592	1175	1845	0	1023	1624	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160			255			5			247
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1025				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	4%	0%	2%	0%	5%	0%	4%	5%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	212	302	57	28	324	142	73	186	0	132	181	189
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	13.5	37.5	37.5	24.0	24.0	24.0	14.0	23.5		14.0	23.5	23.5
Total Split (%)	18.0%	50.0%	50.0%	32.0%	32.0%	32.0%	18.7%	31.3%		18.7%	31.3%	31.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	30.4	30.4	30.4	16.5	16.5	16.5	19.1	13.2		19.3	13.3	13.3
Actuated g/C Ratio	0.46	0.46	0.46	0.25	0.25	0.25	0.29	0.20		0.29	0.20	0.20
v/c Ratio	0.60	0.36	0.08	0.12	0.75	0.24	0.18	0.50		0.36	0.55	0.38
Control Delay	22.4	15.0	0.2	23.2	37.6	1.0	14.7	29.1		17.3	32.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	22.4	15.0	0.2	23.2	37.6	1.0	14.7	29.1		17.3	32.1	3.8
LOS	C	B	A	C	D	A	B	C		B	C	A
Approach Delay		16.3			26.2			25.1			17.6	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	57	85	0	9	130	0	20	71		37	72	0
Queue Length 95th (ft)	#125	154	0	30	#259	0	44	129		73	132	24
Internal Link Dist (ft)		860			410			945			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
 SAT Peak Hour

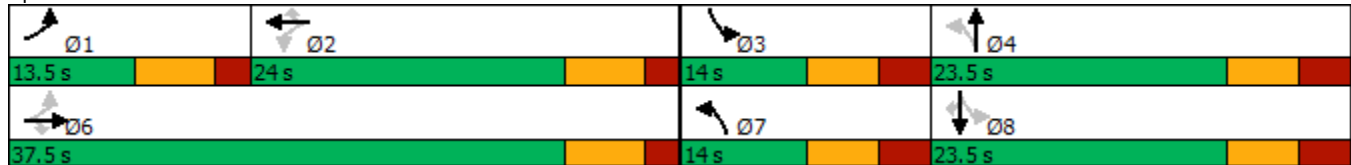


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	353	905	798	268	500	641	412	509		366	444	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.60	0.33	0.07	0.10	0.65	0.22	0.18	0.37		0.36	0.41	0.32

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 66
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 20.6
 Intersection LOS: C
 Intersection Capacity Utilization 66.8%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 No Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	296	56	27	318	139	72	168	15	129	177	185
Future Volume (veh/h)	208	296	56	27	318	139	72	168	15	129	177	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1738	1794	1837	2173	2186	2173	1655	1641	1711
Adj Flow Rate, veh/h	212	302	51	28	324	0	73	171	12	132	181	107
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	0	0	4	0	2	0	5	0	4	5	0
Cap, veh/h	411	836	708	339	411		367	279	20	372	305	269
Arrive On Green	0.13	0.45	0.45	0.23	0.23	0.00	0.07	0.14	0.12	0.11	0.19	0.19
Sat Flow, veh/h	1723	1837	1557	956	1794	1557	2069	2018	142	1576	1641	1450
Grp Volume(v), veh/h	212	302	51	28	324	0	73	0	183	132	181	107
Grp Sat Flow(s),veh/h/ln	1723	1837	1557	956	1794	1557	2069	0	2160	1576	1641	1450
Q Serve(g_s), s	5.0	6.4	1.1	1.4	10.2	0.0	1.7	0.0	4.8	4.1	6.0	3.9
Cycle Q Clear(g_c), s	5.0	6.4	1.1	1.4	10.2	0.0	1.7	0.0	4.8	4.1	6.0	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	411	836	708	339	411		367	0	298	372	305	269
V/C Ratio(X)	0.52	0.36	0.07	0.08	0.79		0.20	0.00	0.61	0.35	0.59	0.40
Avail Cap(c_a), veh/h	411	982	832	416	555		504	0	632	402	480	424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.8	10.6	9.2	18.3	21.7	0.0	19.7	0.0	24.3	18.4	22.3	21.4
Incr Delay (d2), s/veh	1.1	0.1	0.0	0.0	3.7	0.0	0.3	0.0	2.0	0.6	1.8	0.9
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	3.0	3.6	0.5	0.5	7.3	0.0	1.5	0.0	4.5	2.4	4.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	10.7	9.2	18.4	25.4	0.0	20.0	0.0	26.4	19.0	24.1	22.4
LnGrp LOS	B	B	A	B	C		B	A	C	B	C	C
Approach Vol, veh/h		565			352			256			420	
Approach Delay, s/veh		12.2			24.8			24.5			22.1	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	13.5	19.2	12.9	14.3		32.7	10.0	17.1				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	7.0	17.5	7.0	16.5		31.0	7.0	16.5				
Max Q Clear Time (g_c+I1), s	7.5	12.7	6.6	6.8		8.9	4.2	8.5				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.5		0.1	0.0	0.9				

Intersection Summary

HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
29: Colebrook Rd & Harrisburg Ave

2029 No Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	39	50	33	16	33	48	20	179	7	25	182	34
Future Volume (vph)	39	50	33	16	33	48	20	179	7	25	182	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1680	0	0	1633	0	0	1772	0	0	1850	0
Flt Permitted		0.984			0.992			0.995			0.995	
Satd. Flow (perm)	0	1680	0	0	1633	0	0	1772	0	0	1850	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1010			1132			1000			1025	
Travel Time (s)		19.7			22.1			27.3			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	4%	0%	0%	3%	0%	5%	2%	0%	0%	2%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	0	0	101	0	0	214	0	0	251	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 36.4%

ICU Level of Service A

Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	39	50	33	16	33	48	20	179	7	25	182	34
Future Vol, veh/h	39	50	33	16	33	48	20	179	7	25	182	34
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	8	4	0	0	3	0	5	2	0	0	2	9
Mvmt Flow	41	52	34	17	34	50	21	186	7	26	190	35
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.4	8.8	9.9	10
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	32%	16%	10%
Vol Thru, %	87%	41%	34%	76%
Vol Right, %	3%	27%	49%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	206	122	97	241
LT Vol	20	39	16	25
Through Vol	179	50	33	182
RT Vol	7	33	48	34
Lane Flow Rate	215	127	101	251
Geometry Grp	1	1	1	1
Degree of Util (X)	0.289	0.182	0.138	0.326
Departure Headway (Hd)	4.854	5.165	4.91	4.671
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	736	689	723	763
Service Time	2.919	3.243	2.99	2.733
HCM Lane V/C Ratio	0.292	0.184	0.14	0.329
HCM Control Delay	9.9	9.4	8.8	10
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.2	0.7	0.5	1.4

Lanes, Volumes, Timings
32: SR 0230 & Ridge Run Rd

2029 No Build
SAT Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	398	434	34	32	3
Future Volume (vph)	3	398	434	34	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1793	0	1660	0
Flt Permitted	0.950				0.956	
Satd. Flow (perm)	1754	1828	1793	0	1660	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1310	
Travel Time (s)		33.5	12.4		25.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	415	487	0	36	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.9% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	398	434	34	32	3
Future Vol, veh/h	3	398	434	34	32	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	3	415	452	35	33	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	487	0	-	0	891 470
Stage 1	-	-	-	-	470 -
Stage 2	-	-	-	-	421 -
Critical Hdwy	4.1	-	-	-	6.8 6.4
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	838	-	-	-	316 612
Stage 1	-	-	-	-	680 -
Stage 2	-	-	-	-	722 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	838	-	-	-	315 612
Mov Cap-2 Maneuver	-	-	-	-	462 -
Stage 1	-	-	-	-	677 -
Stage 2	-	-	-	-	722 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	838	-	-	-	472
HCM Lane V/C Ratio	0.004	-	-	-	0.077
HCM Control Delay (s)	9.3	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

APPENDIX L6

2029 BUILD CONDITION ANALYSES

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2029 Build
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	457	80	90	397	146	155
Future Volume (vph)	457	80	90	397	146	155
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1685	0	1662	1766	1530	0
Flt Permitted			0.205		0.976	
Satd. Flow (perm)	1685	0	359	1766	1530	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	15					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)						2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	12%	6%	12%	4%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	597	0	100	441	334	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	34.0		12.0	46.0	24.0	
Total Split (%)	48.6%		17.1%	65.7%	34.3%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effect Green (s)	31.4		42.2	41.0	18.6	
Actuated g/C Ratio	0.45		0.60	0.59	0.27	
v/c Ratio	0.78		0.28	0.43	0.82	
Control Delay	26.8		5.8	6.6	43.2	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	26.8		5.8	6.6	43.2	
LOS	C		A	A	D	
Approach Delay	26.8			6.5	43.2	
Approach LOS	C			A	D	
Queue Length 50th (ft)	219		12	59	134	
Queue Length 95th (ft)	#407		m22	83	#266	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2029 Build
 AM Peak Hour

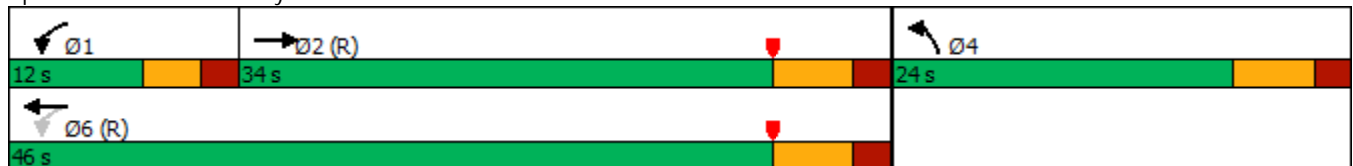


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	765		365	1034	410	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.78		0.27	0.43	0.81	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 61 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 23.0
 Intersection LOS: C
 Intersection Capacity Utilization 66.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary

3: Maytown Rd & SR 0230

2029 Build
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	457	80	90	397	146	155
Future Volume (veh/h)	457	80	90	397	146	155
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1648	1542	1938	1927	1818	1846
Adj Flow Rate, veh/h	508	83	100	441	162	172
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	9	12	6	12	4	2
Cap, veh/h	651	106	382	1164	194	206
Arrive On Green	0.47	0.46	0.15	1.00	0.25	0.23
Sat Flow, veh/h	1381	226	1846	1927	785	834
Grp Volume(v), veh/h	0	591	100	441	335	0
Grp Sat Flow(s),veh/h/ln	0	1607	1846	1927	1624	0
Q Serve(g_s), s	0.0	21.6	1.7	0.0	13.7	0.0
Cycle Q Clear(g_c), s	0.0	21.6	1.7	0.0	13.7	0.0
Prop In Lane		0.14	1.00		0.48	0.51
Lane Grp Cap(c), veh/h	0	757	382	1164	402	0
V/C Ratio(X)	0.00	0.78	0.26	0.38	0.83	0.00
Avail Cap(c_a), veh/h	0	757	454	1164	436	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	15.5	10.2	0.0	25.2	0.0
Incr Delay (d2), s/veh	0.0	7.8	0.4	0.9	16.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	13.1	1.0	0.5	11.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	23.4	10.6	0.9	41.7	0.0
LnGrp LOS	A	C	B	A	D	A
Approach Vol, veh/h	591			541	335	
Approach Delay, s/veh	23.4			2.7	41.7	
Approach LOS	C			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.3	38.2		22.5		47.5
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	27.8		17.8		39.8
Max Q Clear Time (g_c+I1), s	3.7	23.6		15.7		2.0
Green Ext Time (p_c), s	0.1	3.0		0.6		11.6

Intersection Summary




















HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2029 Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	641	1	0	583	47	0	0	2	47	0	35
Future Volume (vph)	26	641	1	0	583	47	0	0	2	47	0	35
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1640	1742	0	1843	1615	0	0	1070	0	1771	1389	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	8%	7%	0%	0%	9%	10%	0%	0%	50%	0%	0%	18%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	721	0	0	708	0	0	2	0	53	39	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.9%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕		↶	↷	
Traffic Vol, veh/h	26	641	1	0	583	47	0	0	2	47	0	35
Future Vol, veh/h	26	641	1	0	583	47	0	0	2	47	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	8	7	0	0	9	10	0	0	50	0	0	18
Mvmt Flow	29	720	1	0	655	53	0	0	2	53	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	708	0	0	721	0	0	1481	1487	722	1463	1461	683
Stage 1	-	-	-	-	-	-	779	779	-	682	682	-
Stage 2	-	-	-	-	-	-	702	708	-	781	779	-
Critical Hdwy	3.9	-	-	5.5	-	-	6.7	6.1	6.5	6.5	5.9	6.1
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3.1	-	-	3	-	-	3	4	3.6	3	4	3.462
Pot Cap-1 Maneuver	720	-	-	531	-	-	133	148	381	148	166	446
Stage 1	-	-	-	-	-	-	475	446	-	555	507	-
Stage 2	-	-	-	-	-	-	522	477	-	495	466	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	720	-	-	531	-	-	117	142	381	143	159	446
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	142	-	143	159	-
Stage 1	-	-	-	-	-	-	456	428	-	533	507	-
Stage 2	-	-	-	-	-	-	476	477	-	472	447	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			14.5			31.3		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	381	720	-	-	531	-	-	143	446
HCM Lane V/C Ratio	0.006	0.041	-	-	-	-	-	0.369	0.088
HCM Control Delay (s)	14.5	10.2	-	-	0	-	-	44.2	13.9
HCM Lane LOS		B	B	-	-	A	-	E	B
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	1.5	0.3

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (vph)	3	555	45	64	518	6	104	2	73	4	3	2
Future Volume (vph)	3	555	45	64	518	6	104	2	73	4	3	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1667	1552	1541	1558	1608	1645	1516	0	1761	1842	0
Flt Permitted	0.448			0.282			0.754			0.703		
Satd. Flow (perm)	779	1667	1552	458	1558	1608	1302	1516	0	1303	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			45		81				2
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1060			1340			300				300
Travel Time (s)		18.1			22.8			8.2				8.2
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	2%	2%	10%	0%	3%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	617	50	71	576	7	116	83	0	4	5	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	40.0	40.0	40.0	13.0	53.0	53.0	17.0	17.0		17.0	17.0	
Total Split (%)	57.1%	57.1%	57.1%	18.6%	75.7%	75.7%	24.3%	24.3%		24.3%	24.3%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	42.2	42.2	42.2	52.2	52.1	52.1	10.8	10.8		10.7	10.7	
Actuated g/C Ratio	0.60	0.60	0.60	0.75	0.74	0.74	0.15	0.15		0.15	0.15	
v/c Ratio	0.01	0.61	0.05	0.16	0.50	0.01	0.58	0.27		0.02	0.02	
Control Delay	6.7	9.8	0.1	1.6	3.3	0.0	39.1	9.7		24.5	21.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.7	9.8	0.1	1.6	3.3	0.0	39.1	9.7		24.5	21.0	
LOS	A	A	A	A	A	A	D	A		C	C	
Approach Delay		9.1			3.1			26.8			22.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	93	0	7	63	0	46	1		1	1	
Queue Length 95th (ft)	m1	m124	m0	1	12	m0	95	35		9	10	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	470	1005	988	473	1159	1208	225	329		225	320	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.01	0.61	0.05	0.15	0.50	0.01	0.52	0.25		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 29 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 8.9
 Intersection LOS: A
 Intersection Capacity Utilization 67.8%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	3	555	45	64	518	6	104	2	73	4	3	2
Future Volume (veh/h)	3	555	45	64	518	6	104	2	73	4	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	1947	2032	1722	1609	1820	1944	1986	1929	2024	2104	2024
Adj Flow Rate, veh/h	3	617	34	71	576	6	116	2	43	4	3	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	8	2	2	10	0	3	0	4	0	0	0
Cap, veh/h	660	1183	1047	624	1165	1116	283	9	199	259	145	97
Arrive On Green	1.00	1.00	1.00	0.10	1.00	1.00	0.12	0.12	0.11	0.12	0.12	0.11
Sat Flow, veh/h	917	1947	1722	1640	1609	1542	1461	75	1612	1467	1176	784
Grp Volume(v), veh/h	3	617	34	71	576	6	116	0	45	4	0	5
Grp Sat Flow(s),veh/h/ln	917	1947	1722	1640	1609	1542	1461	0	1687	1467	0	1959
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	5.3	0.0	1.7	0.2	0.0	0.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	0.0	0.0	5.3	0.0	1.7	1.4	0.0	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.40
Lane Grp Cap(c), veh/h	660	1183	1047	624	1165	1116	283	0	208	259	0	242
V/C Ratio(X)	0.00	0.52	0.03	0.11	0.49	0.01	0.41	0.00	0.22	0.02	0.00	0.02
Avail Cap(c_a), veh/h	660	1183	1047	739	1165	1116	355	0	292	331	0	339
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.90	0.90	0.90	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.3	0.0	0.0	29.2	0.0	28.1	28.0	0.0	27.1
Incr Delay (d2), s/veh	0.0	1.6	0.1	0.1	1.4	0.0	0.9	0.0	0.5	0.0	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	1.0	0.0	0.3	0.8	0.0	3.4	0.0	1.3	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.6	0.1	3.3	1.4	0.0	30.2	0.0	28.6	28.1	0.0	27.2
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		654			653			161				9
Approach Delay, s/veh		1.6			1.6			29.7				27.6
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.1	48.3		13.5		56.5		13.5				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	33.2		* 11		46.2		* 11				
Max Q Clear Time (g_c+I1), s	3.5	2.5		3.9		2.5		7.8				
Green Ext Time (p_c), s	0.0	0.8		0.0		0.7		0.1				

Intersection Summary

HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2029 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	480	14	5	554	13	9	0	15	6	0	8
Future Volume (vph)	26	480	14	5	554	13	9	0	15	6	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1660	0	1744	1654	1445	0	1727	0	1719	1501	0
Flt Permitted	0.359			0.467				0.870				
Satd. Flow (perm)	633	1660	0	857	1654	1415	0	1530	0	1809	1501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				126		139			377	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	6%	0%	0%	11%	8%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	531	0	5	596	14	0	26	0	6	9	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	56.0		45.0	45.0	45.0	14.0	14.0		14.0	14.0	
Total Split (%)	15.7%	80.0%		64.3%	64.3%	64.3%	20.0%	20.0%		20.0%	20.0%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	60.6	62.9		58.5	58.5	58.5		7.0		7.1	7.1	
Actuated g/C Ratio	0.87	0.90		0.84	0.84	0.84		0.10		0.10	0.10	
v/c Ratio	0.04	0.36		0.01	0.43	0.01		0.09		0.03	0.02	
Control Delay	0.8	2.6		3.6	5.2	0.0		0.7		28.5	0.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	0.8	2.6		3.6	5.2	0.0		0.7		28.5	0.1	
LOS	A	A		A	A	A		A		C	A	
Approach Delay		2.5			5.1			0.7			11.5	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)	0	0		0	0	0		0		2	0	
Queue Length 95th (ft)	m1	85		m1	181	m0		0		13	0	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2029 Build
 AM Peak Hour

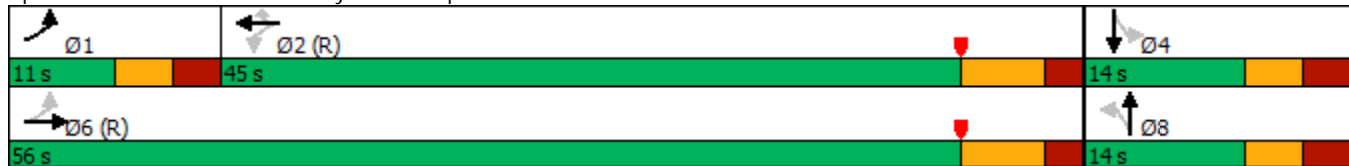


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	645	1493		716	1383	1204		325		242	527	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.04	0.36		0.01	0.43	0.01		0.08		0.02	0.02	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 7 (10%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.43
 Intersection Signal Delay: 3.9
 Intersection LOS: A
 Intersection Capacity Utilization 47.3%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2029 Build
 AM Peak Hour























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗		↕		↖	↗	
Traffic Volume (veh/h)	26	480	14	5	554	13	9	0	15	6	0	8
Future Volume (veh/h)	26	480	14	5	554	13	9	0	15	6	0	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1626	1711	1949	1793	1835	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	28	516	15	5	596	14	10	0	15	6	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	6	0	0	11	8	0	0	0	0	0	0
Cap, veh/h	691	1288	37	760	1295	1123	88	0	24	161	70	0
Arrive On Green	0.06	1.00	1.00	1.00	1.00	1.00	0.02	0.00	0.02	0.04	0.00	0.00
Sat Flow, veh/h	1629	1573	46	909	1793	1554	418	0	626	1360	1837	0
Grp Volume(v), veh/h	28	0	531	5	596	14	25	0	0	6	0	0
Grp Sat Flow(s),veh/h/ln	1629	0	1618	909	1793	1554	1044	0	0	1360	1837	0
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		0.03	1.00		1.00	0.40		0.60	1.00		0.00
Lane Grp Cap(c), veh/h	691	0	1326	760	1295	1123	97	0	0	161	70	0
V/C Ratio(X)	0.04	0.00	0.40	0.01	0.46	0.01	0.26	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	790	0	1326	760	1295	1123	241	0	0	292	247	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.00	0.76	0.90	0.90	0.90	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.6	0.0	0.0	0.0	0.0	0.0	33.9	0.0	0.0	32.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.7	0.0	1.1	0.0	1.4	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.5	0.0	0.7	0.0	0.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.6	0.0	0.7	0.0	1.1	0.0	35.3	0.0	0.0	32.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	C	A	A
Approach Vol, veh/h		559			615			25				6
Approach Delay, s/veh		0.7			1.0			35.3				32.6
Approach LOS		A			A			D				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.8	56.0		7.3		62.7		7.3				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	38.6		8.4		49.6		8.4				
Max Q Clear Time (g_c+I1), s	2.8	2.5		2.7		2.5		3.7				
Green Ext Time (p_c), s	0.0	0.7		0.0		0.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	1.8
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	450	1	10	456	25	60	27	36	29	16	47
Future Volume (vph)	38	450	1	10	456	25	60	27	36	29	16	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1684	1685	0	1246	1593	0	1248	1497	0	0	1795	0
Flt Permitted	0.443			0.463			0.759				0.870	
Satd. Flow (perm)	785	1685	0	607	1593	0	997	1497	0	0	1584	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					7			39				51
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	100%	30%	6%	10%	26%	4%	9%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	485	0	11	517	0	65	68	0	0	99	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	45.0	45.0		45.0	45.0		25.0	25.0		25.0	25.0	
Total Split (%)	64.3%	64.3%		64.3%	64.3%		35.7%	35.7%		35.7%	35.7%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	52.3	52.3		52.3	52.3		11.1	11.1				11.1
Actuated g/C Ratio	0.75	0.75		0.75	0.75		0.16	0.16				0.16
v/c Ratio	0.07	0.39		0.02	0.43		0.41	0.25				0.34
Control Delay	1.0	1.5		4.6	6.4		33.2	15.3				16.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	1.0	1.5		4.6	6.4		33.2	15.3				16.8
LOS	A	A		A	A		C	B				B
Approach Delay		1.4			6.4			24.0				16.8
Approach LOS		A			A			C				B
Queue Length 50th (ft)	1	8		1	78		26	11				18
Queue Length 95th (ft)	3	17		7	174		56	40				52

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 Build
AM Peak Hour

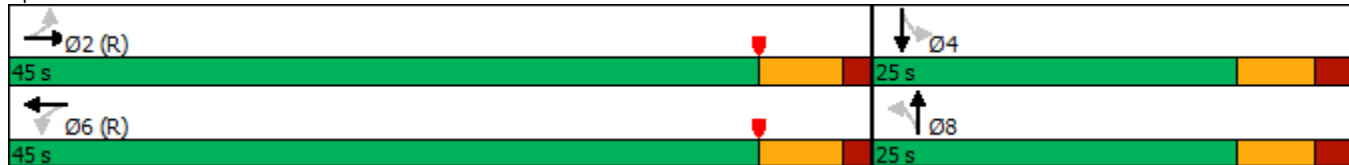


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	586	1258		453	1192		284	455				489
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.07	0.39		0.02	0.43		0.23	0.15				0.20

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.43
Intersection Signal Delay:	7.0
Intersection LOS:	A
Intersection Capacity Utilization	53.9%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2029 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	450	1	10	456	25	60	27	36	29	16	47
Future Volume (veh/h)	38	450	1	10	456	25	60	27	36	29	16	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1680	346	1485	1826	1770	1385	1694	1623	1949	2027	1864
Adj Flow Rate, veh/h	41	484	0	11	490	26	65	29	17	31	17	33
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	5	100	30	6	10	26	4	9	0	0	6
Cap, veh/h	653	1276	0	653	1306	69	218	98	58	114	45	60
Arrive On Green	1.00	1.00	0.00	0.76	0.76	0.75	0.10	0.10	0.08	0.08	0.10	0.08
Sat Flow, veh/h	828	1680	0	724	1719	91	1000	999	585	431	455	609
Grp Volume(v), veh/h	41	484	0	11	0	516	65	0	46	81	0	0
Grp Sat Flow(s),veh/h/ln	828	1680	0	724	0	1810	1000	0	1584	1496	0	0
Q Serve(g_s), s	0.5	0.0	0.0	0.3	0.0	6.7	0.0	0.0	1.9	2.0	0.0	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0	0.3	0.0	6.7	3.3	0.0	1.9	3.9	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	1.00		0.37	0.38		0.41
Lane Grp Cap(c), veh/h	653	1276	0	653	0	1376	218	0	156	197	0	0
V/C Ratio(X)	0.06	0.38	0.00	0.02	0.00	0.38	0.30	0.00	0.29	0.41	0.00	0.00
Avail Cap(c_a), veh/h	653	1276	0	653	0	1376	405	0	453	507	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	2.0	0.0	2.8	29.9	0.0	29.5	30.6	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.8	0.0	0.0	0.0	0.8	0.8	0.0	1.0	1.4	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.5	0.0	0.0	0.0	2.3	1.9	0.0	1.3	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	0.8	0.0	2.1	0.0	3.6	30.7	0.0	30.5	32.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	A
Approach Vol, veh/h		525			527			111				81
Approach Delay, s/veh		0.8			3.6			30.6				32.0
Approach LOS		A			A			C				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.1		11.9		58.1		11.9				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 39		19.0		* 39		19.0				
Max Q Clear Time (g_c+I1), s		2.0		5.9		8.7		5.3				
Green Ext Time (p_c), s		14.5		0.2		14.5		0.3				

Intersection Summary



















HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	394	0	90	565	153	0	0	211	57
Future Volume (vph)	0	0	0	394	0	90	565	153	0	0	211	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1546	1145	1544	1424	0	0	1528	1523
Flt Permitted					0.950		0.442					
Satd. Flow (perm)	0	0	0	0	1546	1145	718	1424	0	0	1528	1523
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	8%	0%	26%	6%	21%	2%	2%	15%	15%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	410	94	589	159	0	0	220	59
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				21.0	21.0	21.0	17.0	39.0			22.0	22.0
Total Split (%)				35.0%	35.0%	35.0%	28.3%	65.0%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					16.5	16.5	32.8	32.8			15.8	15.8
Actuated g/C Ratio					0.28	0.28	0.56	0.56			0.27	0.27
v/c Ratio					0.94	0.21	1.04	0.20			0.54	0.11
Control Delay					56.7	2.0	62.8	7.2			23.9	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					56.7	2.0	62.8	7.2			23.9	0.4
LOS					E	A	E	A			C	A
Approach Delay					46.5			51.0			18.9	
Approach LOS					D			D			B	
Queue Length 50th (ft)					145	0	~141	25			66	0
Queue Length 95th (ft)					#302	9	#406	50			125	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 AM Peak Hour

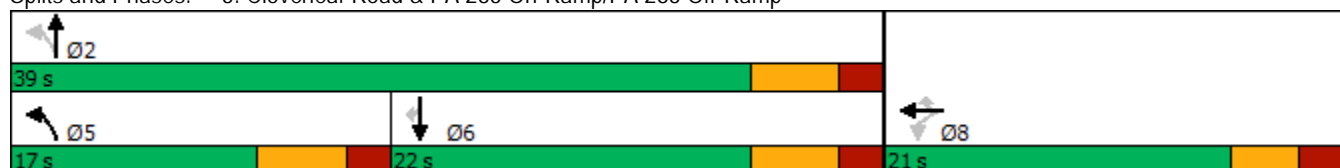


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					434	439	569	824			441	550
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.94	0.21	1.04	0.19			0.50	0.11

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	58.8
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	43.7
Intersection LOS:	D
Intersection Capacity Utilization:	93.6%
ICU Level of Service:	F
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕			↕	↕
Traffic Volume (veh/h)	0	0	0	394	0	90	565	153	0	0	211	57
Future Volume (veh/h)	0	0	0	394	0	90	565	153	0	0	211	57
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1761	1875	1505	1693	1483	0	0	1661	1728
Adj Flow Rate, veh/h				410	0	0	589	159	0	0	220	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				8	0	26	6	21	0	0	15	15
Cap, veh/h				496	0		613	813	0	0	395	
Arrive On Green				0.26	0.00	0.00	0.22	0.55	0.00	0.00	0.24	0.00
Sat Flow, veh/h				1785	0	1275	1613	1483	0	0	1661	1464
Grp Volume(v), veh/h				410	0	0	589	159	0	0	220	0
Grp Sat Flow(s),veh/h/ln				1785	0	1275	1613	1483	0	0	1661	1464
Q Serve(g_s), s				11.8	0.0	0.0	12.0	3.0	0.0	0.0	6.4	0.0
Cycle Q Clear(g_c), s				11.8	0.0	0.0	12.0	3.0	0.0	0.0	6.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				496	0		613	813	0	0	395	
V/C Ratio(X)				0.83	0.00		0.96	0.20	0.00	0.00	0.56	
Avail Cap(c_a), veh/h				539	0		613	922	0	0	516	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				19.0	0.0	0.0	14.0	6.2	0.0	0.0	18.3	0.0
Incr Delay (d2), s/veh				9.6	0.0	0.0	26.8	0.4	0.0	0.0	4.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				9.9	0.0	0.0	13.4	1.3	0.0	0.0	4.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				28.7	0.0	0.0	40.8	6.7	0.0	0.0	22.7	0.0
LnGrp LOS				C	A		D	A	A	A	C	
Approach Vol, veh/h					410			748			220	
Approach Delay, s/veh					28.7			33.6			22.7	
Approach LOS					C			C			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		35.0			17.0	18.0		19.7				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		33.0			11.0	16.0		15.5				
Max Q Clear Time (g_c+I1), s		5.0			14.0	8.4		13.8				
Green Ext Time (p_c), s		3.4			0.0	2.1		0.4				

Intersection Summary


















HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 Build
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	2	289	0	0	0	0	686	623	109	488	0
Future Volume (vph)	32	2	289	0	0	0	0	686	623	109	488	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1600	1454	0	0	0	0	1629	0	1588	1686	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1600	1454	0	0	0	0	1629	0	1588	1686	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	16%	0%	9%	2%	2%	2%	2%	9%	4%	11%	10%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	307	0	0	0	0	1393	0	116	519	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	93.6%
Analysis Period (min)	15
	ICU Level of Service F

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	32	2	289	0	0	0	0	686	623	109	488	0
Future Vol, veh/h	32	2	289	0	0	0	0	686	623	109	488	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	16	0	9	2	2	2	2	9	4	11	10	2
Mvmt Flow	34	2	307	0	0	0	0	730	663	116	519	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1481	1481	519	-	0	0	730	0	0
Stage 1	751	751	-	-	-	-	-	-	-
Stage 2	730	730	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.99	-	-	-	4	-	-
Critical Hdwy Stg 1	4.96	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.96	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.2	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	131	162	592	0	-	-	695	-	0
Stage 1	560	478	-	0	-	-	-	-	0
Stage 2	572	486	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	109	0	592	-	-	-	695	-	-
Mov Cap-2 Maneuver	109	0	-	-	-	-	-	-	-
Stage 1	560	0	-	-	-	-	-	-	-
Stage 2	476	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.3	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	109	592	695	-
HCM Lane V/C Ratio	-	-	0.332	0.519	0.167	-
HCM Control Delay (s)	-	-	53.6	17.5	11.2	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	1.3	3	0.6	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 Build
 AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	25	0	1292	768	5
Future Volume (vph)	6	25	0	1292	768	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1622	0	0	1734	1652	0
Flt Permitted	0.990					
Satd. Flow (perm)	1622	0	0	1734	1652	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	7%	10%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	0	0	1436	859	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	78.0% ICU Level of Service D
Analysis Period (min)	15

HCM 6th TWSC
10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 Build
AM Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	25	0	1292	768	5
Future Vol, veh/h	6	25	0	1292	768	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	7	10	0
Mvmt Flow	7	28	0	1436	853	6






















Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	2292	856	859	0	0
Stage 1	856	-	-	-	-
Stage 2	1436	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-
Pot Cap-1 Maneuver	46	376	663	-	-
Stage 1	465	-	-	-	-
Stage 2	239	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	46	376	663	-	-
Mov Cap-2 Maneuver	46	-	-	-	-
Stage 1	465	-	-	-	-
Stage 2	239	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.3	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	663	-	157	-	-
HCM Lane V/C Ratio	-	-	0.219	-	-
HCM Control Delay (s)	0	-	34.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	20	106	8	13	76	42	870	8	10	643	153
Future Volume (vph)	345	20	106	8	13	76	42	870	8	10	643	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1604	1570	0	1391	1564	0	1500	1616	0	1628	1580	0
Flt Permitted	0.694			0.668			0.132			0.101		
Satd. Flow (perm)	1172	1570	0	977	1564	0	208	1616	0	173	1580	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		118			84			1				28
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	5%	13%	8%	1%	8%	9%	25%	0%	10%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	383	140	0	9	98	0	47	976	0	11	884	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	25.0	25.0		25.0	25.0		45.0	45.0		45.0	45.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		64.3%	64.3%		64.3%	64.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	20.0	20.0		20.0	20.0		39.5	39.5		39.5	39.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.56	0.56		0.56	0.56	
v/c Ratio	1.15	0.26		0.03	0.19		0.40	1.07		0.11	0.98	
Control Delay	123.0	7.2		18.6	7.4		16.0	63.3		10.5	42.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	123.0	7.2		18.6	7.4		16.0	63.3		10.5	42.4	
LOS	F	A		B	A		B	E		B	D	
Approach Delay		92.0			8.4			61.1			42.0	
Approach LOS		F			A			E			D	
Queue Length 50th (ft)	~198	7		3	4		6	~481		2	329	
Queue Length 95th (ft)	#354	45		13	36		m11	#690		10	#605	

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 Build
AM Peak Hour

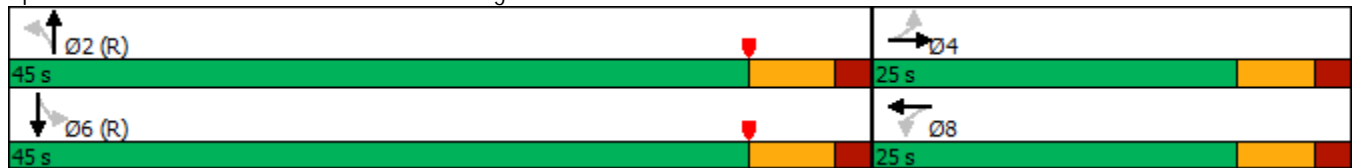


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		920			920			1160			2095	
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	334	532		279	506		117	912		97	903	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.15	0.26		0.03	0.19		0.40	1.07		0.11	0.98	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.15
 Intersection Signal Delay: 58.5
 Intersection LOS: E
 Intersection Capacity Utilization 84.4%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
11: Cloverleaf Rd & Schwanger Rd



















2029 Build
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	20	106	8	13	76	42	870	8	10	643	153
Future Volume (veh/h)	345	20	106	8	13	76	42	870	8	10	643	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	1915	1567	1703	1736	1798	1784	1556	1949	1807	1878
Adj Flow Rate, veh/h	383	22	118	9	14	84	47	967	9	11	714	170
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	5	13	8	1	8	9	25	0	10	5
Cap, veh/h	420	80	431	337	60	361	174	996	9	442	796	190
Arrive On Green	0.29	0.29	0.27	0.29	0.29	0.27	1.00	1.00	1.00	0.56	0.56	0.55
Sat Flow, veh/h	1356	281	1509	1045	210	1263	604	1764	16	600	1411	336
Grp Volume(v), veh/h	383	0	140	9	0	98	47	0	976	11	0	884
Grp Sat Flow(s),veh/h/ln	1356	0	1791	1045	0	1473	604	0	1781	600	0	1746
Q Serve(g_s), s	16.4	0.0	4.3	0.5	0.0	3.6	5.0	0.0	0.0	0.6	0.0	31.3
Cycle Q Clear(g_c), s	20.0	0.0	4.3	4.8	0.0	3.6	36.3	0.0	0.0	0.6	0.0	31.3
Prop In Lane	1.00		0.84	1.00		0.86	1.00		0.01	1.00		0.19
Lane Grp Cap(c), veh/h	420	0	512	337	0	421	174	0	1005	442	0	985
V/C Ratio(X)	0.91	0.00	0.27	0.03	0.00	0.23	0.27	0.00	0.97	0.02	0.00	0.90
Avail Cap(c_a), veh/h	420	0	512	337	0	421	174	0	1005	442	0	985
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.63	0.00	0.63	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	19.7	21.2	0.0	19.5	14.4	0.0	0.0	6.8	0.0	13.5
Incr Delay (d2), s/veh	23.7	0.0	0.3	0.0	0.0	0.3	2.4	0.0	16.7	0.1	0.0	12.5
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	13.9	0.0	3.1	0.2	0.0	2.1	1.1	0.0	7.5	0.1	0.0	18.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.0	0.0	20.0	21.3	0.0	19.8	16.8	0.0	16.7	6.9	0.0	26.1
LnGrp LOS	D	A	C	C	A	B	B	A	B	A	A	C
Approach Vol, veh/h		523			107			1023			895	
Approach Delay, s/veh		43.4			19.9			16.7			25.8	
Approach LOS		D			B			B			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.0		25.0		45.0		25.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		38.5		19.0		38.5		19.0				
Max Q Clear Time (g_c+I1), s		2.0		22.0		33.3		6.8				
Green Ext Time (p_c), s		30.9		0.0		4.8		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				25.5								
HCM 6th LOS				C								

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	0	17	17	1	9	2	884	7	25	710	7
Future Volume (vph)	36	0	17	17	1	9	2	884	7	25	710	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1686	0	0	1561	0	0	1614	1648
Flt Permitted		0.739			0.783			0.999			0.959	
Satd. Flow (perm)	0	1286	1581	0	1362	0	0	1560	0	0	1551	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		9			1				39
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	50%	10%	29%	0%	9%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	18	0	28	0	0	930	0	0	766	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		6			6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	17.0	17.0	17.0	17.0	17.0		53.0	53.0		53.0	53.0	53.0
Total Split (%)	24.3%	24.3%	24.3%	24.3%	24.3%		75.7%	75.7%		75.7%	75.7%	75.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.7	8.7		8.6			58.4			58.4	58.4
Actuated g/C Ratio		0.12	0.12		0.12			0.83			0.83	0.83
v/c Ratio		0.24	0.08		0.16			0.71			0.59	0.01
Control Delay		30.5	2.8		22.5			10.3			9.7	0.6
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		30.5	2.8		22.5			10.3			9.7	0.6
LOS		C	A		C			B			A	A
Approach Delay		21.6			22.5			10.3			9.6	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)		15	0		7			193			252	0
Queue Length 95th (ft)		40	5		28			#566			m281	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
 AM Peak Hour

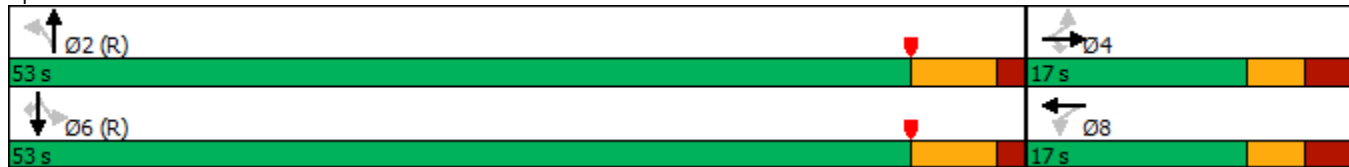


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		229	320		250			1301			1293	1380
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.17	0.06		0.11			0.71			0.59	0.01

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 63 (90%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 10.6
 Intersection LOS: B
 Intersection Capacity Utilization 75.7%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Volume (veh/h)	36	0	17	17	1	9	2	884	7	25	710	7
Future Volume (veh/h)	36	0	17	17	1	9	2	884	7	25	710	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1076	1637	1371	1875	1747	1950
Adj Flow Rate, veh/h	38	0	18	18	1	9	2	921	7	26	740	7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	50	10	29	0	9	0
Cap, veh/h	208	0	104	120	9	21	52	1295	10	73	1333	1319
Arrive On Green	0.05	0.00	0.07	0.05	0.07	0.05	0.78	0.80	0.78	1.00	1.00	1.00
Sat Flow, veh/h	1599	0	1586	549	133	323	0	1621	12	25	1669	1652
Grp Volume(v), veh/h	38	0	18	28	0	0	930	0	0	766	0	7
Grp Sat Flow(s),veh/h/ln	1599	0	1586	1004	0	0	1634	0	0	1694	0	1652
Q Serve(g_s), s	0.0	0.0	0.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.8	2.4	0.0	0.0	19.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.64		0.32	0.00		0.01	0.03		1.00
Lane Grp Cap(c), veh/h	185	0	104	136	0	0	1333	0	0	1382	0	1319
V/C Ratio(X)	0.21	0.00	0.17	0.21	0.00	0.00	0.70	0.00	0.00	0.55	0.00	0.01
Avail Cap(c_a), veh/h	338	0	283	302	0	0	1333	0	0	1382	0	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.16	0.00	0.16
Uniform Delay (d), s/veh	31.7	0.0	30.9	32.4	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.8	0.7	0.0	0.0	3.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	1.2	0.0	0.5	0.9	0.0	0.0	5.3	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.3	0.0	31.7	33.1	0.0	0.0	6.4	0.0	0.0	0.3	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		56			28			930			773	
Approach Delay, s/veh		32.1			33.1			6.4			0.3	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		60.9		9.1		60.9		9.1				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		47.0		11.5		47.0		11.5				
Max Q Clear Time (g_c+I1), s		21.1		3.5		2.0		4.4				
Green Ext Time (p_c), s		21.7		0.1		28.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			5.0									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	246	38	52	243	204	74	380	51	109	216	191
Future Volume (vph)	283	246	38	52	243	204	74	380	51	109	216	191
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1485	1660	1113	1194	1649	1561	1637	1684	0	1500	1509	1388
Flt Permitted	0.312			0.597			0.561			0.206		
Satd. Flow (perm)	488	1660	1088	749	1649	1561	967	1684	0	325	1509	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			239		8				232
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1026				640
Travel Time (s)		14.2			7.4			28.0				10.9
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	9%	29%	33%	5%	4%	6%	13%	18%	8%	13%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	262	40	55	259	217	79	458	0	116	230	203
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	15.0	38.5	38.5	23.5	23.5	23.5	14.0	27.5		14.0	27.5	27.5
Total Split (%)	18.8%	48.1%	48.1%	29.4%	29.4%	29.4%	17.5%	34.4%		17.5%	34.4%	34.4%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	30.9	30.9	30.9	15.8	15.8	15.8	27.8	21.7		27.9	21.8	21.8
Actuated g/C Ratio	0.41	0.41	0.41	0.21	0.21	0.21	0.37	0.29		0.37	0.29	0.29
v/c Ratio	0.92	0.38	0.07	0.35	0.75	0.42	0.19	0.93		0.48	0.53	0.36
Control Delay	55.0	18.3	0.3	33.5	43.4	5.8	14.2	56.0		20.4	29.3	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.0	18.3	0.3	33.5	43.4	5.8	14.2	56.0		20.4	29.3	4.4
LOS	E	B	A	C	D	A	B	E		C	C	A
Approach Delay		35.4			27.0			49.8			18.2	
Approach LOS		D			C			D			B	
Queue Length 50th (ft)	108	89	0	23	120	0	21	219		32	96	0
Queue Length 95th (ft)	#265	148	0	57	#219	43	47	#419		66	170	36

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		860			410			946			560	
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	328	738	566	181	400	559	431	493		247	438	567
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.92	0.36	0.07	0.30	0.65	0.39	0.18	0.93		0.47	0.53	0.36

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	75
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	32.6
Intersection LOS:	C
Intersection Capacity Utilization	80.0%
ICU Level of Service	D
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230

Ø1	Ø2	Ø3	Ø4
15 s	23.5 s	14 s	27.5 s
Ø6	Ø7	Ø8	
38.5 s	14 s	27.5 s	

HCM 6th Signalized Intersection Summary
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	246	38	52	243	204	74	380	51	109	216	191
Future Volume (veh/h)	283	246	38	52	243	204	74	380	51	109	216	191
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1724	1709	1425	1331	1724	1808	2087	2067	1917	1598	1528	1598
Adj Flow Rate, veh/h	301	262	27	55	259	0	79	404	52	116	230	173
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	9	29	33	5	4	6	13	18	8	13	8
Cap, veh/h	367	684	482	249	332		412	475	61	288	449	398
Arrive On Green	0.13	0.40	0.40	0.19	0.19	0.00	0.06	0.26	0.25	0.09	0.29	0.29
Sat Flow, veh/h	1641	1709	1206	775	1724	1532	1988	1794	231	1522	1528	1352
Grp Volume(v), veh/h	301	262	27	55	259	0	79	0	456	116	230	173
Grp Sat Flow(s),veh/h/ln	1641	1709	1206	775	1724	1532	1988	0	2025	1522	1528	1352
Q Serve(g_s), s	9.5	7.9	1.0	4.5	10.3	0.0	2.0	0.0	15.5	3.8	9.0	7.5
Cycle Q Clear(g_c), s	9.5	7.9	1.0	4.5	10.3	0.0	2.0	0.0	15.5	3.8	9.0	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	367	684	482	249	332		412	0	536	288	449	398
V/C Ratio(X)	0.82	0.38	0.06	0.22	0.78		0.19	0.00	0.85	0.40	0.51	0.44
Avail Cap(c_a), veh/h	367	780	550	292	429		505	0	602	314	454	402
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	15.4	13.3	25.4	27.7	0.0	17.3	0.0	25.3	17.9	21.2	20.7
Incr Delay (d2), s/veh	13.8	0.1	0.0	0.2	4.9	0.0	0.2	0.0	10.2	0.9	0.9	0.8
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	8.4	4.8	0.4	1.4	7.7	0.0	1.6	0.0	13.5	2.3	5.5	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	15.5	13.3	25.5	32.7	0.0	17.5	0.0	35.5	18.9	22.2	21.4
LnGrp LOS	C	B	B	C	C		B	A	D	B	C	C
Approach Vol, veh/h		590			314			535			519	
Approach Delay, s/veh		25.1			31.4			32.9			21.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	19.4	12.7	25.2		34.4	10.6	27.3				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	8.5	17.0	7.0	20.5		32.0	7.0	20.5				
Max Q Clear Time (g_c+I1), s	12.0	12.8	6.3	17.5		10.4	4.5	11.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.7		0.1	0.0	1.4				

Intersection Summary

HCM 6th Ctrl Delay	27.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2029 Build
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	155	0	786	15	183	516	0
Future Volume (vph)	0	0	0	0	0	155	0	786	15	183	516	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%				-2%
Storage Length (ft)	0		0	0		0	0		150	325		0
Storage Lanes	0		1	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1726	1567	1787	1745	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1726	1567	1787	1745	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		500			500			640			600	
Travel Time (s)		8.5			8.5			17.5			16.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	9%	2%	2%	10%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	172	0	873	17	203	573	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	75.2%
ICU Level of Service	D
Analysis Period (min)	15

HCM 6th TWSC
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2029 Build
 AM Peak Hour

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↖	↗	↖	↗	
Traffic Vol, veh/h	0	0	0	0	0	155	0	786	15	183	516	0
Future Vol, veh/h	0	0	0	0	0	155	0	786	15	183	516	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	150	325	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	9	2	2	10	2
Mvmt Flow	0	0	0	0	0	172	0	873	17	203	573	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	573	-	-	873	573	0	0	890	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	519	0	0	349	1000	-	-	761	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	519	-	-	349	1000	-	-	761	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		25		0		3	
HCM LOS	A		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1000	-	-	-	349	761	-
HCM Lane V/C Ratio	-	-	-	-	0.493	0.267	-
HCM Control Delay (s)	0	-	-	0	25	11.4	-
HCM Lane LOS	A	-	-	A	D	B	-
HCM 95th %tile Q(veh)	0	-	-	-	2.6	1.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↖	↗	↘	↘
Traffic Volume (vph)	113	294	399	51	65	141
Future Volume (vph)	113	294	399	51	65	141
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350			225	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1805	1743	1810	1583	1664	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1805	1743	1810	1583	1664	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2697		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	9%	5%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	327	443	57	229	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.5% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	113	294	399	51	65	141
Future Vol, veh/h	113	294	399	51	65	141
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	225	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	9	5	2	2	2
Mvmt Flow	126	327	443	57	72	157

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	500	0	-	0	1022 443
Stage 1	-	-	-	-	443 -
Stage 2	-	-	-	-	579 -
Critical Hdwy	4.5	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	785	-	-	-	288 650
Stage 1	-	-	-	-	737 -
Stage 2	-	-	-	-	633 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	785	-	-	-	242 650
Mov Cap-2 Maneuver	-	-	-	-	396 -
Stage 1	-	-	-	-	618 -
Stage 2	-	-	-	-	633 -

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	785	-	-	-	541
HCM Lane V/C Ratio	0.16	-	-	-	0.423
HCM Control Delay (s)	10.5	-	-	-	16.4
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.6	-	-	-	2.1

Lanes, Volumes, Timings
 29: SR 0230 & Ridge Run Rd

2029 Build
 AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕	↗	↖		↘	↘
Traffic Volume (vph)	3	331	451	24	26	3
Future Volume (vph)	3	331	451	24	26	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1318	1693	1725	0	1554	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1318	1693	1725	0	1554	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2697	1003		1286	
Travel Time (s)		33.4	12.4		25.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	33%	9%	5%	9%	4%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	364	522	0	32	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.2% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	331	451	24	26	3
Future Vol, veh/h	3	331	451	24	26	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	9	5	9	4	33
Mvmt Flow	3	364	496	26	29	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	522	0	-	0	879
Stage 1	-	-	-	-	509
Stage 2	-	-	-	-	370
Critical Hdwy	4.4	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	3.3	-	-	-	3
Pot Cap-1 Maneuver	725	-	-	-	319
Stage 1	-	-	-	-	645
Stage 2	-	-	-	-	765
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	725	-	-	-	318
Mov Cap-2 Maneuver	-	-	-	-	462
Stage 1	-	-	-	-	642
Stage 2	-	-	-	-	765

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	725	-	-	-	467
HCM Lane V/C Ratio	0.005	-	-	-	0.068
HCM Control Delay (s)	10	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2029 Build
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	71	23	34	6	44	123	47	345	9	32	193	79
Future Volume (vph)	71	23	34	6	44	123	47	345	9	32	193	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1300	0	0	1537	0	0	1665	0	0	1514	0
Flt Permitted		0.973			0.998			0.994			0.995	
Satd. Flow (perm)	0	1300	0	0	1537	0	0	1665	0	0	1514	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1157			1404			999			1026	
Travel Time (s)		22.5			27.4			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	133	0	0	180	0	0	417	0	0	316	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.6%
ICU Level of Service	B
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	16.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	71	23	34	6	44	123	47	345	9	32	193	79
Future Vol, veh/h	71	23	34	6	44	123	47	345	9	32	193	79
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	74	24	35	6	46	128	49	359	9	33	201	82
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13	11.6	20	16
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	55%	3%	11%
Vol Thru, %	86%	18%	25%	63%
Vol Right, %	2%	27%	71%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	401	128	173	304
LT Vol	47	71	6	32
Through Vol	345	23	44	193
RT Vol	9	34	123	79
Lane Flow Rate	418	133	180	317
Geometry Grp	1	1	1	1
Degree of Util (X)	0.67	0.27	0.302	0.533
Departure Headway (Hd)	5.777	7.302	6.041	6.159
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	618	495	598	589
Service Time	3.87	5.311	4.041	4.159
HCM Lane V/C Ratio	0.676	0.269	0.301	0.538
HCM Control Delay	20	13	11.6	16
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	5.1	1.1	1.3	3.1

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2029 Build
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	721	88	212	556	126	141
Future Volume (vph)	721	88	212	556	126	141
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1801	0	1744	1958	1579	0
Flt Permitted			0.089		0.977	
Satd. Flow (perm)	1801	0	163	1958	1579	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	11					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	0%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	889	0	233	611	293	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	46.0		12.0	58.0	22.0	
Total Split (%)	57.5%		15.0%	72.5%	27.5%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effct Green (s)	40.8		54.0	52.8	16.8	
Actuated g/C Ratio	0.51		0.68	0.66	0.21	
v/c Ratio	0.96		0.87	0.47	0.89	
Control Delay	42.6		39.5	7.3	60.5	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	42.6		39.5	7.3	60.5	
LOS	D		D	A	E	
Approach Delay	42.6			16.2	60.5	
Approach LOS	D			B	E	
Queue Length 50th (ft)	399		56	132	143	
Queue Length 95th (ft)	#672		m#105	m156	#283	

Lanes, Volumes, Timings
 3: Maytown Rd & SR 0230

2029 Build
 PM Peak Hour

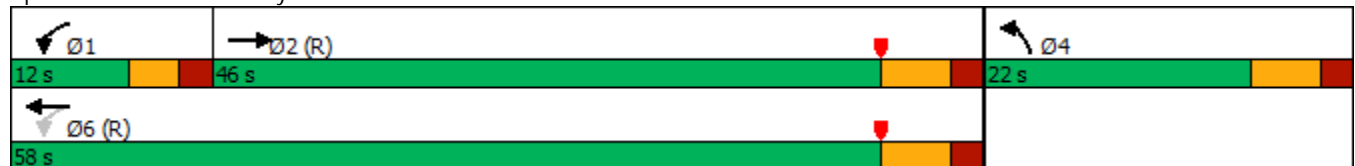


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	920			1120	920	
Turn Bay Length (ft)			150			
Base Capacity (vph)	923		268	1292	331	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.96		0.87	0.47	0.89	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 5 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 34.2
 Intersection LOS: C
 Intersection Capacity Utilization 86.6%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2029 Build
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	721	88	212	556	126	141
Future Volume (veh/h)	721	88	212	556	126	141
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1735	1711	2009	2090	1860	1860
Adj Flow Rate, veh/h	792	88	233	611	138	155
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	0	1	1	1	1
Cap, veh/h	785	87	281	1383	162	182
Arrive On Green	0.51	0.50	0.20	1.00	0.21	0.20
Sat Flow, veh/h	1534	170	1914	2090	781	877
Grp Volume(v), veh/h	0	880	233	611	294	0
Grp Sat Flow(s),veh/h/ln	0	1704	1914	2090	1663	0
Q Serve(g_s), s	0.0	41.0	5.3	0.0	13.6	0.0
Cycle Q Clear(g_c), s	0.0	41.0	5.3	0.0	13.6	0.0
Prop In Lane		0.10	1.00		0.47	0.53
Lane Grp Cap(c), veh/h	0	873	281	1383	346	0
V/C Ratio(X)	0.00	1.01	0.83	0.44	0.85	0.00
Avail Cap(c_a), veh/h	0	873	281	1383	349	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	19.6	18.7	0.0	30.7	0.0
Incr Delay (d2), s/veh	0.0	32.6	18.2	1.0	20.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	29.6	5.9	0.7	11.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	52.2	36.9	1.0	51.6	0.0
LnGrp LOS	A	F	D	A	D	A
Approach Vol, veh/h	880			844	294	
Approach Delay, s/veh	52.2			10.9	51.6	
Approach LOS	D			B	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	46.2		21.8		58.2
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	7.0	39.8		15.8		51.8
Max Q Clear Time (g_c+I1), s	7.3	43.0		15.6		2.0
Green Ext Time (p_c), s	0.0	0.0		0.0		19.8

Intersection Summary




















HCM 6th Ctrl Delay	34.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2029 Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	898	0	0	1049	95	1	0	2	36	0	49
Future Volume (vph)	28	898	0	0	1049	95	1	0	2	36	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Flt Permitted	0.950							0.984		0.950		
Satd. Flow (perm)	1640	1828	0	1843	1744	0	0	1661	0	1771	1576	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	8%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	966	0	0	1230	0	0	3	0	39	53	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	72.9%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↔		↖	↗	
Traffic Vol, veh/h	28	898	0	0	1049	95	1	0	2	36	0	49
Future Vol, veh/h	28	898	0	0	1049	95	1	0	2	36	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	2	0	0	1	0	0	0	0	0	0	4
Mvmt Flow	30	966	0	0	1128	102	1	0	2	39	0	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1230	0	0	966	0	0	2233	2256	966	2206	2205	1180
Stage 1	-	-	-	-	-	-	1026	1026	-	1179	1179	-
Stage 2	-	-	-	-	-	-	1207	1230	-	1027	1026	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	542	-	-	399	-	-	41	54	342	49	65	267
Stage 1	-	-	-	-	-	-	352	353	-	311	324	-
Stage 2	-	-	-	-	-	-	281	289	-	372	373	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	542	-	-	399	-	-	31	51	342	47	61	267
Mov Cap-2 Maneuver	-	-	-	-	-	-	31	51	-	47	61	-
Stage 1	-	-	-	-	-	-	333	334	-	294	324	-
Stage 2	-	-	-	-	-	-	225	289	-	349	352	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	52.5	103.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	79	542	-	-	399	-	-	47	267
HCM Lane V/C Ratio	0.041	0.056	-	-	-	-	-	0.824	0.197
HCM Control Delay (s)	52.5	12	-	-	0	-	-	215	21.8
HCM Lane LOS	F	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	3.3	0.7

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	702	38	155	849	18	275	3	119	24	8	17
Future Volume (vph)	15	702	38	155	849	18	275	3	119	24	8	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1766	1584	1572	1697	1608	1694	1576	0	1761	1742	0
Flt Permitted	0.246			0.131			0.740			0.676		
Satd. Flow (perm)	428	1766	1550	217	1697	1608	1314	1576	0	1253	1742	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			40		124			18	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)			1				2					2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	731	40	161	884	19	286	127	0	25	26	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	43.0	43.0	43.0	13.0	56.0	56.0	24.0	24.0		24.0	24.0	
Total Split (%)	53.8%	53.8%	53.8%	16.3%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	37.5	37.5	37.5	51.6	50.3	50.3	19.0	19.0		19.0	19.0	
Actuated g/C Ratio	0.47	0.47	0.47	0.64	0.63	0.63	0.24	0.24		0.24	0.24	
v/c Ratio	0.08	0.88	0.05	0.57	0.83	0.02	0.92	0.27		0.08	0.06	
Control Delay	12.1	22.5	0.2	19.8	10.0	0.1	66.4	7.1		24.7	14.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	12.1	22.5	0.2	19.8	10.0	0.1	66.4	7.1		24.7	14.0	
LOS	B	C	A	B	B	A	E	A		C	B	
Approach Delay		21.2			11.3			48.2			19.2	
Approach LOS		C			B			D			B	
Queue Length 50th (ft)	3	156	0	12	27	0	140	1		10	3	
Queue Length 95th (ft)	m5	m220	m0	m54	#80	m0	#284	42		29	22	

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	201	828	787	283	1066	1025	313	470		299	429	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.88	0.05	0.57	0.83	0.02	0.91	0.27		0.08	0.06	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 33 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 21.4
 Intersection LOS: C
 Intersection Capacity Utilization 96.2%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	15	702	38	155	849	18	275	3	119	24	8	17
Future Volume (veh/h)	15	702	38	155	849	18	275	3	119	24	8	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2032	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	16	731	25	161	884	16	286	3	84	25	8	15
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	425	997	856	541	1097	975	429	14	381	370	153	287
Arrive On Green	0.98	0.98	0.98	0.17	1.00	1.00	0.23	0.23	0.22	0.23	0.23	0.22
Sat Flow, veh/h	682	2032	1745	1666	1736	1542	1468	58	1627	1413	653	1224
Grp Volume(v), veh/h	16	731	25	161	884	16	286	0	87	25	0	23
Grp Sat Flow(s),veh/h/ln	682	2032	1745	1666	1736	1542	1468	0	1685	1413	0	1878
Q Serve(g_s), s	0.0	1.9	0.0	3.4	0.0	0.0	14.9	0.0	3.4	1.2	0.0	0.8
Cycle Q Clear(g_c), s	0.0	1.9	0.0	3.4	0.0	0.0	15.2	0.0	3.4	4.0	0.0	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.65
Lane Grp Cap(c), veh/h	425	997	856	541	1097	975	429	0	394	370	0	439
V/C Ratio(X)	0.04	0.73	0.03	0.30	0.81	0.02	0.67	0.00	0.22	0.07	0.00	0.05
Avail Cap(c_a), veh/h	425	997	856	576	1097	975	436	0	402	376	0	448
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.63	0.63	0.63	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.4	0.4	0.4	6.3	0.0	0.0	29.4	0.0	25.2	26.2	0.0	24.0
Incr Delay (d2), s/veh	0.2	4.8	0.1	0.2	4.1	0.0	3.8	0.0	0.3	0.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	2.8	0.0	1.6	2.2	0.0	9.4	0.0	2.5	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.5	5.2	0.4	6.5	4.1	0.0	33.2	0.0	25.4	26.3	0.0	24.1
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		772			1061			373				48
Approach Delay, s/veh		4.9			4.4			31.4				25.2
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.3	45.1		23.6		56.4		23.6				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	7.5	36.2		* 18		49.2		* 18				
Max Q Clear Time (g_c+I1), s	5.9	4.4		6.5		2.5		17.7				
Green Ext Time (p_c), s	0.1	0.9		0.1		1.1		0.1				

Intersection Summary

HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	526	1	10	854	75	9	2	1	43	3	115
Future Volume (vph)	87	526	1	10	854	75	9	2	1	43	3	115
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1729	0	1586	1818	1561	0	1831	0	1719	1506	0
Flt Permitted	0.173			0.456				0.712		0.750		
Satd. Flow (perm)	305	1729	0	761	1818	1561	0	1347	0	1357	1506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						110		1				121
Link Speed (mph)		40			40			25				25
Link Distance (ft)		1340			610			200				300
Travel Time (s)		22.8			10.4			5.5				8.2
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	10%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	555	0	11	899	79	0	12	0	45	124	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8				4
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	11.0	62.0		51.0	51.0	51.0	18.0	18.0		18.0	18.0	
Total Split (%)	13.8%	77.5%		63.8%	63.8%	63.8%	22.5%	22.5%		22.5%	22.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	63.9	64.1		55.3	55.3	55.3		9.3		9.3	9.3	
Actuated g/C Ratio	0.80	0.80		0.69	0.69	0.69		0.12		0.12	0.12	
v/c Ratio	0.26	0.40		0.02	0.72	0.07		0.08		0.29	0.44	
Control Delay	3.8	6.8		4.3	12.9	0.4		29.9		36.2	12.1	
Queue Delay	0.0	0.0		0.0	0.2	0.0		0.0		0.0	0.0	
Total Delay	3.8	6.8		4.3	13.1	0.4		29.9		36.2	12.1	
LOS	A	A		A	B	A		C		D	B	
Approach Delay		6.4			12.0			29.9			18.6	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	9	161		1	357	0		5		21	1	
Queue Length 95th (ft)	m16	m253		m2	#608	m1		19		50	46	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2029 Build
 PM Peak Hour

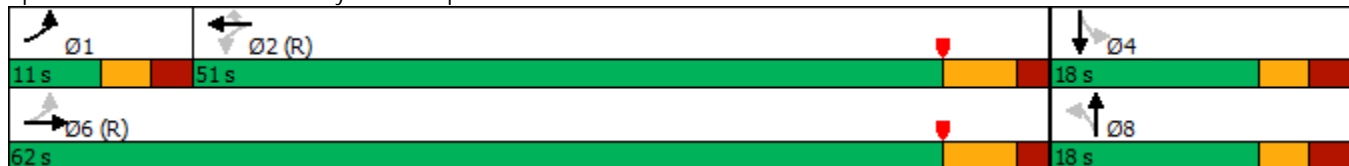


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	355	1384		525	1255	1112		226		227	352	
Starvation Cap Reductn	0	0		0	39	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.26	0.40		0.02	0.74	0.07		0.05		0.20	0.35	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 11 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 10.7
 Intersection LOS: B
 Intersection Capacity Utilization 72.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2029 Build
 PM Peak Hour























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗		↕		↖	↗	
Traffic Volume (veh/h)	87	526	1	10	854	75	9	2	1	43	3	115
Future Volume (veh/h)	87	526	1	10	854	75	9	2	1	43	3	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1683	1711	1807	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	92	554	1	11	899	70	9	2	0	45	3	65
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	10	1	0	0	0	0	0	0	0
Cap, veh/h	540	1338	2	658	1333	1138	113	19	0	210	5	115
Arrive On Green	0.10	1.00	1.00	1.00	1.00	1.00	0.07	0.08	0.00	0.08	0.08	0.07
Sat Flow, veh/h	1629	1679	3	825	1935	1652	396	245	0	1376	68	1476
Grp Volume(v), veh/h	92	0	555	11	899	70	11	0	0	45	0	68
Grp Sat Flow(s),veh/h/ln	1629	0	1682	825	1935	1652	641	0	0	1376	0	1544
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4
Cycle Q Clear(g_c), s	1.1	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	2.0	0.0	3.4
Prop In Lane	1.00		0.00	1.00		1.00	0.82		0.00	1.00		0.96
Lane Grp Cap(c), veh/h	540	0	1341	658	1333	1138	124	0	0	210	0	120
V/C Ratio(X)	0.17	0.00	0.41	0.02	0.67	0.06	0.09	0.00	0.00	0.21	0.00	0.57
Avail Cap(c_a), veh/h	588	0	1341	658	1333	1138	249	0	0	334	0	259
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.40	0.00	0.40	0.66	0.66	0.66	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.1	0.0	0.0	0.0	0.0	0.0	34.7	0.0	0.0	34.9	0.0	36.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	1.8	0.1	0.3	0.0	0.0	0.5	0.0	4.1
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.3	0.0	1.2	0.0	0.4	0.0	0.0	1.5	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.2	0.0	0.4	0.0	1.8	0.1	35.0	0.0	0.0	35.4	0.0	40.2
LnGrp LOS	A	A	A	A	A	A	C	A	A	D	A	D
Approach Vol, veh/h		647			980			11				113
Approach Delay, s/veh		0.6			1.7			35.0				38.3
Approach LOS		A			A			C				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.7	60.5		10.8		69.2		10.8				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	5.5	44.6		12.4		55.6		12.4				
Max Q Clear Time (g_c+I1), s	3.6	2.5		5.4		2.5		5.4				
Green Ext Time (p_c), s	0.0	1.3		0.2		0.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	3.9
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	473	22	42	740	33	94	36	30	34	45	96
Future Volume (vph)	63	473	22	42	740	33	94	36	30	34	45	96
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%			-4%	
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1710	0	1573	1679	0	1572	1603	0	0	1801	0
Flt Permitted	0.263			0.430			0.514				0.921	
Satd. Flow (perm)	457	1710	0	712	1679	0	850	1603	0	0	1675	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			4			32				83
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	3%	0%	3%	1%	0%	0%	3%	3%	0%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	521	0	44	814	0	99	70	0	0	184	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0		48.0	48.0		32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effect Green (s)	56.0	56.0		56.0	56.0		14.1	14.1				14.1
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.18	0.18				0.18
v/c Ratio	0.21	0.43		0.09	0.69		0.66	0.23				0.51
Control Delay	2.0	1.7		5.7	12.4		50.5	17.8				20.4
Queue Delay	0.0	0.0		0.0	0.2		0.0	0.0				0.0
Total Delay	2.0	1.7		5.7	12.6		50.5	17.8				20.4
LOS	A	A		A	B		D	B				C
Approach Delay		1.7			12.2			37.0				20.4
Approach LOS		A			B			D				C
Queue Length 50th (ft)	1	8		6	196		47	16				45
Queue Length 95th (ft)	2	10		21	438		89	45				94

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		530			920			270			920	
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	319	1198		498	1176		286	562			620	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	48		0	0			2	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.21	0.43		0.09	0.72		0.35	0.12			0.30	

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization	83.9%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
13: Sheaffer Rd & SR 0230

2029 Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Volume (veh/h)	63	473	22	42	740	33	94	36	30	34	45	96
Future Volume (veh/h)	63	473	22	42	740	33	94	36	30	34	45	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1708	1750	1869	1898	1912	1750	1708	1708	1949	1997	1921
Adj Flow Rate, veh/h	66	498	22	44	779	33	99	38	14	36	47	80
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	0	3	1	0	0	3	3	0	2	2
Cap, veh/h	424	1198	53	740	1334	57	235	164	60	93	84	118
Arrive On Green	1.00	1.00	1.00	0.74	0.74	0.73	0.14	0.14	0.13	0.13	0.14	0.13
Sat Flow, veh/h	619	1623	72	881	1807	77	1180	1189	438	272	611	851
Grp Volume(v), veh/h	66	0	520	44	0	812	99	0	52	163	0	0
Grp Sat Flow(s),veh/h/ln	619	0	1695	881	0	1884	1180	0	1627	1735	0	0
Q Serve(g_s), s	2.7	0.0	0.0	1.1	0.0	15.9	0.4	0.0	2.3	4.4	0.0	0.0
Cycle Q Clear(g_c), s	18.6	0.0	0.0	1.1	0.0	15.9	7.6	0.0	2.3	7.2	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.04	1.00		0.27	0.22		0.49
Lane Grp Cap(c), veh/h	424	0	1251	740	0	1390	235	0	225	273	0	0
V/C Ratio(X)	0.16	0.00	0.42	0.06	0.00	0.58	0.42	0.00	0.23	0.60	0.00	0.00
Avail Cap(c_a), veh/h	424	0	1251	740	0	1390	471	0	549	611	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.5	0.0	0.0	2.9	0.0	4.8	33.0	0.0	30.8	33.1	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.2	0.0	1.8	1.2	0.0	0.5	2.1	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.6	0.3	0.0	7.6	3.3	0.0	1.6	5.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.2	0.0	0.9	3.0	0.0	6.6	34.2	0.0	31.3	35.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	C	D	A	A
Approach Vol, veh/h		586			856			151			163	
Approach Delay, s/veh		1.2			6.4			33.2			35.2	
Approach LOS		A			A			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		64.0		16.0		64.0		16.0				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 42		26.0		* 42		26.0				
Max Q Clear Time (g_c+I1), s		2.0		9.2		17.9		9.6				
Green Ext Time (p_c), s		16.1		0.5		18.8		0.4				

Intersection Summary

HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↗	↕			↕	↗
Traffic Volume (vph)	0	0	0	650	0	125	335	168	0	0	252	48
Future Volume (vph)	0	0	0	650	0	125	335	168	0	0	252	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1653	1414	1589	1511	0	0	1658	1637
Flt Permitted					0.950		0.362					
Satd. Flow (perm)	0	0	0	0	1653	1414	605	1511	0	0	1658	1637
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						151						143
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	1%	0%	2%	3%	14%	2%	2%	6%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	684	132	353	177	0	0	265	51
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				30.0	30.0	30.0	13.0	35.0			22.0	22.0
Total Split (%)				46.2%	46.2%	46.2%	20.0%	53.8%			33.8%	33.8%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					25.5	25.5	29.1	29.1			16.1	16.1
Actuated g/C Ratio					0.40	0.40	0.45	0.45			0.25	0.25
v/c Ratio					1.04	0.20	0.89	0.26			0.64	0.10
Control Delay					69.5	3.0	41.6	12.0			29.2	0.4
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					69.5	3.0	41.6	12.0			29.2	0.4
LOS					E	A	D	B			C	A
Approach Delay					58.7			31.7			24.6	
Approach LOS					E			C			C	
Queue Length 50th (ft)					-305	0	92	40			92	0
Queue Length 95th (ft)					#492	24	#228	77			163	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 PM Peak Hour

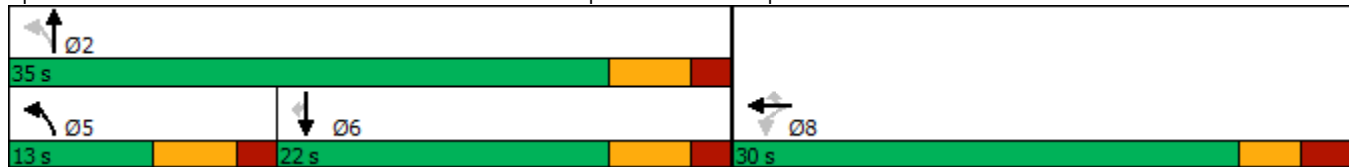


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					657	653	397	707			439	539
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					1.04	0.20	0.89	0.25			0.60	0.09

Intersection Summary

Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 64.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 43.6
 Intersection LOS: D
 Intersection Capacity Utilization 141.7%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (veh/h)	0	0	0	650	0	125	335	168	0	0	252	48
Future Volume (veh/h)	0	0	0	650	0	125	335	168	0	0	252	48
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1860	1875	1846	1736	1581	0	0	1789	1846
Adj Flow Rate, veh/h				684	0	0	353	177	0	0	265	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	0	2	3	14	0	0	6	7
Cap, veh/h				741	0		418	679	0	0	388	
Arrive On Green				0.40	0.00	0.00	0.13	0.43	0.00	0.00	0.22	0.00
Sat Flow, veh/h				1785	0	1564	1653	1581	0	0	1789	1564
Grp Volume(v), veh/h				684	0	0	353	177	0	0	265	0
Grp Sat Flow(s),veh/h/ln				1785	0	1564	1653	1581	0	0	1789	1564
Q Serve(g_s), s				22.3	0.0	0.0	8.0	4.4	0.0	0.0	8.3	0.0
Cycle Q Clear(g_c), s				22.3	0.0	0.0	8.0	4.4	0.0	0.0	8.3	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				741	0		418	679	0	0	388	
V/C Ratio(X)				0.92	0.00		0.85	0.26	0.00	0.00	0.68	
Avail Cap(c_a), veh/h				744	0		418	775	0	0	497	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				17.5	0.0	0.0	18.2	11.2	0.0	0.0	22.0	0.0
Incr Delay (d2), s/veh				17.1	0.0	0.0	14.7	0.7	0.0	0.0	7.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				17.4	0.0	0.0	8.6	2.5	0.0	0.0	7.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				34.5	0.0	0.0	32.9	11.9	0.0	0.0	29.6	0.0
LnGrp LOS				C	A		C	B	A	A	C	
Approach Vol, veh/h					684			530			265	
Approach Delay, s/veh					34.5			25.9			29.6	
Approach LOS					C			C			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.3			13.0	18.3		29.9				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		24.5				
Max Q Clear Time (g_c+I1), s		6.4			10.0	10.3		24.3				
Green Ext Time (p_c), s		3.5			0.0	2.0		0.1				

Intersection Summary


















HCM 6th Ctrl Delay	30.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 Build
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	3	557	0	0	0	0	463	521	100	810	0
Future Volume (vph)	44	3	557	0	0	0	0	463	521	100	810	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1563	1569	0	0	0	0	1666	0	1663	1801	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1563	1569	0	0	0	0	1666	0	1663	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	19%	0%	1%	2%	2%	2%	2%	5%	2%	6%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	574	0	0	0	0	1014	0	103	835	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	141.7%
ICU Level of Service	H
Analysis Period (min)	15

HCM 6th TWSC
6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 Build
PM Peak Hour

Intersection												
Int Delay, s/veh	49.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↕	↗	
Traffic Vol, veh/h	44	3	557	0	0	0	0	463	521	100	810	0
Future Vol, veh/h	44	3	557	0	0	0	0	463	521	100	810	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	19	0	1	2	2	2	2	5	2	6	3	2
Mvmt Flow	45	3	574	0	0	0	0	477	537	103	835	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1518	1518	835	-	0	0	477	0	0
Stage 1	1041	1041	-	-	-	-	-	-	-
Stage 2	477	477	-	-	-	-	-	-	-
Critical Hdwy	6.7	5.9	5.91	-	-	-	4	-	-
Critical Hdwy Stg 1	4.99	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.99	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.2	4	3.1	-	-	-	3.1	-	-
Pot Cap-1 Maneuver	122	155	~ 413	0	-	-	834	-	0
Stage 1	407	368	-	0	-	-	-	-	0
Stage 2	713	606	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	107	0	~ 413	-	-	-	834	-	-
Mov Cap-2 Maneuver	107	0	-	-	-	-	-	-	-
Stage 1	407	0	-	-	-	-	-	-	-
Stage 2	625	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	204.4	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	107	413	834	-
HCM Lane V/C Ratio	-	-	0.453	1.39	0.124	-
HCM Control Delay (s)	-	-	63.9	216.3	9.9	-
HCM Lane LOS	-	-	F	F	A	-
HCM 95th %tile Q(veh)	-	-	2	27.9	0.4	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 Build
 PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	9	8	969	1339	10
Future Volume (vph)	3	9	8	969	1339	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1631	0	0	1801	1781	0
Flt Permitted	0.988					
Satd. Flow (perm)	1631	0	0	1801	1781	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	0	1007	1390	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	81.1% ICU Level of Service D
Analysis Period (min)	15

HCM 6th TWSC
10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 Build
PM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	9	8	969	1339	10
Future Vol, veh/h	3	9	8	969	1339	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	3	9	8	999	1380	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2400	1385	1390	0	-	0
Stage 1	1385	-	-	-	-	-
Stage 2	1015	-	-	-	-	-
Critical Hdwy	6.4	6.2	3.9	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	39	183	449	-	-	-
Stage 1	253	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	37	183	449	-	-	-
Mov Cap-2 Maneuver	37	-	-	-	-	-
Stage 1	243	-	-	-	-	-
Stage 2	388	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	50.1	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	449	-	92	-	-
HCM Lane V/C Ratio	0.018	-	0.134	-	-
HCM Control Delay (s)	13.2	0	50.1	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	34	97	9	42	36	79	723	14	50	975	327
Future Volume (vph)	224	34	97	9	42	36	79	723	14	50	975	327
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1670	0	1416	1704	0	1620	1694	0	1628	1678	0
Flt Permitted	0.704			0.669			0.107			0.257		
Satd. Flow (perm)	1200	1670	0	997	1704	0	182	1694	0	440	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102			38			3				54
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	11%	0%	0%	0%	4%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	236	138	0	9	82	0	83	776	0	53	1370	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6		6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0		12.0
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5		22.5
Total Split (s)	17.0	17.0		17.0	17.0		43.0	43.0		43.0		43.0
Total Split (%)	28.3%	28.3%		28.3%	28.3%		71.7%	71.7%		71.7%		71.7%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5		4.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0		-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5		5.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max		C-Max
Act Effect Green (s)	12.0	12.0		12.0	12.0		37.5	37.5		37.5		37.5
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.62	0.62		0.62		0.62
v/c Ratio	0.98	0.33		0.05	0.22		0.73	0.73		0.19		1.28
Control Delay	83.8	10.4		20.2	14.4		44.5	15.5		6.9		151.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	83.8	10.4		20.2	14.4		44.5	15.5		6.9		151.0
LOS	F	B		C	B		D	B		A		F
Approach Delay		56.7			14.9			18.3				145.6
Approach LOS		E			B			B				F
Queue Length 50th (ft)	86	11		3	13		38	356		7		~650
Queue Length 95th (ft)	#209	51		13	44		m#61	364		21		#882
Internal Link Dist (ft)		920			920			1160				2095

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2029 Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	240	415		199	371		113	1059		275	1069	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.98	0.33		0.05	0.22		0.73	0.73		0.19	1.28	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 89.4 Intersection LOS: F
 Intersection Capacity Utilization 103.7% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2029 Build
 PM Peak Hour





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	224	34	97	9	42	36	79	723	14	50	975	327
Future Volume (veh/h)	224	34	97	9	42	36	79	723	14	50	975	327
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1595	1820	1750	1912	1855	1912	1949	1921	1935
Adj Flow Rate, veh/h	236	36	78	9	44	24	83	761	14	53	1026	333
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	11	0	0	0	4	0	0	2	1
Cap, veh/h	354	116	252	280	221	121	120	1135	21	293	868	282
Arrive On Green	0.20	0.20	0.18	0.20	0.20	0.18	0.21	0.21	0.20	0.63	0.63	0.61
Sat Flow, veh/h	1406	581	1258	1091	1107	604	409	1815	33	725	1389	451
Grp Volume(v), veh/h	236	0	114	9	0	68	83	0	775	53	0	1359
Grp Sat Flow(s),veh/h/ln	1406	0	1839	1091	0	1711	409	0	1849	725	0	1839
Q Serve(g_s), s	10.0	0.0	3.2	0.4	0.0	2.0	0.0	0.0	23.2	3.6	0.0	37.5
Cycle Q Clear(g_c), s	12.0	0.0	3.2	3.6	0.0	2.0	37.5	0.0	23.2	26.8	0.0	37.5
Prop In Lane	1.00		0.68	1.00		0.35	1.00		0.02	1.00		0.25
Lane Grp Cap(c), veh/h	354	0	368	280	0	342	120	0	1156	293	0	1150
V/C Ratio(X)	0.67	0.00	0.31	0.03	0.00	0.20	0.69	0.00	0.67	0.18	0.00	1.18
Avail Cap(c_a), veh/h	354	0	368	280	0	342	120	0	1156	293	0	1150
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.66	0.00	0.66	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	20.8	22.0	0.0	20.1	42.6	0.0	18.1	18.8	0.0	11.4
Incr Delay (d2), s/veh	4.7	0.0	0.5	0.0	0.0	0.3	19.5	0.0	2.1	1.3	0.0	91.1
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	6.3	0.0	2.4	0.2	0.0	1.4	3.5	0.0	16.1	1.2	0.0	55.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	21.2	22.1	0.0	20.4	62.0	0.0	20.2	20.1	0.0	102.5
LnGrp LOS	C	A	C	C	A	C	E	A	C	C	A	F
Approach Vol, veh/h		350			77			858				1412
Approach Delay, s/veh		27.0			20.6			24.2				99.4
Approach LOS		C			C			C				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		17.0		43.0		17.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		36.5		11.0		36.5		11.0				
Max Q Clear Time (g_c+I1), s		25.2		14.0		39.5		5.6				
Green Ext Time (p_c), s		9.3		0.0		0.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	63.8
HCM 6th LOS	E

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	18	63	0	40	17	762	5	10	1036	35
Future Volume (vph)	15	0	18	63	0	40	17	762	5	10	1036	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1653	1581	0	1670	0	0	1639	0	0	1723	1648
Flt Permitted		0.762			0.804			0.970			0.992	
Satd. Flow (perm)	0	1326	1581	0	1384	0	0	1592	0	0	1709	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			1				45
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	19	0	108	0	0	825	0	0	1102	37
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		6			6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	15.0	15.0	15.0	15.0	15.0		45.0	45.0		45.0	45.0	45.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	75.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		8.7	8.7		8.7			45.0			45.0	45.0
Actuated g/C Ratio		0.14	0.14		0.14			0.75			0.75	0.75
v/c Ratio		0.08	0.07		0.44			0.69			0.86	0.03
Control Delay		22.1	1.7		18.8			9.3			7.5	0.1
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		22.1	1.7		18.8			9.3			7.5	0.1
LOS		C	A		B			A			A	A
Approach Delay		11.0			18.8			9.3			7.3	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		5	0		17			161			24	0
Queue Length 95th (ft)		19	4		55			289			m30	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		232	322		287			1195			1283	1248
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.07	0.06		0.38			0.69			0.86	0.03

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 25 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 8.7
 Intersection LOS: A
 Intersection Capacity Utilization 83.5%
 ICU Level of Service E
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	15	0	18	63	0	40	17	762	5	10	1036	35
Future Volume (veh/h)	15	0	18	63	0	40	17	762	5	10	1036	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1707	1778	1875	1846	1950
Adj Flow Rate, veh/h	16	0	11	66	0	27	18	802	5	11	1091	36
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	5	0	0	2	0
Cap, veh/h	290	0	168	201	4	42	71	1211	7	64	1349	1216
Arrive On Green	0.09	0.00	0.11	0.09	0.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1607	0	1586	931	33	395	13	1646	10	5	1832	1652
Grp Volume(v), veh/h	16	0	11	93	0	0	825	0	0	1102	0	36
Grp Sat Flow(s),veh/h/ln	1607	0	1586	1360	0	0	1669	0	0	1837	0	1652
Q Serve(g_s), s	0.0	0.0	0.4	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.4	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.71		0.29	0.02		0.01	0.01		1.00
Lane Grp Cap(c), veh/h	263	0	168	223	0	0	1262	0	0	1382	0	1216
V/C Ratio(X)	0.06	0.00	0.07	0.42	0.00	0.00	0.65	0.00	0.00	0.80	0.00	0.03
Avail Cap(c_a), veh/h	355	0	278	324	0	0	1262	0	0	1382	0	1216
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.00	0.09
Uniform Delay (d), s/veh	24.7	0.0	24.2	26.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	1.2	0.0	0.0	2.6	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.3	2.4	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	24.3	27.7	0.0	0.0	2.6	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		27			93			825				1138
Approach Delay, s/veh		24.6			27.7			2.6				0.4
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		49.2		10.8		49.2		10.8				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		39.0		9.5		39.0		9.5				
Max Q Clear Time (g_c+I1), s		2.0		2.5		2.0		6.1				
Green Ext Time (p_c), s		26.5		0.0		33.5		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				2.8								
HCM 6th LOS				A								

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	348	60	135	458	136	96	297	61	223	303	222
Future Volume (vph)	237	348	60	135	458	136	96	297	61	223	303	222
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%				4%
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1588	1791	1435	1512	1697	1577	1522	1781	0	1604	1640	1442
Flt Permitted	0.140			0.547			0.451			0.202		
Satd. Flow (perm)	234	1791	1435	871	1697	1577	723	1781	0	341	1640	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			159			8			229
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1028				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	5%	2%	3%	14%	7%	6%	1%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	359	62	139	472	140	99	369	0	230	312	229
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	23.0	68.0	68.0	45.0	45.0	45.0	15.0	32.0		20.0	37.0	37.0
Total Split (%)	19.2%	56.7%	56.7%	37.5%	37.5%	37.5%	12.5%	26.7%		16.7%	30.8%	30.8%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	58.1	58.1	58.1	36.1	36.1	36.1	39.1	30.4		49.6	35.7	35.7
Actuated g/C Ratio	0.48	0.48	0.48	0.30	0.30	0.30	0.33	0.25		0.41	0.30	0.30
v/c Ratio	0.82	0.41	0.08	0.53	0.93	0.24	0.34	0.81		0.80	0.64	0.39
Control Delay	44.9	20.9	1.0	42.3	65.9	4.1	27.4	57.4		37.6	36.1	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	44.9	20.9	1.0	42.3	65.9	4.1	27.4	57.4		37.6	36.1	7.1
LOS	D	C	A	D	E	A	C	E		D	D	A
Approach Delay		27.9			50.0			51.0			27.9	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	109	164	0	87	343	0	49	275		108	192	27
Queue Length 95th (ft)	#230	233	7	153	#519	34	90	#468		m146	m252	m41
Internal Link Dist (ft)		860			410			948			560	

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	310	932	795	286	558	625	297	457		288	487	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.79	0.39	0.08	0.49	0.85	0.22	0.33	0.81		0.80	0.64	0.39

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 38.2

Intersection LOS: D

Intersection Capacity Utilization 91.9%

ICU Level of Service F

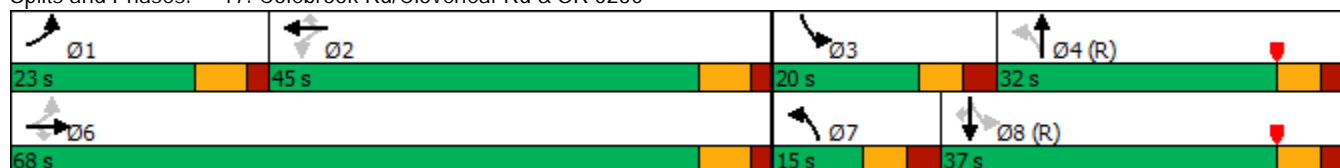
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	348	60	135	458	136	96	297	61	223	303	222
Future Volume (veh/h)	237	348	60	135	458	136	96	297	61	223	303	222
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1823	1823	1837	1724	1766	1822	1974	2156	2087	1697	1655	1655
Adj Flow Rate, veh/h	244	359	32	139	472	0	99	306	62	230	312	158
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	5	2	3	14	7	6	1	4	4
Cap, veh/h	302	837	715	325	511		351	484	98	367	548	464
Arrive On Green	0.12	0.46	0.46	0.29	0.29	0.00	0.06	0.28	0.27	0.12	0.33	0.33
Sat Flow, veh/h	1736	1823	1557	915	1766	1544	1880	1740	353	1616	1655	1402
Grp Volume(v), veh/h	244	359	32	139	472	0	99	0	368	230	312	158
Grp Sat Flow(s),veh/h/ln	1736	1823	1557	915	1766	1544	1880	0	2093	1616	1655	1402
Q Serve(g_s), s	11.1	15.9	1.4	15.3	31.1	0.0	4.4	0.0	18.5	11.6	18.7	10.2
Cycle Q Clear(g_c), s	11.1	15.9	1.4	15.3	31.1	0.0	4.4	0.0	18.5	11.6	18.7	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	302	837	715	325	511		351	0	583	367	548	464
V/C Ratio(X)	0.81	0.43	0.04	0.43	0.92		0.28	0.00	0.63	0.63	0.57	0.34
Avail Cap(c_a), veh/h	340	950	811	361	581		372	0	583	367	548	464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	21.9	17.9	35.7	41.4	0.0	28.1	0.0	38.0	26.2	33.1	30.2
Incr Delay (d2), s/veh	12.2	0.1	0.0	0.3	18.2	0.0	0.4	0.0	5.1	3.4	4.3	2.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	9.1	10.7	0.9	6.0	22.0	0.0	3.7	0.0	15.7	8.2	12.6	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.1	22.0	17.9	36.1	59.6	0.0	28.5	0.0	43.1	29.6	37.3	32.2
LnGrp LOS	D	C	B	D	E		C	A	D	C	D	C
Approach Vol, veh/h		635			611			467			700	
Approach Delay, s/veh		28.7			54.2			40.0			33.6	
Approach LOS		C			D			D			C	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	20.4	40.2	20.0	39.4		60.6	13.7	45.7				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	16.5	38.5	13.0	25.0		61.5	8.0	30.0				
Max Q Clear Time (g_c+I1), s	13.6	33.6	14.1	20.5		18.4	6.9	21.2				
Green Ext Time (p_c), s	0.3	0.1	0.0	0.7		0.1	0.0	1.7				

Intersection Summary

HCM 6th Ctrl Delay	38.8
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2029 Build
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	256	0	566	71	282	755	0
Future Volume (vph)	0	0	0	0	0	256	0	566	71	282	755	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%				-2%
Storage Length (ft)	0		0	0		0	0		150	325		0
Storage Lanes	0		1	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1809	1567	1787	1863	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1809	1567	1787	1863	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		500			500			640			600	
Travel Time (s)		8.5			8.5			17.5			16.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	278	0	615	77	307	821	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	76.2%
ICU Level of Service	D
Analysis Period (min)	15

HCM 6th TWSC
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2029 Build
 PM Peak Hour

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↖	↗	↖	↖	↖
Traffic Vol, veh/h	0	0	0	0	0	256	0	566	71	282	755	0
Future Vol, veh/h	0	0	0	0	0	256	0	566	71	282	755	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	150	325	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	4	2	2	3	2
Mvmt Flow	0	0	0	0	0	278	0	615	77	307	821	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	821	-	-	615	821	0	0	692	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.1	2.218	-	-	3	-	-
Pot Cap-1 Maneuver	0	0	374	0	0	517	808	-	-	746	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	-	374	-	-	517	808	-	-	746	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		19.8		0		3.6	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	808	-	-	-	517	746	-	-
HCM Lane V/C Ratio	-	-	-	-	0.538	0.411	-	-
HCM Control Delay (s)	0	-	-	0	19.8	13.2	-	-
HCM Lane LOS	A	-	-	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	3.2	2	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	462	461	77	150	326
Future Volume (vph)	169	462	461	77	150	326
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350			225	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1770	1881	1845	1583	1664	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1770	1881	1845	1583	1664	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	188	513	512	86	529	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	72.0%
Analysis Period (min)	15
	ICU Level of Service C

Intersection						
Int Delay, s/veh	44.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	169	462	461	77	150	326
Future Vol, veh/h	169	462	461	77	150	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	225	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	3	2	2	2
Mvmt Flow	188	513	512	86	167	362

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	598	0	-	0	1401 512
Stage 1	-	-	-	-	512 -
Stage 2	-	-	-	-	889 -
Critical Hdwy	4.5	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	722	-	-	-	167 593
Stage 1	-	-	-	-	682 -
Stage 2	-	-	-	-	446 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	722	-	-	-	~ 124 593
Mov Cap-2 Maneuver	-	-	-	-	272 -
Stage 1	-	-	-	-	505 -
Stage 2	-	-	-	-	446 -

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	148.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	722	-	-	-	432
HCM Lane V/C Ratio	0.26	-	-	-	1.224
HCM Control Delay (s)	11.7	-	-	-	148.3
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1	-	-	-	21.4

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
 29: SR 0230 & Ridge Run Rd

2029 Build
 PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	566	492	57	39	1
Future Volume (vph)	6	566	492	57	39	1
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1767	0	1668	0
Flt Permitted	0.950				0.953	
Satd. Flow (perm)	1754	1828	1767	0	1668	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1319	
Travel Time (s)		33.5	12.4		25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	590	572	0	42	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.8% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	566	492	57	39	1
Future Vol, veh/h	6	566	492	57	39	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	2	0	0
Mvmt Flow	6	590	513	59	41	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	572	0	-	0	1145 543
Stage 1	-	-	-	-	543 -
Stage 2	-	-	-	-	602 -
Critical Hdwy	4.1	-	-	-	6.8 6.4
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	786	-	-	-	214 554
Stage 1	-	-	-	-	622 -
Stage 2	-	-	-	-	579 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	786	-	-	-	212 554
Mov Cap-2 Maneuver	-	-	-	-	369 -
Stage 1	-	-	-	-	617 -
Stage 2	-	-	-	-	579 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	786	-	-	-	372
HCM Lane V/C Ratio	0.008	-	-	-	0.112
HCM Control Delay (s)	9.6	-	-	-	15.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2029 Build
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	86	83	78	4	52	66	33	301	6	98	358	55
Future Volume (vph)	86	83	78	4	52	66	33	301	6	98	358	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1388	0	0	1568	0	0	1670	0	0	1572	0
Flt Permitted		0.983			0.998			0.995			0.991	
Satd. Flow (perm)	0	1388	0	0	1568	0	0	1670	0	0	1572	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1146			1234			997			1028	
Travel Time (s)		22.3			24.0			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	257	0	0	127	0	0	354	0	0	532	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	74.4%
ICU Level of Service	D
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	40.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	86	83	78	4	52	66	33	301	6	98	358	55
Future Vol, veh/h	86	83	78	4	52	66	33	301	6	98	358	55
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	48	5	21	0	7	4	16	8	0	32	15	41
Mvmt Flow	90	86	81	4	54	69	34	314	6	102	373	57
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	21.1	13.4	24.1	66.8
HCM LOS	C	B	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	35%	3%	19%
Vol Thru, %	89%	34%	43%	70%
Vol Right, %	2%	32%	54%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	340	247	122	511
LT Vol	33	86	4	98
Through Vol	301	83	52	358
RT Vol	6	78	66	55
Lane Flow Rate	354	257	127	532
Geometry Grp	1	1	1	1
Degree of Util (X)	0.685	0.568	0.266	1.005
Departure Headway (Hd)	7.067	8.049	7.674	6.794
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	514	450	471	532
Service Time	5.067	6.049	5.674	4.879
HCM Lane V/C Ratio	0.689	0.571	0.27	1
HCM Control Delay	24.1	21.1	13.4	66.8
HCM Lane LOS	C	C	B	F
HCM 95th-tile Q	5.2	3.5	1.1	14.2

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2029 Build
SAT Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	691	84	150	596	91	146
Future Volume (vph)	691	84	150	596	91	146
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	12	12	14	11	12
Grade (%)	4%			-6%	-2%	
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	1837	0	1761	1958	1571	0
Flt Permitted			0.162		0.981	
Satd. Flow (perm)	1837	0	300	1958	1571	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)	7					
Link Speed (mph)	35			35	35	
Link Distance (ft)	1000			1200	1000	
Travel Time (s)	19.5			23.4	19.5	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	783	0	152	602	239	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases	2		6		4	
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	25.2		12.0	22.2	15.0	
Total Split (s)	52.0		13.0	65.0	45.0	
Total Split (%)	47.3%		11.8%	59.1%	40.9%	
Yellow Time (s)	4.2		3.0	4.2	4.2	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.2		4.0	5.2	5.2	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max		None	C-Max	None	
Act Effect Green (s)	60.9		75.0	73.8	25.8	
Actuated g/C Ratio	0.55		0.68	0.67	0.23	
v/c Ratio	0.77		0.47	0.46	0.65	
Control Delay	26.7		10.3	10.8	45.7	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	26.7		10.3	10.8	45.7	
LOS	C		B	B	D	
Approach Delay	26.7			10.7	45.7	
Approach LOS	C			B	D	
Queue Length 50th (ft)	406		36	210	153	
Queue Length 95th (ft)	#729		m62	m320	217	
Internal Link Dist (ft)	920			1120	920	

Lanes, Volumes, Timings
3: Maytown Rd & SR 0230

2029 Build
SAT Peak Hour

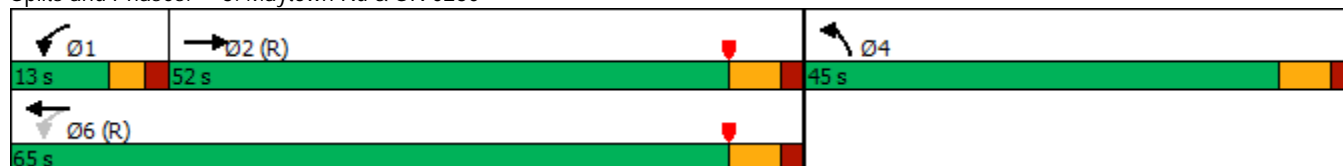


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)			150			
Base Capacity (vph)	1020		324	1312	568	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.77		0.47	0.46	0.42	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 97 (88%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 22.5
 Intersection LOS: C
 Intersection Capacity Utilization 79.3%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Maytown Rd & SR 0230



HCM 6th Signalized Intersection Summary
 3: Maytown Rd & SR 0230

2029 Build
 SAT Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (veh/h)	691	84	150	596	91	146
Future Volume (veh/h)	691	84	150	596	91	146
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1765	1711	2024	2090	1875	1860
Adj Flow Rate, veh/h	698	83	152	602	92	147
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	0	0	1	0	1
Cap, veh/h	971	115	410	1501	119	191
Arrive On Green	0.63	0.62	0.04	0.48	0.19	0.18
Sat Flow, veh/h	1547	184	1927	2090	636	1017
Grp Volume(v), veh/h	0	781	152	602	240	0
Grp Sat Flow(s),veh/h/ln	0	1731	1927	2090	1660	0
Q Serve(g_s), s	0.0	33.7	2.8	20.4	15.1	0.0
Cycle Q Clear(g_c), s	0.0	33.7	2.8	20.4	15.1	0.0
Prop In Lane		0.11	1.00		0.38	0.61
Lane Grp Cap(c), veh/h	0	1087	410	1501	311	0
V/C Ratio(X)	0.00	0.72	0.37	0.40	0.77	0.00
Avail Cap(c_a), veh/h	0	1087	464	1501	601	0
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	13.9	12.9	13.3	42.8	0.0
Incr Delay (d2), s/veh	0.0	4.1	0.6	0.8	13.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	19.0	2.5	16.0	11.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	18.0	13.5	14.1	56.3	0.0
LnGrp LOS	A	B	B	B	E	A
Approach Vol, veh/h	781			754	240	
Approach Delay, s/veh	18.0			14.0	56.3	
Approach LOS	B			B	E	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.0	74.2		25.8		84.2
Change Period (Y+Rc), s	5.0	6.2		6.2		6.2
Max Green Setting (Gmax), s	8.0	45.8		38.8		58.8
Max Q Clear Time (g_c+I1), s	4.8	35.7		17.1		22.4
Green Ext Time (p_c), s	0.1	8.0		2.5		16.6

Intersection Summary

HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
5: SR 0230 & Groff Ave

2029 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	898	0	1	914	112	0	0	1	58	0	36
Future Volume (vph)	17	898	0	1	914	112	0	0	1	58	0	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	11	12	12	11	12	11	12	12
Grade (%)		-3%			6%			-2%			-3%	
Storage Length (ft)	75		0	75		0	0		0	0		75
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1771	1846	0	1751	1738	0	0	1605	0	1771	1639	0
Link Speed (mph)		40			40			25			35	
Link Distance (ft)		1200			1060			200			1000	
Travel Time (s)		20.5			18.1			5.5			19.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	935	0	1	1069	0	0	1	0	60	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.4%
ICU Level of Service	C
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	
Traffic Vol, veh/h	17	898	0	1	914	112	0	0	1	58	0	36
Future Vol, veh/h	17	898	0	1	914	112	0	0	1	58	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	6	-	-	-2	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	18	935	0	1	952	117	0	0	1	60	0	38

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1069	0	0	935	0	0	2003	2042	935	1985	1984	1011
Stage 1	-	-	-	-	-	-	971	971	-	1013	1013	-
Stage 2	-	-	-	-	-	-	1032	1071	-	972	971	-
Critical Hdwy	3.7	-	-	5.5	-	-	6.7	6.1	6	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	604	-	-	414	-	-	59	72	356	68	86	332
Stage 1	-	-	-	-	-	-	376	372	-	378	378	-
Stage 2	-	-	-	-	-	-	349	338	-	397	392	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	604	-	-	414	-	-	51	70	356	66	83	332
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	70	-	66	83	-
Stage 1	-	-	-	-	-	-	365	361	-	367	377	-
Stage 2	-	-	-	-	-	-	309	337	-	384	380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	15.1	124.8
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	356	604	-	-	414	-	-	66	332
HCM Lane V/C Ratio	0.003	0.029	-	-	0.003	-	-	0.915	0.113
HCM Control Delay (s)	15.1	11.1	-	-	13.7	-	-	191.6	17.2
HCM Lane LOS		C	B	-	B	-	-	F	C
HCM 95th %tile Q(veh)		0	0.1	-	-	0	-	4.4	0.4

Lanes, Volumes, Timings
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	666	50	156	759	16	262	3	164	35	4	15
Future Volume (vph)	22	666	50	156	759	16	262	3	164	35	4	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	11	12	10	11	14	11	12	12	12	14	12
Grade (%)		-7%			3%			-5%			-6%	
Storage Length (ft)	200		150	250		100	200		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1652	1783	1584	1572	1697	1608	1694	1574	0	1761	1740	0
Flt Permitted	0.318			0.200			0.744			0.536		
Satd. Flow (perm)	553	1783	1584	331	1697	1573	1327	1574	0	994	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83			29		173			16	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1060			1340			300			300	
Travel Time (s)		18.1			22.8			8.2			8.2	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	701	53	164	799	17	276	176	0	37	20	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	3.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	21.8	21.8	21.8	12.5	21.8	21.8	13.0	13.0		13.0	13.0	
Total Split (s)	57.0	57.0	57.0	22.0	79.0	79.0	31.0	31.0		31.0	31.0	
Total Split (%)	51.8%	51.8%	51.8%	20.0%	71.8%	71.8%	28.2%	28.2%		28.2%	28.2%	
Yellow Time (s)	4.8	4.8	4.8	3.0	4.8	4.8	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.5	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.8	5.8	5.8	4.5	5.8	5.8	4.9	4.9		4.9	4.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	58.6	58.6	58.6	75.4	74.1	74.1	25.2	25.2		25.2	25.2	
Actuated g/C Ratio	0.53	0.53	0.53	0.69	0.67	0.67	0.23	0.23		0.23	0.23	
v/c Ratio	0.08	0.74	0.06	0.47	0.70	0.02	0.91	0.36		0.16	0.05	
Control Delay	16.1	21.7	2.9	12.3	11.3	1.8	75.1	7.6		35.6	16.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.1	21.7	2.9	12.3	11.3	1.8	75.1	7.6		35.6	16.9	
LOS	B	C	A	B	B	A	E	A		D	B	
Approach Delay		20.3			11.3			48.8			29.0	
Approach LOS		C			B			D			C	
Queue Length 50th (ft)	6	202	0	27	174	0	189	2		21	2	
Queue Length 95th (ft)	m15	376	m5	m87	297	m1	#341	57		50	22	

Lanes, Volumes, Timings
 7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		980			1260			220			220	
Turn Bay Length (ft)	200		150	250		100	200			100		
Base Capacity (vph)	294	949	882	424	1143	1068	314	505		235	425	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.74	0.06	0.39	0.70	0.02	0.88	0.35		0.16	0.05	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 4 (4%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 22.3
 Intersection LOS: C
 Intersection Capacity Utilization 91.2%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Giant Plaza Dr/Carey Ln & SR 0230



HCM 6th Signalized Intersection Summary
7: Giant Plaza Dr/Carey Ln & SR 0230

2029 Build
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	666	50	156	759	16	262	3	164	35	4	15
Future Volume (veh/h)	22	666	50	156	759	16	262	3	164	35	4	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2061	2047	2061	1750	1736	1820	1986	1986	1986	2024	2104	2024
Adj Flow Rate, veh/h	23	701	31	164	799	12	276	3	108	37	4	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	491	1176	1002	574	1193	1058	385	10	354	294	124	279
Arrive On Green	1.00	1.00	1.00	0.14	1.00	1.00	0.22	0.22	0.21	0.22	0.22	0.21
Sat Flow, veh/h	741	2047	1743	1666	1736	1540	1488	46	1645	1387	576	1296
Grp Volume(v), veh/h	23	701	31	164	799	12	276	0	111	37	0	13
Grp Sat Flow(s),veh/h/ln	741	2047	1743	1666	1736	1540	1488	0	1690	1387	0	1871
Q Serve(g_s), s	0.0	0.0	0.0	4.1	0.0	0.0	19.7	0.0	6.1	2.5	0.0	0.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	4.1	0.0	0.0	19.8	0.0	6.1	8.1	0.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.69
Lane Grp Cap(c), veh/h	491	1176	1002	574	1193	1058	385	0	364	294	0	403
V/C Ratio(X)	0.05	0.60	0.03	0.29	0.67	0.01	0.72	0.00	0.30	0.13	0.00	0.03
Avail Cap(c_a), veh/h	491	1176	1002	720	1193	1058	417	0	401	324	0	444
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.2	0.0	0.0	41.7	0.0	36.7	39.4	0.0	34.4
Incr Delay (d2), s/veh	0.2	2.2	0.1	0.2	2.2	0.0	5.4	0.0	0.5	0.2	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.0	1.3	0.0	2.1	1.3	0.0	12.4	0.0	4.7	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	2.2	0.1	6.4	2.2	0.0	47.0	0.0	37.1	39.6	0.0	34.4
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h		755			975			387				50
Approach Delay, s/veh		2.1			2.9			44.2				38.3
Approach LOS		A			A			D				D
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.4	69.0		28.6		81.4		28.6				
Change Period (Y+Rc), s	5.5	6.8		* 5.9		6.8		* 5.9				
Max Green Setting (Gmax), s	16.5	50.2		* 25		72.2		* 25				
Max Q Clear Time (g_c+I1), s	6.6	2.5		10.6		2.5		22.3				
Green Ext Time (p_c), s	0.3	0.9		0.1		1.0		0.4				

Intersection Summary

HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
10: Driveway/Market Sq Dr & SR 0230

2029 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	611	13	4	741	68	9	3	10	63	40	130
Future Volume (vph)	109	611	13	4	741	68	9	3	10	63	40	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	14	12	12	12	12
Grade (%)		4%			-4%			0%				-1%
Storage Length (ft)	275		0	225		225	0		0	300		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1676	1742	0	1744	1818	1561	0	1765	0	1719	1574	0
Flt Permitted	0.242			0.410				0.601		0.742		
Satd. Flow (perm)	427	1742	0	753	1818	1561	0	1082	0	1342	1574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				80		11			135	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1340			610			200			300	
Travel Time (s)		22.8			10.4			5.5			8.2	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	671	0	4	797	73	0	24	0	68	183	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0	15.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	11.0	22.4		22.4	22.4	22.4	13.0	13.0		13.0	13.0	
Total Split (s)	14.0	82.0		68.0	68.0	68.0	28.0	28.0		28.0	28.0	
Total Split (%)	12.7%	74.5%		61.8%	61.8%	61.8%	25.5%	25.5%		25.5%	25.5%	
Yellow Time (s)	3.0	4.4		4.4	4.4	4.4	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.0		2.0	2.0	2.0	2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.5	5.4		5.4	5.4	5.4		4.6		4.6	4.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	88.7	87.8		75.2	75.2	75.2		12.2		12.2	12.2	
Actuated g/C Ratio	0.81	0.80		0.68	0.68	0.68		0.11		0.11	0.11	
v/c Ratio	0.27	0.48		0.01	0.64	0.07		0.19		0.46	0.62	
Control Delay	4.9	6.3		6.0	14.1	1.4		31.7		54.7	23.6	
Queue Delay	0.0	0.0		0.0	0.2	0.0		0.0		0.0	0.0	
Total Delay	4.9	6.3		6.0	14.3	1.4		31.7		54.7	23.6	
LOS	A	A		A	B	A		C		D	C	
Approach Delay		6.1			13.1			31.7			32.0	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	20	147		1	343	2		8		46	32	
Queue Length 95th (ft)	m36	254		m2	558	7		33		87	98	

Lanes, Volumes, Timings
 10: Driveway/Market Sq Dr & SR 0230

2029 Build
 SAT Peak Hour

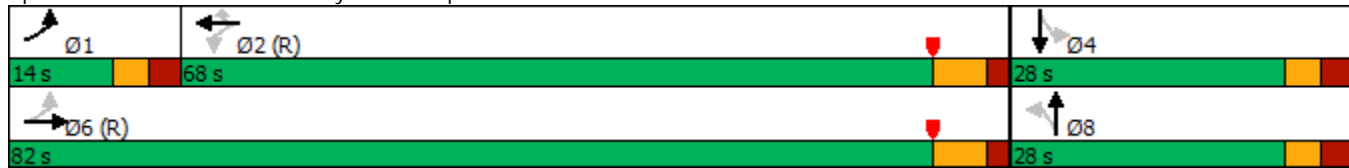


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1260			530			120			220	
Turn Bay Length (ft)	275			225		225				300		
Base Capacity (vph)	452	1391		514	1242	1091		238		285	441	
Starvation Cap Reductn	0	0		0	59	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.26	0.48		0.01	0.67	0.07		0.10		0.24	0.41	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 9 (8%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 12.9
 Intersection LOS: B
 Intersection Capacity Utilization 70.9%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Driveway/Market Sq Dr & SR 0230



HCM 6th Signalized Intersection Summary
 10: Driveway/Market Sq Dr & SR 0230

2029 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	611	13	4	741	68	9	3	10	63	40	130
Future Volume (veh/h)	109	611	13	4	741	68	9	3	10	63	40	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1711	1949	1935	1949	1800	1872	1800	1837	1837	1837
Adj Flow Rate, veh/h	117	657	12	4	797	60	10	3	7	68	43	69
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	570	1348	25	644	1399	1194	67	27	24	192	62	99
Arrive On Green	0.10	1.00	1.00	1.00	1.00	1.00	0.09	0.10	0.09	0.10	0.10	0.09
Sat Flow, veh/h	1629	1661	30	800	1935	1652	182	282	250	1375	633	1015
Grp Volume(v), veh/h	117	0	669	4	797	60	20	0	0	68	0	112
Grp Sat Flow(s),veh/h/ln	1629	0	1691	800	1935	1652	713	0	0	1375	0	1648
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	7.3
Cycle Q Clear(g_c), s	1.8	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0	5.7	0.0	7.3
Prop In Lane	1.00		0.02	1.00		1.00	0.50		0.35	1.00		0.62
Lane Grp Cap(c), veh/h	570	0	1373	644	1399	1194	112	0	0	192	0	160
V/C Ratio(X)	0.21	0.00	0.49	0.01	0.57	0.05	0.18	0.00	0.00	0.35	0.00	0.70
Avail Cap(c_a), veh/h	632	0	1373	644	1399	1194	279	0	0	350	0	351
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.00	0.64	0.84	0.84	0.84	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.4	0.0	0.0	0.0	0.0	0.0	45.9	0.0	0.0	47.4	0.0	48.4
Incr Delay (d2), s/veh	0.1	0.0	0.8	0.0	1.4	0.1	0.8	0.0	0.0	1.1	0.0	5.4
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.7	0.0	0.5	0.0	1.0	0.0	1.0	0.0	0.0	3.3	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.5	0.0	0.8	0.0	1.4	0.1	46.6	0.0	0.0	48.5	0.0	53.8
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	D
Approach Vol, veh/h		786			861			20			180	
Approach Delay, s/veh		1.1			1.3			46.6			51.8	
Approach LOS		A			A			D			D	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.8	84.9		15.3		94.7		15.3				
Change Period (Y+Rc), s	5.5	6.4		5.6		6.4		5.6				
Max Green Setting (Gmax), s	8.5	61.6		22.4		75.6		22.4				
Max Q Clear Time (g_c+I1), s	4.3	2.5		9.3		2.5		9.3				
Green Ext Time (p_c), s	0.1	1.1		0.5		0.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay	6.6
HCM 6th LOS	A

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	588	24	21	621	14	68	24	18	16	21	76
Future Volume (vph)	55	588	24	21	621	14	68	24	18	16	21	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	10	10	12	10	12	12	12	15	12
Grade (%)		3%			-3%			3%				-4%
Storage Length (ft)	125		0	125		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1651	1746	0	1620	1700	0	1541	1658	0	0	1823	0
Flt Permitted	0.368			0.380			0.531				0.950	
Satd. Flow (perm)	640	1746	0	648	1700	0	861	1658	0	0	1744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			19				80
Link Speed (mph)		40			40			35				35
Link Distance (ft)		610			1000			350				1000
Travel Time (s)		10.4			17.0			6.8				19.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	644	0	22	669	0	72	44	0	0	119	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4		4
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0		3.0
Minimum Split (s)	21.9	21.9		21.9	21.9		13.0	13.0		13.0		13.0
Total Split (s)	64.0	64.0		64.0	64.0		46.0	46.0		46.0		46.0
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%		41.8%
Yellow Time (s)	4.3	4.3		4.3	4.3		4.0	4.0		4.0		4.0
All-Red Time (s)	1.6	1.6		1.6	1.6		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0				-1.0
Total Lost Time (s)	4.9	4.9		4.9	4.9		5.0	5.0				5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None		None
Act Effect Green (s)	86.4	86.4		86.4	86.4		13.7	13.7				13.7
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.12	0.12				0.12
v/c Ratio	0.12	0.47		0.04	0.50		0.67	0.20				0.41
Control Delay	5.7	7.3		3.8	6.3		74.1	28.6				20.6
Queue Delay	0.0	0.1		0.0	0.1		0.0	0.0				0.0
Total Delay	5.7	7.4		3.8	6.4		74.1	28.6				20.6
LOS	A	A		A	A		E	C				C
Approach Delay		7.3			6.3			56.9				20.6
Approach LOS		A			A			E				C
Queue Length 50th (ft)	11	169		3	135		49	16				25
Queue Length 95th (ft)	29	226		11	263		95	47				75
Internal Link Dist (ft)		530			920			270				920

Lanes, Volumes, Timings
13: Sheaffer Rd & SR 0230

2029 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125			125			75					
Base Capacity (vph)	502	1371		508	1335		320	629				700
Starvation Cap Reductn	0	107		0	0		0	0				0
Spillback Cap Reductn	0	0		0	69		0	0				3
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.12	0.51		0.04	0.53		0.23	0.07				0.17

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 11.4
 Intersection Capacity Utilization 70.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 13: Sheaffer Rd & SR 0230



HCM 6th Signalized Intersection Summary
 13: Sheaffer Rd & SR 0230

2029 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Volume (veh/h)	55	588	24	21	621	14	68	24	18	16	21	76
Future Volume (veh/h)	55	588	24	21	621	14	68	24	18	16	21	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1722	1736	1750	1912	1912	1912	1722	1750	1750	1949	2027	1949
Adj Flow Rate, veh/h	58	619	20	22	654	14	72	25	7	17	22	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	1	0	0	0	0	2	0	0	0	0	0
Cap, veh/h	589	1390	45	737	1551	33	173	103	29	63	53	64
Arrive On Green	1.00	1.00	1.00	0.83	0.83	0.82	0.08	0.08	0.07	0.07	0.08	0.07
Sat Flow, veh/h	708	1672	54	807	1865	40	1242	1315	368	286	677	815
Grp Volume(v), veh/h	58	0	639	22	0	668	72	0	32	72	0	0
Grp Sat Flow(s),veh/h/ln	708	0	1726	807	0	1905	1242	0	1683	1778	0	0
Q Serve(g_s), s	1.1	0.0	0.0	0.5	0.0	10.0	1.1	0.0	2.0	1.9	0.0	0.0
Cycle Q Clear(g_c), s	11.1	0.0	0.0	0.5	0.0	10.0	5.3	0.0	2.0	4.2	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.02	1.00		0.22	0.24		0.46
Lane Grp Cap(c), veh/h	589	0	1435	737	0	1584	173	0	132	164	0	0
V/C Ratio(X)	0.10	0.00	0.45	0.03	0.00	0.42	0.42	0.00	0.24	0.44	0.00	0.00
Avail Cap(c_a), veh/h	589	0	1435	737	0	1584	538	0	627	675	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.00	0.87	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.6	0.0	0.0	1.6	0.0	2.4	49.1	0.0	47.7	49.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.9	0.1	0.0	0.8	1.6	0.0	0.9	1.9	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.6	0.1	0.0	4.0	3.6	0.0	1.5	3.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.9	0.0	0.9	1.7	0.0	3.2	50.7	0.0	48.7	50.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		697			690			104				72
Approach Delay, s/veh		0.9			3.2			50.1				50.8
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		96.4		13.6		96.4		13.6				
Change Period (Y+Rc), s		* 5.9		6.0		* 5.9		6.0				
Max Green Setting (Gmax), s		* 58		40.0		* 58		40.0				
Max Q Clear Time (g_c+I1), s		2.0		6.2		12.0		7.3				
Green Ext Time (p_c), s		25.2		0.2		24.8		0.3				

Intersection Summary



















HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	436	1	60	272	142	0	0	157	28
Future Volume (vph)	0	0	0	436	1	60	272	142	0	0	157	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	10	11	11	12	12	11	16
Grade (%)		3%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	200		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1640	1442	1574	1641	0	0	1740	1578
Flt Permitted					0.952		0.489					
Satd. Flow (perm)	0	0	0	0	1640	1442	810	1641	0	0	1740	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164						155
Link Speed (mph)		25			25			40				40
Link Distance (ft)		1000			1000			550				996
Travel Time (s)		27.3			27.3			9.4				17.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	4%	5%	2%	2%	1%	11%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	455	63	283	148	0	0	164	29
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				12.5	12.5	12.5	13.0	22.0			22.0	22.0
Total Split (s)				25.0	25.0	25.0	13.0	35.0			22.0	22.0
Total Split (%)				41.7%	41.7%	41.7%	21.7%	58.3%			36.7%	36.7%
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	None	Min			Min	Min
Act Effect Green (s)					19.0	19.0	27.9	27.9			14.8	14.8
Actuated g/C Ratio					0.34	0.34	0.49	0.49			0.26	0.26
v/c Ratio					0.82	0.11	0.56	0.18			0.36	0.05
Control Delay					32.7	0.4	14.1	9.1			19.9	0.2
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					32.7	0.4	14.1	9.1			19.9	0.2
LOS					C	A	B	A			B	A
Approach Delay					28.8			12.4			17.0	
Approach LOS					C			B			B	
Queue Length 50th (ft)					135	0	57	27			47	0
Queue Length 95th (ft)					#291	0	104	55			91	0
Internal Link Dist (ft)		920			920			470			916	

Lanes, Volumes, Timings
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 SAT Peak Hour

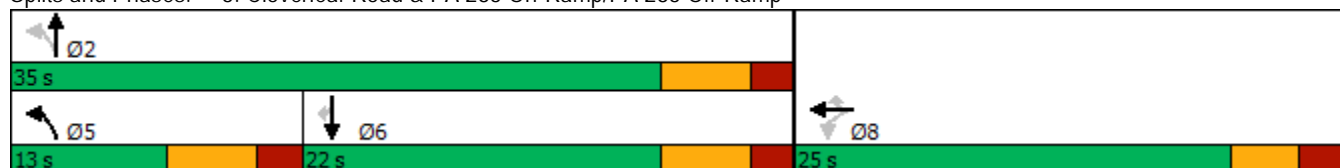


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)						400	200					75
Base Capacity (vph)					598	630	508	876			526	585
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.76	0.10	0.56	0.17			0.31	0.05

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	56.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	20.6
Intersection LOS:	C
Intersection Capacity Utilization:	98.7%
ICU Level of Service:	F
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp



HCM 6th Signalized Intersection Summary
 3: Cloverleaf Road & PA 283 On-Ramp/PA 283 Off-Ramp

2029 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↕	↗
Traffic Volume (veh/h)	0	0	0	436	1	60	272	142	0	0	157	28
Future Volume (veh/h)	0	0	0	436	1	60	272	142	0	0	157	28
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1846	1875	1875	1722	1707	0	0	1860	1787
Adj Flow Rate, veh/h				454	1	0	283	148	0	0	164	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	0	4	5	0	0	1	11
Cap, veh/h				562	1		592	856	0	0	466	
Arrive On Green				0.30	0.32	0.00	0.15	0.50	0.00	0.00	0.25	0.00
Sat Flow, veh/h				1782	4	1589	1640	1707	0	0	1860	1514
Grp Volume(v), veh/h				455	0	0	283	148	0	0	164	0
Grp Sat Flow(s),veh/h/ln				1785	0	1589	1640	1707	0	0	1860	1514
Q Serve(g_s), s				12.2	0.0	0.0	6.0	2.5	0.0	0.0	3.8	0.0
Cycle Q Clear(g_c), s				12.2	0.0	0.0	6.0	2.5	0.0	0.0	3.8	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				563	0		592	856	0	0	466	
V/C Ratio(X)				0.81	0.00		0.48	0.17	0.00	0.00	0.35	
Avail Cap(c_a), veh/h				706	0		592	988	0	0	610	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				16.8	0.0	0.0	10.1	7.1	0.0	0.0	16.0	0.0
Incr Delay (d2), s/veh				5.6	0.0	0.0	0.6	0.3	0.0	0.0	1.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				9.2	0.0	0.0	3.1	1.3	0.0	0.0	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.4	0.0	0.0	10.7	7.4	0.0	0.0	17.6	0.0
LnGrp LOS				C	A		B	A	A	A	B	
Approach Vol, veh/h					455			431			164	
Approach Delay, s/veh					22.4			9.6			17.6	
Approach LOS					C			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.0			13.0	18.0		20.9				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		29.0			7.0	16.0		19.5				
Max Q Clear Time (g_c+I1), s		4.5			8.0	5.8		14.2				
Green Ext Time (p_c), s		2.9			0.0	1.8		1.2				

Intersection Summary


















HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 6: Cloverleaf Road & PA 283 EB Off-Ramp/PA 283 EB On-Ramp

2029 Build
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	0	276	0	0	0	0	381	442	89	507	0
Future Volume (vph)	24	0	276	0	0	0	0	381	442	89	507	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	11	12	12	12	12	11	12	11	11	12
Grade (%)		-3%			3%			-2%			-2%	
Storage Length (ft)	325		0	0		0	0		0	75		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1621	1554	0	0	0	0	1673	0	1762	1801	0
Flt Permitted		0.950								0.950		
Satd. Flow (perm)	0	1621	1554	0	0	0	0	1673	0	1762	1801	0
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		1000			1000			325			550	
Travel Time (s)		27.3			27.3			5.5			9.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	13%	0%	2%	2%	2%	2%	2%	4%	2%	0%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	297	0	0	0	0	885	0	96	545	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	98.7%
Analysis Period (min)	15
	ICU Level of Service F

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↙	↕	
Traffic Vol, veh/h	24	0	276	0	0	0	0	381	442	89	507	0
Future Vol, veh/h	24	0	276	0	0	0	0	381	442	89	507	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	13	0	2	2	2	2	2	4	2	0	3	2
Mvmt Flow	26	0	297	0	0	0	0	410	475	96	545	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1147	1147	545	-	0	0	410	0	0
Stage 1	737	737	-	-	-	-	-	-	-
Stage 2	410	410	-	-	-	-	-	-	-
Critical Hdwy	6.6	5.9	5.92	-	-	-	3.9	-	-
Critical Hdwy Stg 1	4.93	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.93	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.1	4	3.1	-	-	-	3	-	-
Pot Cap-1 Maneuver	223	243	594	0	-	-	909	-	0
Stage 1	572	483	-	0	-	-	-	-	0
Stage 2	786	641	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	199	0	594	-	-	-	909	-	-
Mov Cap-2 Maneuver	199	0	-	-	-	-	-	-	-
Stage 1	572	0	-	-	-	-	-	-	-
Stage 2	703	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	199	594	909	-
HCM Lane V/C Ratio	-	-	0.13	0.5	0.105	-
HCM Control Delay (s)	-	-	25.8	17	9.4	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.4	2.8	0.4	-

Lanes, Volumes, Timings
 10: Cloverleaf Rd/Cloverleaf Road & Merts Drive

2029 Build
 SAT Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	11	14	795	798	3
Future Volume (vph)	6	11	14	795	798	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	11	12
Grade (%)	0%			-2%	2%	
Satd. Flow (prot)	1556	0	0	1800	1798	0
Flt Permitted	0.984			0.999		
Satd. Flow (perm)	1556	0	0	1800	1798	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	750			2175	325	
Travel Time (s)	20.5			37.1	5.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	17%	0%	0%	3%	1%	33%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	861	852	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	63.1%
ICU Level of Service	B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	11	14	795	798	3
Future Vol, veh/h	6	11	14	795	798	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-2	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	17	0	0	3	1	33
Mvmt Flow	6	12	15	846	849	3






















Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1727	851	852	0	0
Stage 1	851	-	-	-	-
Stage 2	876	-	-	-	-
Critical Hdwy	6.57	6.2	3.9	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-
Follow-up Hdwy	3.2	3.1	3	-	-
Pot Cap-1 Maneuver	94	378	666	-	-
Stage 1	430	-	-	-	-
Stage 2	418	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	90	378	666	-	-
Mov Cap-2 Maneuver	90	-	-	-	-
Stage 1	412	-	-	-	-
Stage 2	418	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.5	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	666	-	178	-	-
HCM Lane V/C Ratio	0.022	-	0.102	-	-
HCM Control Delay (s)	10.5	0	27.5	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	24	76	11	22	33	51	633	8	20	616	185
Future Volume (vph)	155	24	76	11	22	33	51	633	8	20	616	185
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1664	0	1572	1636	0	1620	1712	0	1550	1700	0
Flt Permitted	0.719			0.689			0.223			0.327		
Satd. Flow (perm)	1226	1664	0	1140	1636	0	380	1712	0	534	1700	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		80			35			2				42
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	0%	3%	0%	5%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	163	105	0	12	58	0	54	674	0	21	843	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	20.0	20.0		20.0	20.0		40.0	40.0		40.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	12.8	12.8		12.5	12.5		40.4	40.4		40.4	40.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.67	0.67		0.67	0.67	
v/c Ratio	0.62	0.25		0.05	0.16		0.21	0.58		0.06	0.73	
Control Delay	32.0	9.0		17.9	11.1		7.3	10.0		6.2	14.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.0	9.0		17.9	11.1		7.3	10.0		6.2	14.5	
LOS	C	A		B	B		A	B		A	B	
Approach Delay		23.0			12.2			9.8			14.3	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)	52	7		3	7		8	143		3	202	
Queue Length 95th (ft)	104	39		14	30		m18	336		11	#458	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2029 Build
 SAT Peak Hour

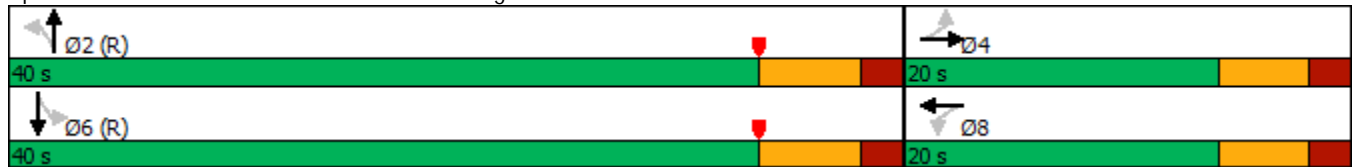


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	306	476		285	435		256	1154		360	1159	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.53	0.22		0.04	0.13		0.21	0.58		0.06	0.73	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 13.7
 Intersection LOS: B
 Intersection Capacity Utilization 70.6%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2029 Build
 SAT Peak Hour





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	24	76	11	22	33	51	633	8	20	616	185
Future Volume (veh/h)	155	24	76	11	22	33	51	633	8	20	616	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1750	1820	1708	1912	1869	1912	1878	1935	1949
Adj Flow Rate, veh/h	163	25	53	12	23	21	54	666	7	21	648	161
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	0	0	3	0	3	0	5	1	0
Cap, veh/h	352	108	229	301	161	147	372	1185	12	365	960	239
Arrive On Green	0.18	0.18	0.17	0.18	0.18	0.17	0.21	0.21	0.21	0.64	0.64	0.62
Sat Flow, veh/h	1436	590	1251	1236	876	800	689	1846	19	768	1496	372
Grp Volume(v), veh/h	163	0	78	12	0	44	54	0	673	21	0	809
Grp Sat Flow(s),veh/h/ln	1436	0	1841	1236	0	1676	689	0	1866	768	0	1868
Q Serve(g_s), s	6.4	0.0	2.2	0.5	0.0	1.3	4.2	0.0	19.4	1.1	0.0	16.5
Cycle Q Clear(g_c), s	7.8	0.0	2.2	2.7	0.0	1.3	20.8	0.0	19.4	20.5	0.0	16.5
Prop In Lane	1.00		0.68	1.00		0.48	1.00		0.01	1.00		0.20
Lane Grp Cap(c), veh/h	352	0	338	301	0	307	372	0	1197	365	0	1198
V/C Ratio(X)	0.46	0.00	0.23	0.04	0.00	0.14	0.15	0.00	0.56	0.06	0.00	0.68
Avail Cap(c_a), veh/h	447	0	460	384	0	419	372	0	1197	365	0	1198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.85	0.00	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	21.2	22.1	0.0	20.8	24.1	0.0	16.1	14.3	0.0	6.9
Incr Delay (d2), s/veh	1.0	0.0	0.3	0.1	0.0	0.2	0.7	0.0	1.6	0.3	0.0	3.1
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	3.8	0.0	1.6	0.2	0.0	0.9	1.5	0.0	14.5	0.4	0.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	21.5	22.1	0.0	21.0	24.8	0.0	17.7	14.6	0.0	9.9
LnGrp LOS	C	A	C	C	A	C	C	A	B	B	A	A
Approach Vol, veh/h		241			56			727				830
Approach Delay, s/veh		23.7			21.2			18.3				10.0
Approach LOS		C			C			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.0		16.0		44.0		16.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		33.5		14.0		33.5		14.0				
Max Q Clear Time (g_c+I1), s		21.4		9.8		18.5		4.7				
Green Ext Time (p_c), s		9.0		0.3		12.4		0.1				

Intersection Summary

HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Lanes, Volumes, Timings
14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1	13	24	0	7	16	683	7	11	709	7
Future Volume (vph)	5	1	13	24	0	7	16	683	7	11	709	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	13	12	12	12	12	11	12	12	11	14
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		125	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1670	1581	0	1696	0	0	1671	0	0	1722	1648
Flt Permitted					0.990			0.981			0.989	
Satd. Flow (perm)	0	1740	1581	0	1746	0	0	1641	0	0	1705	1648
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		55			2				45
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		750			1000			600			1240	
Travel Time (s)		20.5			27.3			10.2			21.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	14	0	32	0	0	743	0	0	758	7
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	12.5	12.5	12.5	12.5	12.5		22.0	22.0		22.0	22.0	22.0
Total Split (s)	16.0	16.0	16.0	16.0	16.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	73.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		4.5	4.5		4.5			5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)		7.0	7.0		7.0			53.2			53.2	53.2
Actuated g/C Ratio		0.12	0.12		0.12			0.89			0.89	0.89
v/c Ratio		0.03	0.06		0.13			0.51			0.50	0.00
Control Delay		23.5	0.5		5.2			4.2			2.3	0.0
Queue Delay		0.0	0.0		0.0			0.0			0.0	0.0
Total Delay		23.5	0.5		5.2			4.2			2.3	0.0
LOS		C	A		A			A			A	A
Approach Delay		7.4			5.2			4.2			2.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2	0		0			0			0	0
Queue Length 95th (ft)		11	0		13			194			14	m0
Internal Link Dist (ft)		670			920			520			1160	

Lanes, Volumes, Timings
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
 SAT Peak Hour

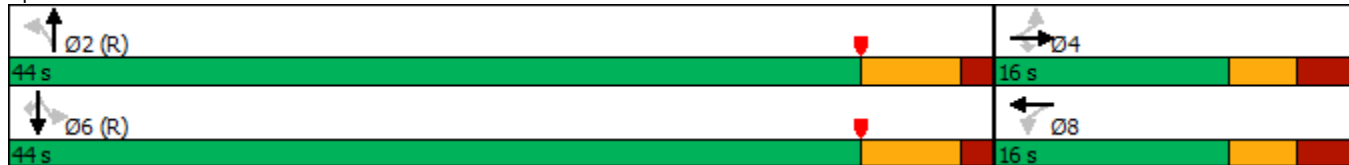


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			125									100
Base Capacity (vph)		333	347		379			1454			1511	1466
Starvation Cap Reductn		0	0		0			0			0	0
Spillback Cap Reductn		0	0		0			0			0	0
Storage Cap Reductn		0	0		0			0			0	0
Reduced v/c Ratio		0.02	0.04		0.08			0.51			0.50	0.00

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 33 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 3.3
 Intersection LOS: A
 Intersection Capacity Utilization 68.4%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr



HCM 6th Signalized Intersection Summary
 14: Cloverleaf Rd & Andrew Ave/Norlanco Dr

2029 Build
 SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (veh/h)	5	1	13	24	0	7	16	683	7	11	709	7
Future Volume (veh/h)	5	1	13	24	0	7	16	683	7	11	709	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1872	1875	1875	1875	1778	1736	1778	1875	1846	1950
Adj Flow Rate, veh/h	5	1	7	25	0	3	17	719	7	12	746	7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	172	12	71	164	0	6	72	1339	13	67	1455	1317
Arrive On Green	0.03	0.04	0.04	0.03	0.00	0.03	0.78	0.80	0.78	1.00	1.00	1.00
Sat Flow, veh/h	1393	279	1586	1121	0	134	14	1680	16	8	1825	1652
Grp Volume(v), veh/h	6	0	7	28	0	0	743	0	0	758	0	7
Grp Sat Flow(s),veh/h/ln	1672	0	1586	1255	0	0	1710	0	0	1833	0	1652
Q Serve(g_s), s	0.0	0.0	0.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.3	1.4	0.0	0.0	9.3	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.83		1.00	0.89		0.11	0.02		0.01	0.02		1.00
Lane Grp Cap(c), veh/h	157	0	71	149	0	0	1396	0	0	1492	0	1317
V/C Ratio(X)	0.04	0.00	0.10	0.19	0.00	0.00	0.53	0.00	0.00	0.51	0.00	0.01
Avail Cap(c_a), veh/h	365	0	304	359	0	0	1396	0	0	1492	0	1317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.63	0.00	0.63
Uniform Delay (d), s/veh	27.9	0.0	27.5	28.6	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.6	0.0	0.0	1.5	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.2	0.0	0.2	0.8	0.0	0.0	1.8	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	28.1	29.2	0.0	0.0	3.6	0.0	0.0	0.8	0.0	0.0
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		13			28			743			765	
Approach Delay, s/veh		28.0			29.2			3.6			0.8	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		52.8		7.2		52.8		7.2				
Change Period (Y+Rc), s		6.0		5.5		6.0		5.5				
Max Green Setting (Gmax), s		38.0		10.5		38.0		10.5				
Max Q Clear Time (g_c+I1), s		11.3		2.3		2.0		3.4				
Green Ext Time (p_c), s		18.5		0.0		23.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			2.9									
HCM 6th LOS			A									

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	367	56	126	451	139	72	181	68	129	143	139
Future Volume (vph)	226	367	56	126	451	139	72	181	68	129	143	139
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%				4%
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1573	1809	1435	1527	1731	1592	1736	1807	0	1558	1624	1499
Flt Permitted	0.163			0.539			0.664			0.461		
Satd. Flow (perm)	270	1809	1435	866	1731	1592	1213	1807	0	756	1624	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160			255			23			247
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1025				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	4%	0%	2%	0%	5%	0%	4%	5%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	231	374	57	129	460	142	73	254	0	132	146	142
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	13.5	37.5	37.5	24.0	24.0	24.0	14.0	23.5		14.0	23.5	23.5
Total Split (%)	18.0%	50.0%	50.0%	32.0%	32.0%	32.0%	18.7%	31.3%		18.7%	31.3%	31.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	None		None	None	None
Act Effect Green (s)	32.6	32.6	32.6	18.9	18.9	18.9	20.2	14.3		20.4	14.4	14.4
Actuated g/C Ratio	0.47	0.47	0.47	0.27	0.27	0.27	0.29	0.21		0.29	0.21	0.21
v/c Ratio	0.82	0.44	0.07	0.55	0.98	0.23	0.18	0.65		0.42	0.43	0.28
Control Delay	42.5	16.3	0.2	35.4	66.9	0.9	14.8	31.9		18.8	29.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	42.5	16.3	0.2	35.4	66.9	0.9	14.8	31.9		18.8	29.1	1.4
LOS	D	B	A	D	E	A	B	C		B	C	A
Approach Delay		24.0			48.5			28.1			16.5	
Approach LOS		C			D			C			B	
Queue Length 50th (ft)	66	115	0	51	-231	0	20	95		38	57	0
Queue Length 95th (ft)	#192	195	0	#124	#415	0	44	167		73	109	1
Internal Link Dist (ft)		860			410			945			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
 SAT Peak Hour

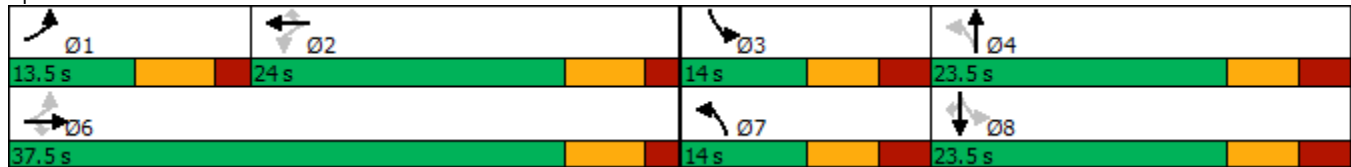


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	280	852	760	235	471	619	418	482		317	418	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.82	0.44	0.07	0.55	0.98	0.23	0.17	0.53		0.42	0.35	0.25

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 69.2
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 31.5
 Intersection LOS: C
 Intersection Capacity Utilization 79.4%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	367	56	126	451	139	72	181	68	129	143	139
Future Volume (veh/h)	226	367	56	126	451	139	72	181	68	129	143	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1809	1837	1837	1738	1794	1837	2173	2186	2173	1655	1641	1711
Adj Flow Rate, veh/h	231	374	51	129	460	0	73	185	66	132	146	60
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	0	0	4	0	2	0	5	0	4	5	0
Cap, veh/h	324	860	729	347	486		422	256	91	337	348	307
Arrive On Green	0.12	0.47	0.47	0.27	0.27	0.00	0.06	0.17	0.15	0.11	0.21	0.21
Sat Flow, veh/h	1723	1837	1557	894	1794	1557	2069	1538	549	1576	1641	1450
Grp Volume(v), veh/h	231	374	51	129	460	0	73	0	251	132	146	60
Grp Sat Flow(s),veh/h/ln	1723	1837	1557	894	1794	1557	2069	0	2087	1576	1641	1450
Q Serve(g_s), s	6.1	9.3	1.2	8.4	17.2	0.0	1.9	0.0	7.8	4.5	5.3	2.3
Cycle Q Clear(g_c), s	6.1	9.3	1.2	8.4	17.2	0.0	1.9	0.0	7.8	4.5	5.3	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	324	860	729	347	486		422	0	348	337	348	307
V/C Ratio(X)	0.71	0.43	0.07	0.37	0.95		0.17	0.00	0.72	0.39	0.42	0.20
Avail Cap(c_a), veh/h	324	860	729	347	486		532	0	534	350	420	371
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	12.1	10.0	21.2	24.4	0.0	21.0	0.0	27.1	20.0	23.3	22.1
Incr Delay (d2), s/veh	7.1	0.1	0.0	0.2	27.7	0.0	0.2	0.0	2.8	0.7	0.8	0.3
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	4.7	5.6	0.6	2.8	15.3	0.0	1.7	0.0	7.3	2.8	3.5	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.4	12.3	10.0	21.5	52.1	0.0	21.2	0.0	29.9	20.8	24.1	22.4
LnGrp LOS	C	B	B	C	D		C	A	C	C	C	C
Approach Vol, veh/h		656			589			324				338
Approach Delay, s/veh		16.0			45.4			28.0				22.5
Approach LOS		B			D			C				C
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	13.5	24.0	13.5	17.4		37.5	10.3	20.5				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	7.0	17.5	7.0	16.5		31.0	7.0	16.5				
Max Q Clear Time (g_c+I1), s	8.6	19.7	7.0	9.8		11.8	4.4	7.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6		0.1	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2029 Build
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	268	0	440	71	281	411	0
Future Volume (vph)	0	0	0	0	0	268	0	440	71	281	411	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%				-2%
Storage Length (ft)	0		0	0		0	0		150	325		0
Storage Lanes	0		1	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1844	1567	1787	1863	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1844	1567	1787	1863	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		500			500			640			600	
Travel Time (s)		8.5			8.5			17.5			16.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	298	0	489	79	312	457	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM 6th TWSC
 20: Cloverleaf Rd & Western Parcels Access/Eastern Parcels Access

2029 Build
 SAT Peak Hour

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↖	↗	↖	↖	↗
Traffic Vol, veh/h	0	0	0	0	0	268	0	440	71	281	411	0
Future Vol, veh/h	0	0	0	0	0	268	0	440	71	281	411	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	150	325	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	3	2
Mvmt Flow	0	0	0	0	0	298	0	489	79	312	457	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	457	-	-	489	457	0	0	568	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.1	2.218	-	-	3	-	-
Pot Cap-1 Maneuver	0	0	604	0	0	611	1104	-	-	814	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	604	-	-	611	1104	-	-	814	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		16.4		0		4.9	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1104	-	-	-	611	814	-
HCM Lane V/C Ratio	-	-	-	-	0.487	0.384	-
HCM Control Delay (s)	0	-	-	0	16.4	12.1	-
HCM Lane LOS	A	-	-	A	C	B	-
HCM 95th %tile Q(veh)	0	-	-	-	2.7	1.8	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	188	376	479	94	150	300
Future Volume (vph)	188	376	479	94	150	300
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350			225	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1770	1881	1881	1583	1668	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1770	1881	1881	1583	1668	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	418	532	104	500	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	72.4%
Analysis Period (min)	15
	ICU Level of Service C

Intersection						
Int Delay, s/veh	40.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	188	376	479	94	150	300
Future Vol, veh/h	188	376	479	94	150	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	225	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	1	2	2	2
Mvmt Flow	209	418	532	104	167	333

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	636	0	-	0	1368 532
Stage 1	-	-	-	-	532 -
Stage 2	-	-	-	-	836 -
Critical Hdwy	4.5	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	698	-	-	-	175 577
Stage 1	-	-	-	-	667 -
Stage 2	-	-	-	-	473 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	698	-	-	-	~ 123 577
Mov Cap-2 Maneuver	-	-	-	-	271 -
Stage 1	-	-	-	-	468 -
Stage 2	-	-	-	-	473 -

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	137.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	698	-	-	-	419
HCM Lane V/C Ratio	0.299	-	-	-	1.193
HCM Control Delay (s)	12.3	-	-	-	137.7
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1.3	-	-	-	19.7

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
29: Colebrook Rd & Harrisburg Ave

2029 Build
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	48	50	33	16	33	61	20	223	7	38	225	43
Future Volume (vph)	48	50	33	16	33	61	20	223	7	38	225	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1676	0	0	1623	0	0	1774	0	0	1848	0
Flt Permitted		0.982			0.993			0.996			0.994	
Satd. Flow (perm)	0	1676	0	0	1623	0	0	1774	0	0	1848	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1010			1132			1000			1025	
Travel Time (s)		19.7			22.1			27.3			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	4%	0%	0%	3%	0%	5%	2%	0%	0%	2%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	136	0	0	115	0	0	260	0	0	319	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.5% ICU Level of Service A

Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	48	50	33	16	33	61	20	223	7	38	225	43
Future Vol, veh/h	48	50	33	16	33	61	20	223	7	38	225	43
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	8	4	0	0	3	0	5	2	0	0	2	9
Mvmt Flow	50	52	34	17	34	64	21	232	7	40	234	45
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.2	9.4	11.2	11.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	37%	15%	12%
Vol Thru, %	89%	38%	30%	74%
Vol Right, %	3%	25%	55%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	131	110	306
LT Vol	20	48	16	38
Through Vol	223	50	33	225
RT Vol	7	33	61	43
Lane Flow Rate	260	136	115	319
Geometry Grp	1	1	1	1
Degree of Util (X)	0.371	0.213	0.169	0.438
Departure Headway (Hd)	5.133	5.623	5.312	4.947
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	701	639	675	733
Service Time	3.162	3.659	3.351	2.947
HCM Lane V/C Ratio	0.371	0.213	0.17	0.435
HCM Control Delay	11.2	10.2	9.4	11.7
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.7	0.8	0.6	2.2

Lanes, Volumes, Timings
32: SR 0230 & Ridge Run Rd

2029 Build
SAT Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	485	523	34	32	3
Future Volume (vph)	3	485	523	34	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	10	12
Grade (%)		-1%	1%		2%	
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1754	1828	1796	0	1660	0
Flt Permitted	0.950				0.956	
Satd. Flow (perm)	1754	1828	1796	0	1660	0
Link Speed (mph)		55	55		35	
Link Distance (ft)		2700	1000		1310	
Travel Time (s)		33.5	12.4		25.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	505	580	0	36	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.6% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	485	523	34	32	3
Future Vol, veh/h	3	485	523	34	32	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	2	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	3	505	545	35	33	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	580	0	-	0	1074
Stage 1	-	-	-	-	563
Stage 2	-	-	-	-	511
Critical Hdwy	4.1	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	782	-	-	-	239
Stage 1	-	-	-	-	607
Stage 2	-	-	-	-	647
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	782	-	-	-	238
Mov Cap-2 Maneuver	-	-	-	-	394
Stage 1	-	-	-	-	605
Stage 2	-	-	-	-	647

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	782	-	-	-	403
HCM Lane V/C Ratio	0.004	-	-	-	0.09
HCM Control Delay (s)	9.6	-	-	-	14.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

APPENDIX L7

2029 BUILD WITH IMPROVEMENTS CONDITION ANALYSES

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2029 Build w/ Improvements
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	71	23	34	6	44	123	47	345	9	32	193	79
Future Volume (vph)	71	23	34	6	44	123	47	345	9	32	193	79
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%				-5%
Satd. Flow (prot)	0	1232	0	0	1456	0	0	1577	0	0	1434	0
Flt Permitted		0.785			0.988			0.931			0.933	
Satd. Flow (perm)	0	994	0	0	1441	0	0	1477	0	0	1345	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			128			2				36
Link Speed (mph)		35			35			25				25
Link Distance (ft)		1157			1404			999				1026
Travel Time (s)		22.5			27.4			27.2				28.0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	133	0	0	180	0	0	417	0	0	316	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	30.0	30.0		30.0	30.0		50.0	50.0		50.0	50.0	
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%		62.5%	62.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)		11.9			11.9			21.9			21.9	
Actuated g/C Ratio		0.27			0.27			0.50			0.50	
v/c Ratio		0.47			0.37			0.57			0.46	
Control Delay		17.9			8.0			12.3			9.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.9			8.0			12.3			9.8	
LOS		B			A			B			A	
Approach Delay		17.9			8.0			12.3			9.8	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)		19			8			61			37	
Queue Length 95th (ft)		74			53			168			114	
Internal Link Dist (ft)		1077			1324			919			946	
Turn Bay Length (ft)												
Base Capacity (vph)		596			903			1393			1270	
Starvation Cap Reductn		0			0			0			0	

Lanes, Volumes, Timings
 33: Colebrook Rd & Harrisburg Ave

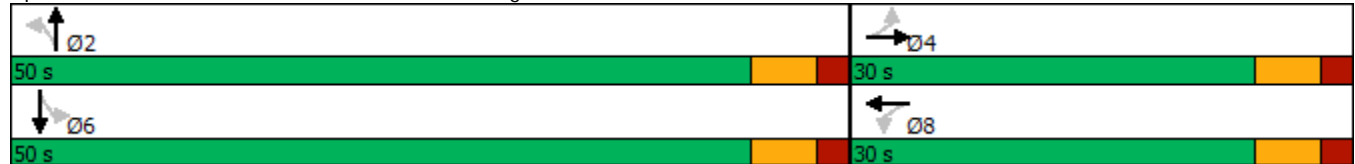
2029 Build w/ Improvements
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.22			0.20			0.30			0.25	

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	44.2
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	11.5
Intersection LOS:	B
Intersection Capacity Utilization	61.6%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 33: Colebrook Rd & Harrisburg Ave



HCM 6th Signalized Intersection Summary
33: Colebrook Rd & Harrisburg Ave

2029 Build w/ Improvements
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	71	23	34	6	44	123	47	345	9	32	193	79
Future Volume (veh/h)	71	23	34	6	44	123	47	345	9	32	193	79
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1155	1766	1539	1837	1738	1780	1570	1682	1794	1531	1773	1403
Adj Flow Rate, veh/h	74	24	35	6	46	128	49	359	9	33	201	82
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	48	5	21	0	7	4	16	8	0	32	15	41
Cap, veh/h	372	93	91	147	93	243	194	583	14	184	452	170
Arrive On Green	0.19	0.22	0.19	0.19	0.22	0.19	0.36	0.40	0.36	0.36	0.40	0.36
Sat Flow, veh/h	717	418	405	26	416	1089	104	1463	35	85	1135	427
Grp Volume(v), veh/h	133	0	0	180	0	0	417	0	0	316	0	0
Grp Sat Flow(s),veh/h/ln	1541	0	0	1531	0	0	1602	0	0	1647	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.5	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.0	0.0	2.8	0.0	0.0	5.6	0.0	0.0	3.8	0.0	0.0
Prop In Lane	0.56		0.26	0.03		0.71	0.12		0.02	0.10		0.26
Lane Grp Cap(c), veh/h	498	0	0	425	0	0	730	0	0	745	0	0
V/C Ratio(X)	0.27	0.00	0.00	0.42	0.00	0.00	0.57	0.00	0.00	0.42	0.00	0.00
Avail Cap(c_a), veh/h	1442	0	0	1524	0	0	2746	0	0	2779	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.0	0.0	0.0	9.4	0.0	0.0	6.5	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.8	0.0	0.0	1.2	0.0	0.0	2.3	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.3	0.0	0.0	10.1	0.0	0.0	7.2	0.0	0.0	6.4	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		133			180			417				316
Approach Delay, s/veh		9.3			10.1			7.2				6.4
Approach LOS		A			B			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.5		10.9		15.5		10.9				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		44.0		24.0		44.0		24.0				
Max Q Clear Time (g_c+I1), s		7.6		3.8		5.8		4.8				
Green Ext Time (p_c), s		1.9		0.4		1.5		0.6				
Intersection Summary												
HCM 6th Ctrl Delay				7.7								
HCM 6th LOS				A								

Lanes, Volumes, Timings
33: Colebrook Rd & Harrisburg Ave

2029 Build w/ Improvements
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	86	83	78	4	52	66	33	301	6	98	358	55
Future Volume (vph)	86	83	78	4	52	66	33	301	6	98	358	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1315	0	0	1486	0	0	1583	0	0	1489	0
Flt Permitted		0.853			0.987			0.927			0.863	
Satd. Flow (perm)	0	1141	0	0	1469	0	0	1474	0	0	1297	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			69			2			16	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1146			1234			997			1028	
Travel Time (s)		22.3			24.0			27.2			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	48%	5%	21%	0%	7%	4%	16%	8%	0%	32%	15%	41%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	257	0	0	127	0	0	354	0	0	532	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.0	22.0		22.0	22.0	
Total Split (s)	22.0	22.0		22.0	22.0		38.0	38.0		38.0	38.0	
Total Split (%)	36.7%	36.7%		36.7%	36.7%		63.3%	63.3%		63.3%	63.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)		14.7			14.7			28.0			28.0	
Actuated g/C Ratio		0.28			0.28			0.53			0.53	
v/c Ratio		0.74			0.28			0.45			0.77	
Control Delay		31.4			10.6			10.3			19.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		31.4			10.6			10.3			19.3	
LOS		C			B			B			B	
Approach Delay		31.4			10.6			10.3			19.3	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)		61			13			67			127	
Queue Length 95th (ft)		#177			51			122			#269	
Internal Link Dist (ft)		1066			1154			917			948	
Turn Bay Length (ft)												
Base Capacity (vph)		399			526			936			828	
Starvation Cap Reductn		0			0			0			0	

Lanes, Volumes, Timings
 33: Colebrook Rd & Harrisburg Ave

2029 Build w/ Improvements
 PM Peak Hour

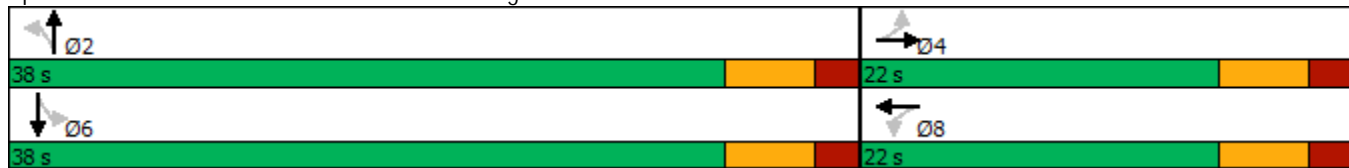


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.64			0.24			0.38			0.64	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	52.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	18.4
Intersection LOS:	B
Intersection Capacity Utilization	79.4%
ICU Level of Service	D
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 33: Colebrook Rd & Harrisburg Ave



HCM 6th Signalized Intersection Summary
33: Colebrook Rd & Harrisburg Ave

2029 Build w/ Improvements
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	86	83	78	4	52	66	33	301	6	98	358	55
Future Volume (veh/h)	86	83	78	4	52	66	33	301	6	98	358	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1155	1766	1539	1837	1738	1780	1570	1682	1794	1531	1773	1403
Adj Flow Rate, veh/h	90	86	81	4	54	69	34	314	6	102	373	57
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	48	5	21	0	7	4	16	8	0	32	15	41
Cap, veh/h	252	160	122	116	180	220	151	679	12	222	542	76
Arrive On Green	0.23	0.26	0.23	0.23	0.26	0.23	0.41	0.44	0.41	0.41	0.44	0.41
Sat Flow, veh/h	415	624	478	18	704	860	74	1529	28	210	1221	172
Grp Volume(v), veh/h	257	0	0	127	0	0	354	0	0	532	0	0
Grp Sat Flow(s),veh/h/ln	1518	0	0	1582	0	0	1630	0	0	1602	0	0
Q Serve(g_s), s	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.0	2.2	0.0	0.0	5.1	0.0	0.0	9.2	0.0	0.0
Prop In Lane	0.35		0.32	0.03		0.54	0.10		0.02	0.19		0.11
Lane Grp Cap(c), veh/h	489	0	0	469	0	0	793	0	0	792	0	0
V/C Ratio(X)	0.53	0.00	0.00	0.27	0.00	0.00	0.45	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h	857	0	0	866	0	0	1634	0	0	1624	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.3	0.0	0.0	10.3	0.0	0.0	6.6	0.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	2.5	0.0	0.0	1.1	0.0	0.0	2.4	0.0	0.0	4.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	0.0	10.6	0.0	0.0	7.0	0.0	0.0	8.7	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		257			127			354			532	
Approach Delay, s/veh		12.2			10.6			7.0			8.7	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.8		13.5		19.8		13.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		32.0		16.0		32.0		16.0				
Max Q Clear Time (g_c+I1), s		7.1		7.1		11.2		4.2				
Green Ext Time (p_c), s		1.5		0.6		2.5		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				9.1								
HCM 6th LOS				A								

Lanes, Volumes, Timings
29: Colebrook Rd & Harrisburg Ave

2029 Build w/ Improvements
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	48	50	33	16	33	61	20	223	7	38	225	43
Future Volume (vph)	48	50	33	16	33	61	20	223	7	38	225	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	10	12	12	11	12	12	12	12
Grade (%)		-1%			-1%			1%			-5%	
Satd. Flow (prot)	0	1588	0	0	1537	0	0	1681	0	0	1751	0
Flt Permitted		0.831			0.923			0.958			0.935	
Satd. Flow (perm)	0	1344	0	0	1429	0	0	1617	0	0	1647	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			64			3			17	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1010			1132			1000			1025	
Travel Time (s)		19.7			22.1			27.3			28.0	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	4%	0%	0%	3%	0%	5%	2%	0%	0%	2%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	136	0	0	115	0	0	260	0	0	319	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Total Split (s)	30.0	30.0		30.0	30.0		45.0	45.0		45.0	45.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)		9.4			9.4			18.0			18.0	
Actuated g/C Ratio		0.28			0.28			0.54			0.54	
v/c Ratio		0.35			0.26			0.30			0.36	
Control Delay		11.4			7.1			8.1			8.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.4			7.1			8.1			8.2	
LOS		B			A			A			A	
Approach Delay		11.4			7.1			8.1			8.2	
Approach LOS		B			A			A			A	
Queue Length 50th (ft)		14			6			28			34	
Queue Length 95th (ft)		50			34			75			90	
Internal Link Dist (ft)		930			1052			920			945	
Turn Bay Length (ft)												
Base Capacity (vph)		1025			1099			1605			1635	
Starvation Cap Reductn		0			0			0			0	

Lanes, Volumes, Timings
 29: Colebrook Rd & Harrisburg Ave

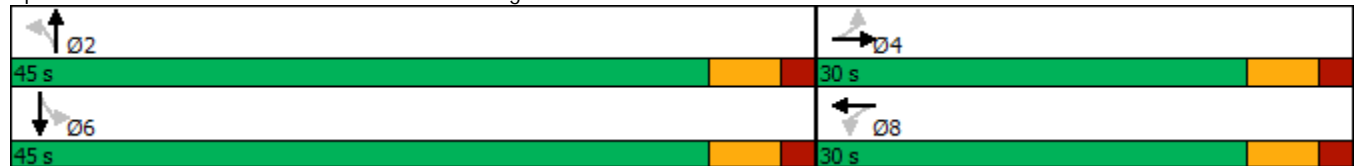
2029 Build w/ Improvements
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.13			0.10			0.16			0.20	

Intersection Summary	
Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	33.6
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.36
Intersection Signal Delay:	8.6
Intersection LOS:	A
Intersection Capacity Utilization	49.0%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 29: Colebrook Rd & Harrisburg Ave



HCM 6th Signalized Intersection Summary
29: Colebrook Rd & Harrisburg Ave






















2029 Build w/ Improvements
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	48	50	33	16	33	61	20	223	7	38	225	43
Future Volume (veh/h)	48	50	33	16	33	61	20	223	7	38	225	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1724	1780	1837	1837	1795	1837	1724	1766	1794	1986	1958	1858
Adj Flow Rate, veh/h	50	52	34	17	34	64	21	232	7	40	234	45
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	4	0	0	3	0	5	2	0	0	2	9
Cap, veh/h	338	119	76	231	101	175	205	547	16	235	492	88
Arrive On Green	0.14	0.19	0.14	0.14	0.19	0.14	0.30	0.34	0.30	0.30	0.34	0.30
Sat Flow, veh/h	567	624	397	200	526	912	70	1593	46	135	1433	258
Grp Volume(v), veh/h	136	0	0	115	0	0	260	0	0	319	0	0
Grp Sat Flow(s),veh/h/ln	1588	0	0	1638	0	0	1709	0	0	1826	0	0
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	1.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0	0.0
Prop In Lane	0.37		0.25	0.15		0.56	0.08		0.03	0.13		0.14
Lane Grp Cap(c), veh/h	459	0	0	430	0	0	688	0	0	730	0	0
V/C Ratio(X)	0.30	0.00	0.00	0.27	0.00	0.00	0.38	0.00	0.00	0.44	0.00	0.00
Avail Cap(c_a), veh/h	1893	0	0	1930	0	0	3215	0	0	3420	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.9	0.0	0.0	7.9	0.0	0.0	5.5	0.0	0.0	5.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	0.5	0.0	0.0	1.0	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	0.0	0.0	8.2	0.0	0.0	5.9	0.0	0.0	6.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		136			115			260				319
Approach Delay, s/veh		8.3			8.2			5.9				6.1
Approach LOS		A			A			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.4		9.1		12.4		9.1				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		39.0		24.0		39.0		24.0				
Max Q Clear Time (g_c+I1), s		4.5		3.6		5.0		3.3				
Green Ext Time (p_c), s		1.1		0.4		1.4		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				6.7								
HCM 6th LOS				A								

Lanes, Volumes, Timings
11: Cloverleaf Rd & Schwanger Rd

2029 Build w/ Improvements
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	34	97	9	42	36	79	723	14	50	975	327
Future Volume (vph)	224	34	97	9	42	36	79	723	14	50	975	327
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	12	10	13	12	10	11	12	10	11	12
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	75		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1620	1670	0	1416	1704	0	1620	1694	0	1628	1678	0
Flt Permitted	0.704			0.669			0.096			0.295		
Satd. Flow (perm)	1200	1670	0	997	1704	0	164	1694	0	506	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102			38			4				65
Link Speed (mph)		35			35			40				40
Link Distance (ft)		1000			1000			1240				2175
Travel Time (s)		19.5			19.5			21.1				37.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	2%	11%	0%	0%	0%	4%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	236	138	0	9	82	0	83	776	0	53	1370	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.5	22.5		22.5	22.5	
Total Split (s)	13.0	13.0		13.0	13.0		47.0	47.0		47.0	47.0	
Total Split (%)	21.7%	21.7%		21.7%	21.7%		78.3%	78.3%		78.3%	78.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effect Green (s)	8.0	8.0		8.0	8.0		41.5	41.5		41.5	41.5	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.69	0.69		0.69	0.69	
v/c Ratio	1.48	0.44		0.07	0.32		0.73	0.66		0.15	1.16	
Control Delay	270.8	14.2		24.2	18.4		42.5	10.8		4.4	96.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	270.8	14.2		24.2	18.4		42.5	10.8		4.4	96.6	
LOS	F	B		C	B		D	B		A	F	
Approach Delay		176.1			19.0			13.9			93.2	
Approach LOS		F			B			B			F	
Queue Length 50th (ft)	~121	12		3	14		37	305		5	~604	
Queue Length 95th (ft)	#241	55		14	48		m#75	258		15	#836	
Internal Link Dist (ft)		920			920			1160			2095	

Lanes, Volumes, Timings
 11: Cloverleaf Rd & Schwanger Rd

2029 Build w/ Improvements
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	225			75			75			100		
Base Capacity (vph)	160	311		132	260		113	1172		349	1180	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.48	0.44		0.07	0.32		0.73	0.66		0.15	1.16	

Intersection Summary






















Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow, Master Intersection
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.48
 Intersection Signal Delay: 77.2 Intersection LOS: E
 Intersection Capacity Utilization 103.7% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Cloverleaf Rd & Schwanger Rd



HCM 6th Signalized Intersection Summary
 11: Cloverleaf Rd & Schwanger Rd

2029 Build w/ Improvements
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	34	97	9	42	36	79	723	14	50	975	327
Future Volume (veh/h)	224	34	97	9	42	36	79	723	14	50	975	327
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1972	2066	1958	1595	1820	1750	1912	1855	1912	1949	1921	1935
Adj Flow Rate, veh/h	236	36	78	9	44	24	83	761	14	53	1026	333
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	11	0	0	0	4	0	0	2	1
Cap, veh/h	257	77	168	202	148	81	120	1256	23	395	961	312
Arrive On Green	0.13	0.13	0.12	0.13	0.13	0.12	0.46	0.46	0.45	0.69	0.69	0.68
Sat Flow, veh/h	1406	581	1258	1091	1107	604	409	1815	33	725	1389	451
Grp Volume(v), veh/h	236	0	114	9	0	68	83	0	775	53	0	1359
Grp Sat Flow(s),veh/h/ln	1406	0	1839	1091	0	1711	409	0	1849	725	0	1839
Q Serve(g_s), s	5.8	0.0	3.5	0.5	0.0	2.2	0.0	0.0	18.8	2.9	0.0	41.5
Cycle Q Clear(g_c), s	8.0	0.0	3.5	3.9	0.0	2.2	41.5	0.0	18.8	21.7	0.0	41.5
Prop In Lane	1.00		0.68	1.00		0.35	1.00		0.02	1.00		0.25
Lane Grp Cap(c), veh/h	257	0	245	202	0	228	120	0	1279	395	0	1272
V/C Ratio(X)	0.92	0.00	0.46	0.04	0.00	0.30	0.69	0.00	0.61	0.13	0.00	1.07
Avail Cap(c_a), veh/h	257	0	245	202	0	228	120	0	1279	395	0	1272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.66	0.00	0.66	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.3	0.0	24.3	25.8	0.0	23.6	36.8	0.0	10.0	12.5	0.0	9.4
Incr Delay (d2), s/veh	35.3	0.0	1.4	0.1	0.0	0.7	19.5	0.0	1.4	0.7	0.0	45.6
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	9.6	0.0	2.7	0.2	0.0	1.5	3.3	0.0	11.4	0.9	0.0	33.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.6	0.0	25.7	25.9	0.0	24.4	56.3	0.0	11.4	13.2	0.0	55.0
LnGrp LOS	E	A	C	C	A	C	E	A	B	B	A	F
Approach Vol, veh/h		350			77			858			1412	
Approach Delay, s/veh		51.3			24.5			15.8			53.4	
Approach LOS		D			C			B			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		47.0		13.0		47.0		13.0				
Change Period (Y+Rc), s		6.5		6.0		6.5		6.0				
Max Green Setting (Gmax), s		40.5		7.0		40.5		7.0				
Max Q Clear Time (g_c+I1), s		20.8		10.0		43.5		5.9				
Green Ext Time (p_c), s		15.1		0.0		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				40.3								
HCM 6th LOS				D								

Lanes, Volumes, Timings
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build w/ Improvements
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	348	60	135	458	136	96	297	61	223	303	222
Future Volume (vph)	237	348	60	135	458	136	96	297	61	223	303	222
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	10	10	11	14	11	13	12	11	11	12
Grade (%)		-1%			1%			-10%			4%	
Storage Length (ft)	275		250	150		125	100		0	325		400
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1588	1791	1435	1512	1697	1577	1522	1781	0	1604	1640	1442
Flt Permitted	0.161			0.547			0.436			0.267		
Satd. Flow (perm)	269	1791	1435	871	1697	1577	699	1781	0	451	1640	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			159		8				229
Link Speed (mph)		45			45			25				40
Link Distance (ft)		940			490			1028				640
Travel Time (s)		14.2			7.4			28.0				10.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	5%	2%	3%	14%	7%	6%	1%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	359	62	139	472	140	99	369	0	230	312	229
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	2	2	2	7	4		3	8	8
Switch Phase												
Minimum Initial (s)	3.0	12.0	12.0	12.0	12.0	12.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	13.5	23.5	23.5	23.5	23.5	23.5	14.0	23.0		14.0	23.0	23.0
Total Split (s)	19.0	71.0	71.0	52.0	52.0	52.0	14.0	32.0		17.0	35.0	35.0
Total Split (%)	15.8%	59.2%	59.2%	43.3%	43.3%	43.3%	11.7%	26.7%		14.2%	29.2%	29.2%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	Min	Min	Min	Min	Min	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	56.9	56.9	56.9	37.9	37.9	37.9	42.5	34.6		48.7	37.7	37.7
Actuated g/C Ratio	0.47	0.47	0.47	0.32	0.32	0.32	0.35	0.29		0.41	0.31	0.31
v/c Ratio	0.89	0.42	0.08	0.51	0.88	0.23	0.33	0.71		0.80	0.61	0.38
Control Delay	53.6	21.6	0.9	35.2	52.6	3.6	27.2	47.9		35.2	34.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	53.6	21.6	0.9	35.2	52.6	3.6	27.2	47.9		35.2	34.6	7.2
LOS	D	C	A	D	D	A	C	D		D	C	A
Approach Delay		31.4			40.2			43.5			26.6	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	113	176	0	93	356	14	46	253		105	170	27
Queue Length 95th (ft)	#226	219	7	138	459	15	94	#468		m#142	m263	m41
Internal Link Dist (ft)		860			410			948			560	

Lanes, Volumes, Timings
 17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build w/ Improvements
 PM Peak Hour

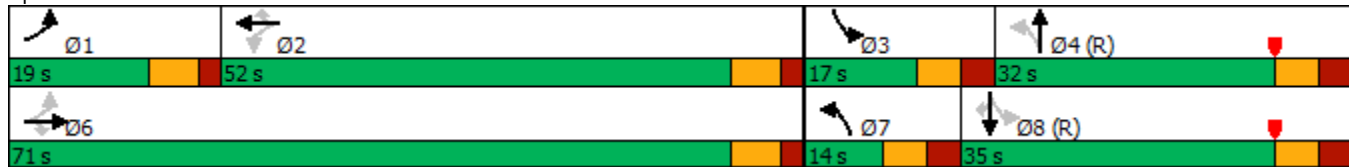


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	275		250	150		125	100			325		400
Base Capacity (vph)	275	977	828	337	657	708	302	519		288	515	610
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.89	0.37	0.07	0.41	0.72	0.20	0.33	0.71		0.80	0.61	0.38

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 34.7 Intersection LOS: C
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Colebrook Rd/Cloverleaf Rd & SR 0230



HCM 6th Signalized Intersection Summary
17: Colebrook Rd/Cloverleaf Rd & SR 0230

2029 Build w/ Improvements
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	348	60	135	458	136	96	297	61	223	303	222
Future Volume (veh/h)	237	348	60	135	458	136	96	297	61	223	303	222
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1823	1823	1837	1724	1766	1822	1974	2156	2087	1697	1655	1655
Adj Flow Rate, veh/h	244	359	32	139	472	0	99	306	62	230	312	158
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	5	2	3	14	7	6	1	4	4
Cap, veh/h	283	816	697	325	511		350	548	111	367	570	483
Arrive On Green	0.11	0.45	0.45	0.29	0.29	0.00	0.06	0.31	0.31	0.06	0.23	0.23
Sat Flow, veh/h	1736	1823	1557	915	1766	1544	1880	1740	353	1616	1655	1402
Grp Volume(v), veh/h	244	359	32	139	472	0	99	0	368	230	312	158
Grp Sat Flow(s),veh/h/ln	1736	1823	1557	915	1766	1544	1880	0	2093	1616	1655	1402
Q Serve(g_s), s	11.3	16.3	1.4	15.3	31.1	0.0	4.2	0.0	17.6	11.0	19.9	11.2
Cycle Q Clear(g_c), s	11.3	16.3	1.4	15.3	31.1	0.0	4.2	0.0	17.6	11.0	19.9	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	283	816	697	325	511		350	0	659	367	570	483
V/C Ratio(X)	0.86	0.44	0.05	0.43	0.92		0.28	0.00	0.56	0.63	0.55	0.33
Avail Cap(c_a), veh/h	283	995	850	415	684		359	0	659	367	570	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.89	0.00	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	22.8	18.7	35.7	41.3	0.0	25.9	0.0	34.3	27.8	37.9	34.6
Incr Delay (d2), s/veh	23.1	0.1	0.0	0.3	13.2	0.0	0.4	0.0	3.0	3.4	3.7	1.8
Initial Q Delay(d3),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
%ile BackOfQ(95%),veh/ln	10.3	10.9	0.9	6.0	21.2	0.0	3.5	0.0	14.4	8.5	13.9	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	22.9	18.7	36.1	54.5	0.0	26.2	0.0	37.3	31.1	41.7	36.4
LnGrp LOS	D	C	B	D	D		C	A	D	C	D	D
Approach Vol, veh/h		635			611			467			700	
Approach Delay, s/veh		33.8			50.3			35.0			37.0	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	19.0	40.2	17.0	43.8		59.2	13.4	47.3				
Change Period (Y+Rc), s	6.5	6.5	7.0	7.0		6.5	7.0	7.0				
Max Green Setting (Gmax), s	12.5	45.5	10.0	25.0		64.5	7.0	28.0				
Max Q Clear Time (g_c+I1), s	13.8	33.6	13.5	19.6		18.8	6.7	22.4				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.8		0.1	0.0	1.2				

Intersection Summary

HCM 6th Ctrl Delay	39.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
23: SR 0230 & Norlanco Dr

2029 Build w/ Improvements
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	113	294	399	51	65	141
Future Volume (vph)	113	294	399	51	65	141
Ideal Flow (vphp)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	350			225	175	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1710	1651	1714	1500	1676	1500
Flt Permitted	0.405				0.950	
Satd. Flow (perm)	729	1651	1714	1500	1676	1500
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				57		157
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2697		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	9%	5%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	327	443	57	72	157
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	1	6	2		8	1
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	8	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	13.0	22.0	22.0	22.0	22.0	13.0
Total Split (s)	13.0	57.0	44.0	44.0	23.0	13.0
Total Split (%)	16.3%	71.3%	55.0%	55.0%	28.8%	16.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	62.3	63.3	49.0	49.0	10.0	21.0
Actuated g/C Ratio	0.78	0.79	0.61	0.61	0.12	0.26
v/c Ratio	0.19	0.25	0.42	0.06	0.34	0.31
Control Delay	3.7	3.8	11.3	3.0	35.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	3.8	11.3	3.0	35.7	5.1
LOS	A	A	B	A	D	A
Approach Delay		3.8	10.4		14.8	
Approach LOS		A	B		B	
Queue Length 50th (ft)	13	40	113	0	33	0
Queue Length 95th (ft)	31	80	212	16	69	37
Internal Link Dist (ft)		730	2617		420	
Turn Bay Length (ft)	350			225	175	
Base Capacity (vph)	674	1307	1050	941	377	514

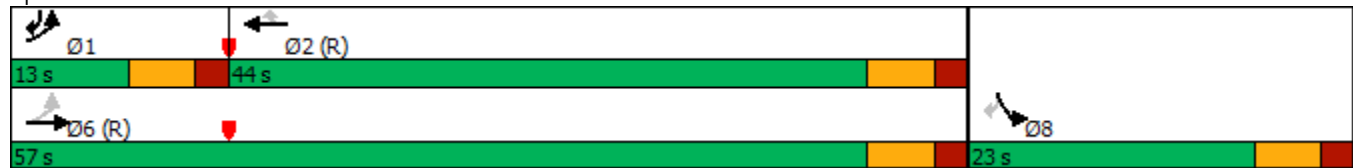


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.25	0.42	0.06	0.19	0.31

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.42
Intersection Signal Delay:	8.7
Intersection LOS:	A
Intersection Capacity Utilization	45.1%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 23: SR 0230 & Norlanco Dr



HCM 6th Signalized Intersection Summary
23: SR 0230 & Norlanco Dr

2029 Build w/ Improvements
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	113	294	399	51	65	141
Future Volume (veh/h)	113	294	399	51	65	141
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1800	1674	1730	1772	1772	1772
Adj Flow Rate, veh/h	126	327	443	57	72	157
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	9	5	2	2	2
Cap, veh/h	610	1235	1066	925	231	295
Arrive On Green	0.06	0.74	0.62	0.62	0.14	0.14
Sat Flow, veh/h	1714	1674	1730	1502	1688	1502
Grp Volume(v), veh/h	126	327	443	57	72	157
Grp Sat Flow(s),veh/h/ln	1714	1674	1730	1502	1688	1502
Q Serve(g_s), s	1.9	5.1	10.6	1.2	3.1	7.5
Cycle Q Clear(g_c), s	1.9	5.1	10.6	1.2	3.1	7.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	610	1235	1066	925	231	295
V/C Ratio(X)	0.21	0.26	0.42	0.06	0.31	0.53
Avail Cap(c_a), veh/h	680	1235	1066	925	380	427
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.0	3.4	7.9	6.1	31.1	28.8
Incr Delay (d2), s/veh	0.2	0.5	1.2	0.1	0.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	2.0	6.0	0.6	2.3	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.2	3.9	9.1	6.3	31.9	30.3
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		453	500		229	
Approach Delay, s/veh		4.3	8.8		30.8	
Approach LOS		A	A		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.8	54.3			64.0	16.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	7.0	38.0			51.0	17.0
Max Q Clear Time (g_c+I1), s	3.9	12.6			7.1	9.5
Green Ext Time (p_c), s	0.1	1.8			1.2	0.5
Intersection Summary						
HCM 6th Ctrl Delay			11.3			
HCM 6th LOS			B			

Lanes, Volumes, Timings
23: SR 0230 & Norlanco Dr

2029 Build w/ Improvements
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	169	462	461	77	150	326
Future Volume (vph)	169	462	461	77	150	326
Ideal Flow (vphp)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	350			225	175	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1676	1782	1748	1500	1676	1500
Flt Permitted	0.369				0.950	
Satd. Flow (perm)	651	1782	1748	1500	1676	1500
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				83		197
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	3%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	188	513	512	86	167	362
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	1	6	2		8	1
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	8	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	13.0	22.0	22.0	22.0	22.0	13.0
Total Split (s)	16.0	68.0	52.0	52.0	52.0	16.0
Total Split (%)	13.3%	56.7%	43.3%	43.3%	43.3%	13.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	Min	None
Act Effct Green (s)	91.3	91.3	75.2	75.2	18.7	33.8
Actuated g/C Ratio	0.76	0.76	0.63	0.63	0.16	0.28
v/c Ratio	0.32	0.38	0.47	0.09	0.64	0.64
Control Delay	3.7	3.6	15.1	3.1	58.2	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	3.6	15.1	3.1	58.2	20.9
LOS	A	A	B	A	E	C
Approach Delay		3.6	13.4		32.7	
Approach LOS		A	B		C	
Queue Length 50th (ft)	18	57	190	1	123	112
Queue Length 95th (ft)	m31	m110	356	26	185	187
Internal Link Dist (ft)		730	2620		420	
Turn Bay Length (ft)	350			225	175	
Base Capacity (vph)	600	1356	1094	970	656	576

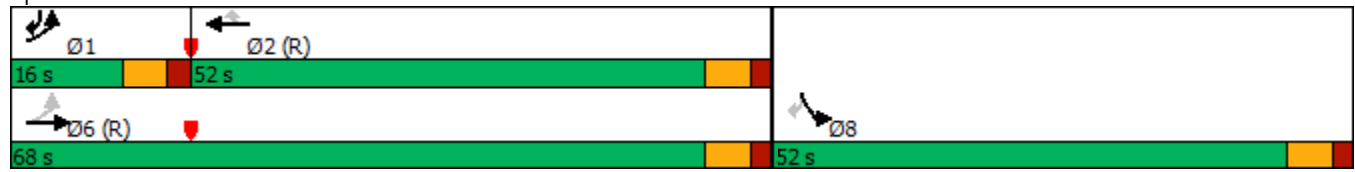


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.38	0.47	0.09	0.25	0.63

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 15.2
 Intersection LOS: B
 Intersection Capacity Utilization 56.8%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: SR 0230 & Norlanco Dr



HCM 6th Signalized Intersection Summary
23: SR 0230 & Norlanco Dr

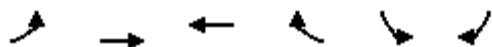
2029 Build w/ Improvements
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	169	462	461	77	150	326
Future Volume (veh/h)	169	462	461	77	150	326
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1772	1786	1758	1772	1772	1772
Adj Flow Rate, veh/h	188	513	512	86	167	362
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	1	3	2	2	2
Cap, veh/h	459	1172	950	811	439	478
Arrive On Green	0.15	1.00	0.54	0.54	0.26	0.25
Sat Flow, veh/h	1688	1786	1758	1502	1688	1502
Grp Volume(v), veh/h	188	513	512	86	167	362
Grp Sat Flow(s),veh/h/ln	1688	1786	1758	1502	1688	1502
Q Serve(g_s), s	5.8	0.0	22.7	3.4	9.7	26.0
Cycle Q Clear(g_c), s	5.8	0.0	22.7	3.4	9.7	26.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	459	1172	950	811	439	478
V/C Ratio(X)	0.41	0.44	0.54	0.11	0.38	0.76
Avail Cap(c_a), veh/h	488	1172	950	811	661	675
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	0.0	17.9	13.5	36.4	36.8
Incr Delay (d2), s/veh	0.6	1.2	2.2	0.3	0.5	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.7	14.0	2.0	7.5	15.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.1	1.2	20.1	13.7	37.0	39.9
LnGrp LOS	B	A	C	B	D	D
Approach Vol, veh/h		701	598		529	
Approach Delay, s/veh		4.1	19.2		39.0	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.9	69.8			83.8	36.2
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	10.0	46.0			62.0	46.0
Max Q Clear Time (g_c+I1), s	7.8	24.7			2.0	28.0
Green Ext Time (p_c), s	0.1	2.2			2.0	2.3
Intersection Summary						
HCM 6th Ctrl Delay			19.1			
HCM 6th LOS			B			

Lanes, Volumes, Timings
23: SR 0230 & Norlanco Dr

2029 Build w/ Improvements
SAT Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	188	376	479	94	150	300
Future Volume (vph)	188	376	479	94	150	300
Ideal Flow (vphp)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	350			225	175	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1676	1782	1782	1500	1676	1500
Flt Permitted	0.293				0.950	
Satd. Flow (perm)	517	1782	1782	1500	1676	1500
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				104		236
Link Speed (mph)		45	45		25	
Link Distance (ft)		810	2700		500	
Travel Time (s)		12.3	40.9		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	418	532	104	167	333
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	1	6	2		8	1
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	8	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	13.0	20.0	20.0	20.0	10.0
Total Split (s)	14.0	53.0	39.0	39.0	22.0	14.0
Total Split (%)	18.7%	70.7%	52.0%	52.0%	29.3%	18.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	51.5	51.5	37.4	37.4	13.5	27.6
Actuated g/C Ratio	0.69	0.69	0.50	0.50	0.18	0.37
v/c Ratio	0.42	0.34	0.60	0.13	0.56	0.48
Control Delay	7.5	6.2	18.0	3.2	34.7	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	6.2	18.0	3.2	34.7	7.5
LOS	A	A	B	A	C	A
Approach Delay		6.7	15.6		16.6	
Approach LOS		A	B		B	
Queue Length 50th (ft)	30	68	173	0	71	29
Queue Length 95th (ft)	61	128	291	24	123	84
Internal Link Dist (ft)		730	2620		420	
Turn Bay Length (ft)	350			225	175	
Base Capacity (vph)	500	1224	888	799	379	706

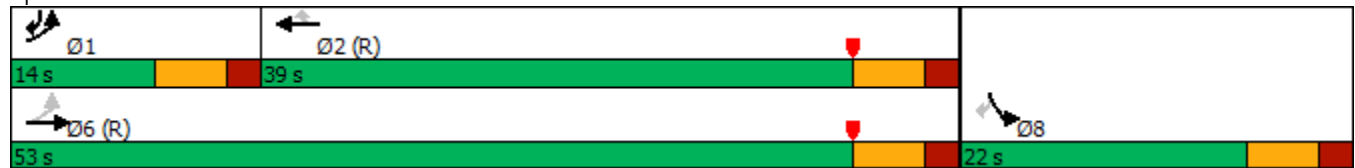


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.34	0.60	0.13	0.44	0.47

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	33 (44%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization	58.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 23: SR 0230 & Norlanco Dr



HCM 6th Signalized Intersection Summary
23: SR 0230 & Norlanco Dr

2029 Build w/ Improvements
SAT Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶	↷	↶	↷
Traffic Volume (veh/h)	188	376	479	94	150	300
Future Volume (veh/h)	188	376	479	94	150	300
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1772	1786	1786	1772	1772	1772
Adj Flow Rate, veh/h	209	418	532	104	167	333
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	1	1	2	2	2
Cap, veh/h	450	1143	851	715	383	486
Arrive On Green	0.10	0.64	0.48	0.48	0.23	0.23
Sat Flow, veh/h	1688	1786	1786	1502	1688	1502
Grp Volume(v), veh/h	209	418	532	104	167	333
Grp Sat Flow(s),veh/h/ln	1688	1786	1786	1502	1688	1502
Q Serve(g_s), s	4.2	8.3	16.7	2.9	6.4	14.5
Cycle Q Clear(g_c), s	4.2	8.3	16.7	2.9	6.4	14.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	450	1143	851	715	383	486
V/C Ratio(X)	0.46	0.37	0.63	0.15	0.44	0.69
Avail Cap(c_a), veh/h	489	1143	851	715	383	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	6.3	14.6	11.1	24.9	22.0
Incr Delay (d2), s/veh	0.7	0.9	3.5	0.4	0.8	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	4.4	10.5	1.6	4.6	9.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.8	7.3	18.1	11.5	25.7	26.0
LnGrp LOS	B	A	B	B	C	C
Approach Vol, veh/h		627	636		500	
Approach Delay, s/veh		8.4	17.0		25.9	
Approach LOS		A	B		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.3	40.7			53.0	22.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	8.0	33.0			47.0	16.0
Max Q Clear Time (g_c+I1), s	6.2	18.7			10.3	16.5
Green Ext Time (p_c), s	0.1	2.2			1.5	0.0
Intersection Summary						
HCM 6th Ctrl Delay			16.5			
HCM 6th LOS			B			

APPENDIX M

TURN LANE ANALYSIS WORKSHEETS

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at Right-In Only Driveway - Westbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		
Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="554"/>	
	Through	-	500	5.0%	513		Right Turn Volume: <input type="text" value="41"/>
	Right	-	40	2.0%	41		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="41"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

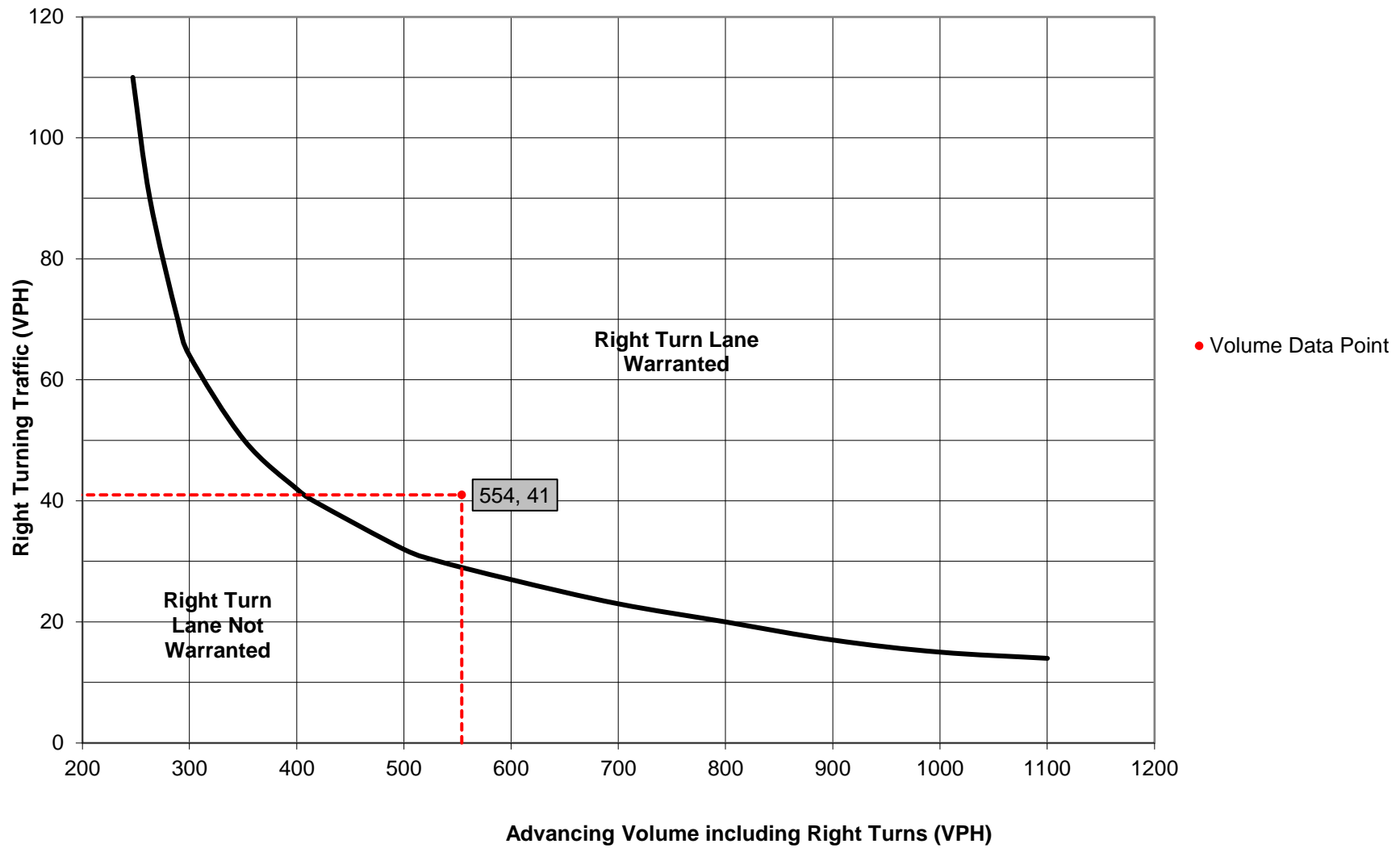
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="150"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at Right-In Only Driveway - Westbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="798"/>	
	Through	-	732	3.0%	743		Right Turn Volume: <input type="text" value="55"/>
	Right	-	54	2.0%	55		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="55"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

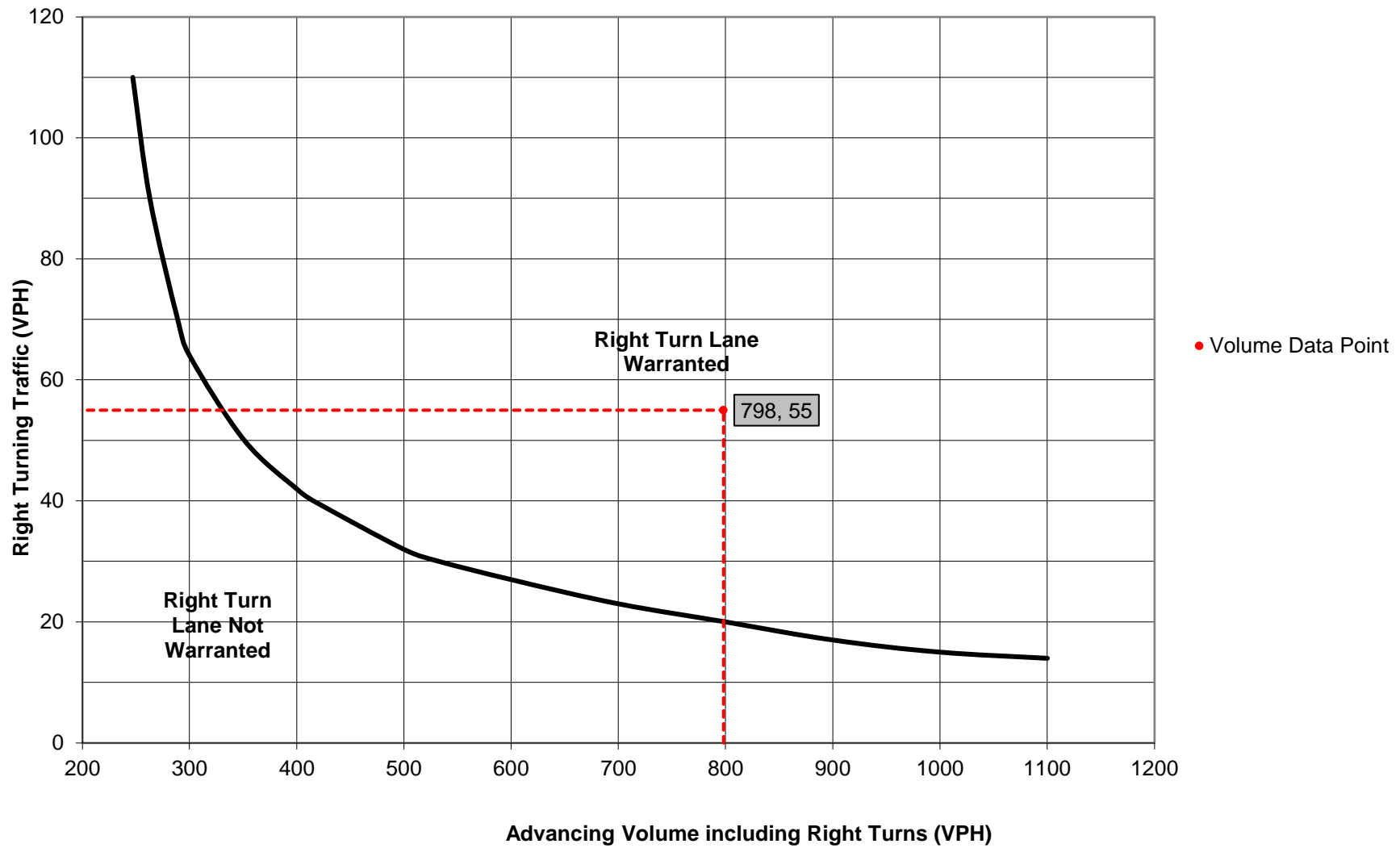
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="150"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at Right-In Only Driveway - Westbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		
Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="784"/>	
	Through	-	715	1.0%	719		Right Turn Volume: <input type="text" value="65"/>
	Right	-	64	2.0%	65		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="65"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

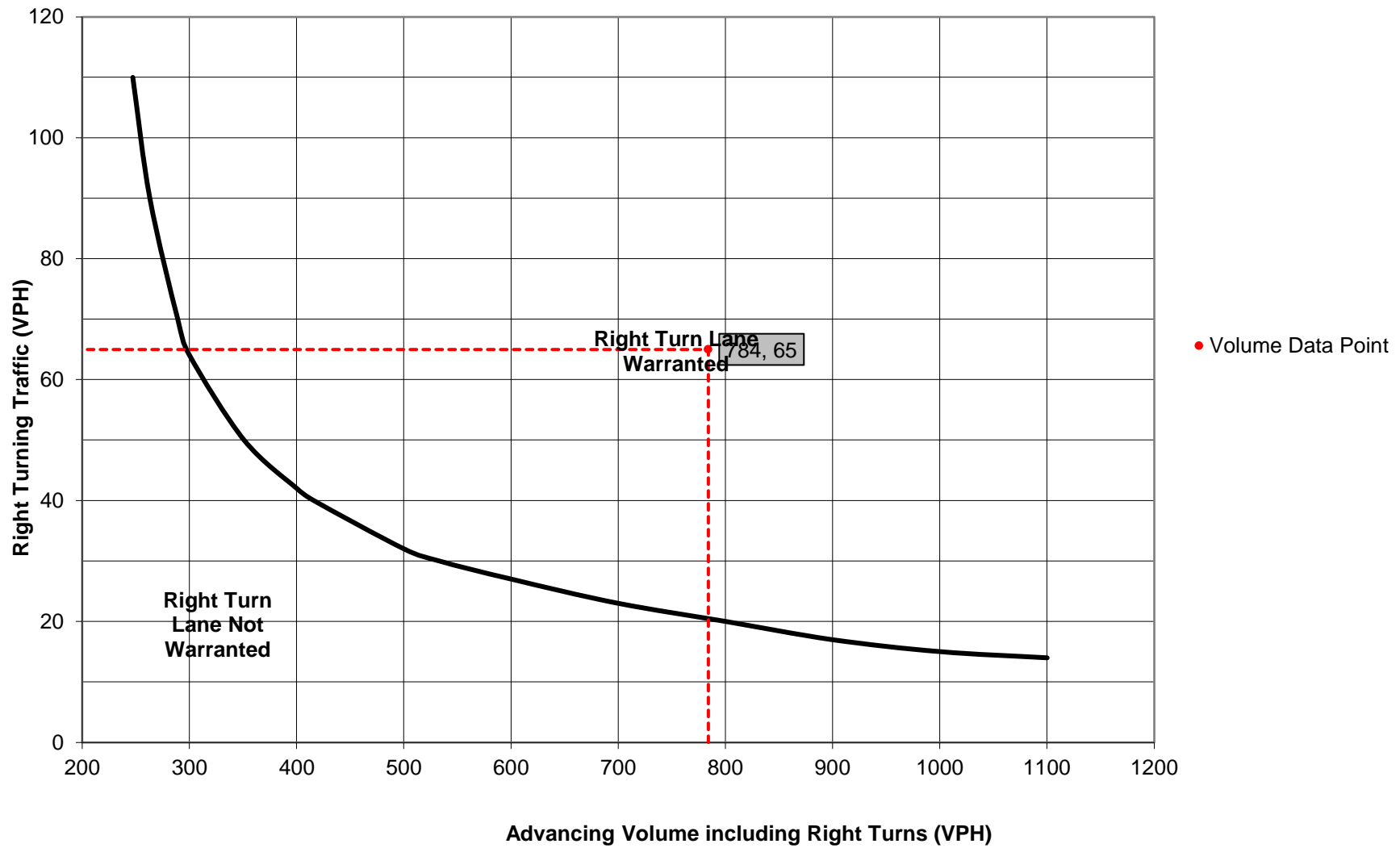
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="150"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Eastbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	113	2.0%	115	Advancing Volume: <input type="text" value="423"/> Opposing Volume: <input type="text" value="461"/> Left Turn Volume: <input type="text" value="115"/>
	Through	-	294	9.0%	308	
	Right	No	0	0.0%	N/A	
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="27.19%"/>
	Through	-	399	5.0%	409	
	Right	Yes	51	2.0%	52	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 3"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="115"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="45"/>	Average # of Vehicles/Cycle: <input type="text" value="3.0"/>

PennDOT Publication 46, Exhibit 11-6

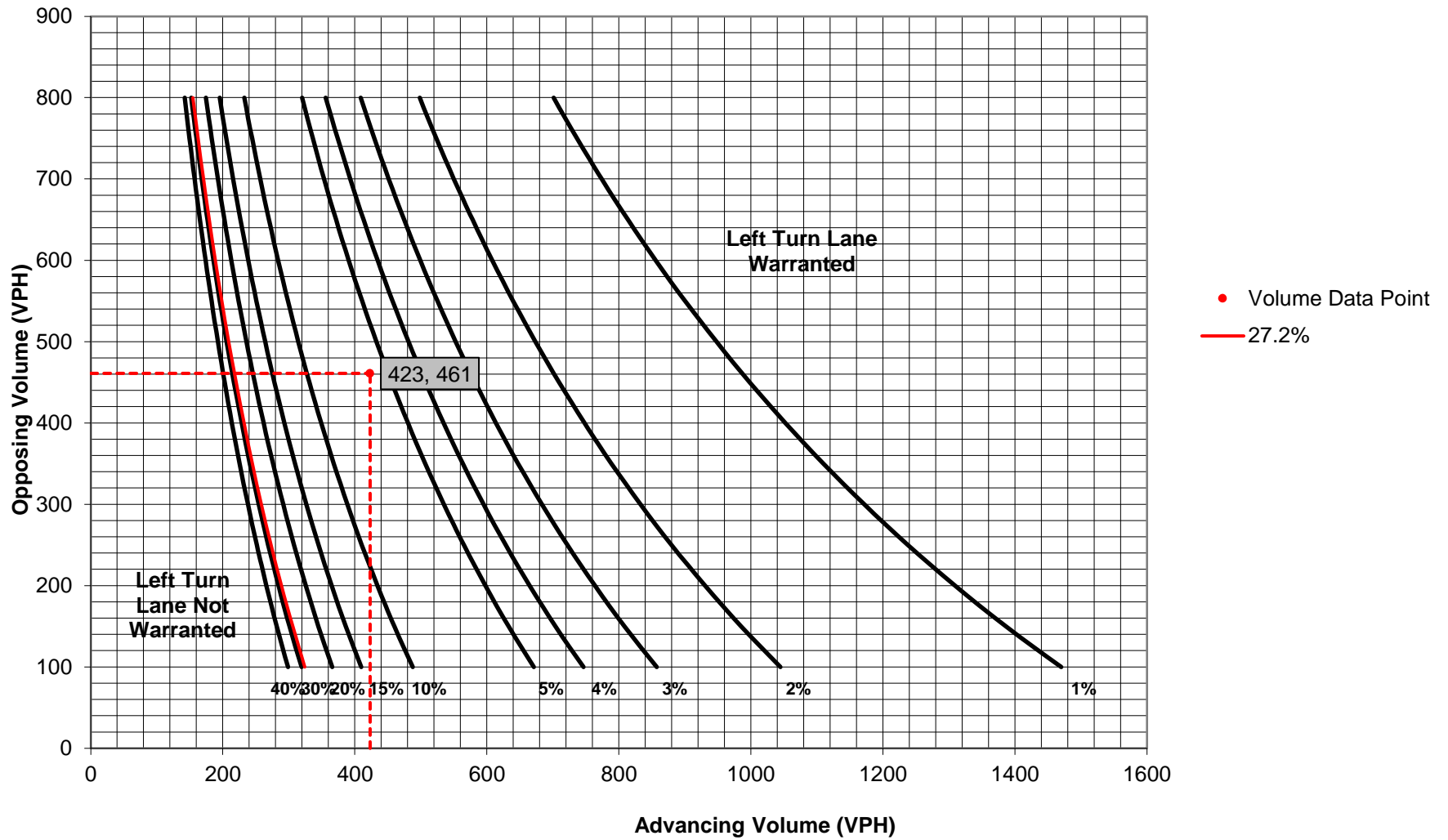
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="225"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="225"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Eastbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	169	2.0%	171	Advancing Volume: <input type="text" value="636"/> Opposing Volume: <input type="text" value="546"/> Left Turn Volume: <input type="text" value="171"/>
	Through	-	462	1.0%	465	
	Right	No	0	0.0%	N/A	
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="26.89%"/>
	Through	-	461	3.0%	468	
	Right	Yes	77	2.0%	78	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 3"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="171"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="3.0"/>

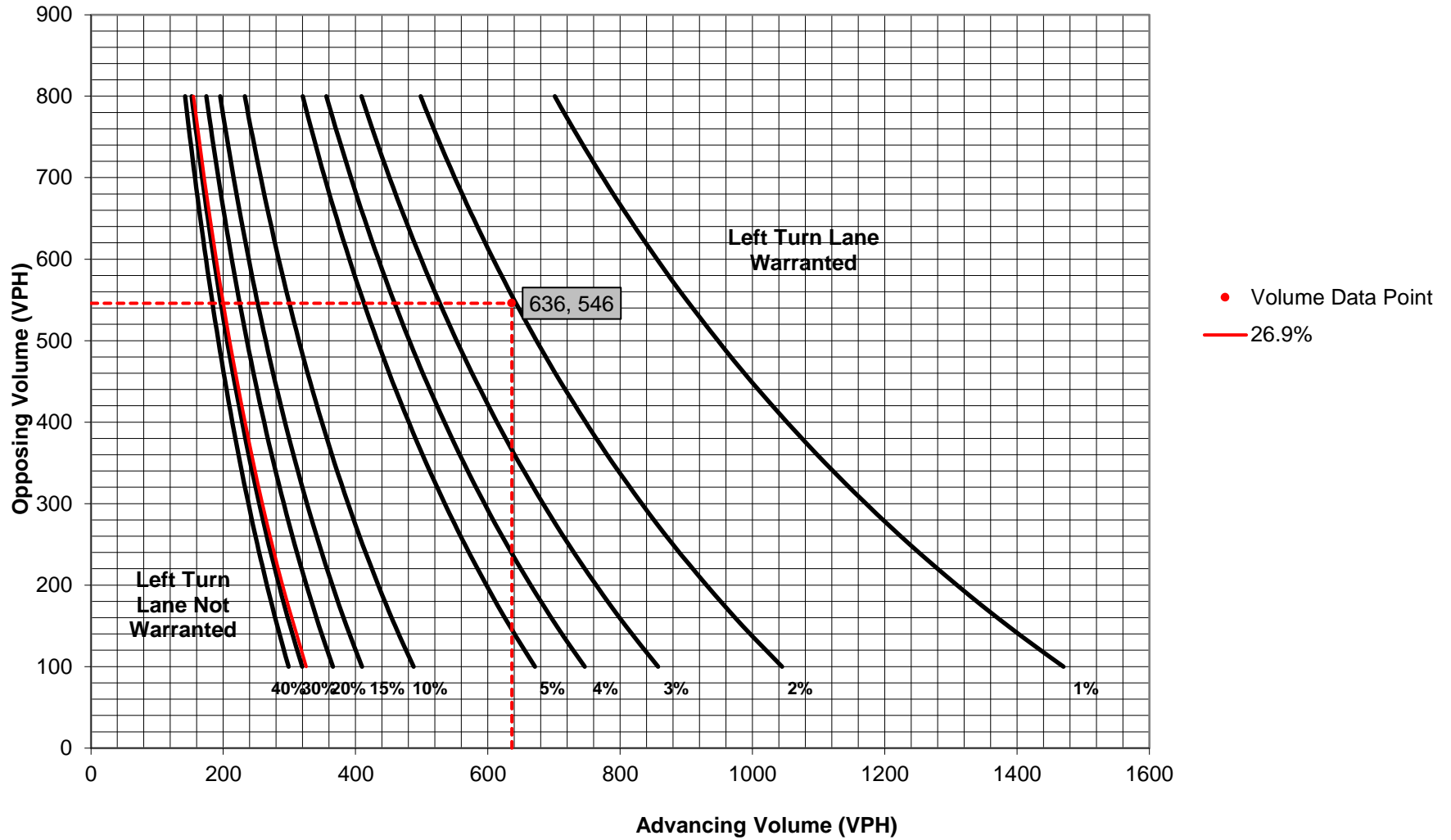
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="225"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="225"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Eastbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	188	2.0%	190	Advancing Volume: <input type="text" value="568"/> Opposing Volume: <input type="text" value="577"/> Left Turn Volume: <input type="text" value="190"/>
	Through	-	376	1.0%	378	
	Right	No	0	0.0%	N/A	
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="33.45%"/>
	Through	-	479	1.0%	482	
	Right	Yes	94	2.0%	95	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 3"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="190"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="48"/>	Average # of Vehicles/Cycle: <input type="text" value="4.0"/>

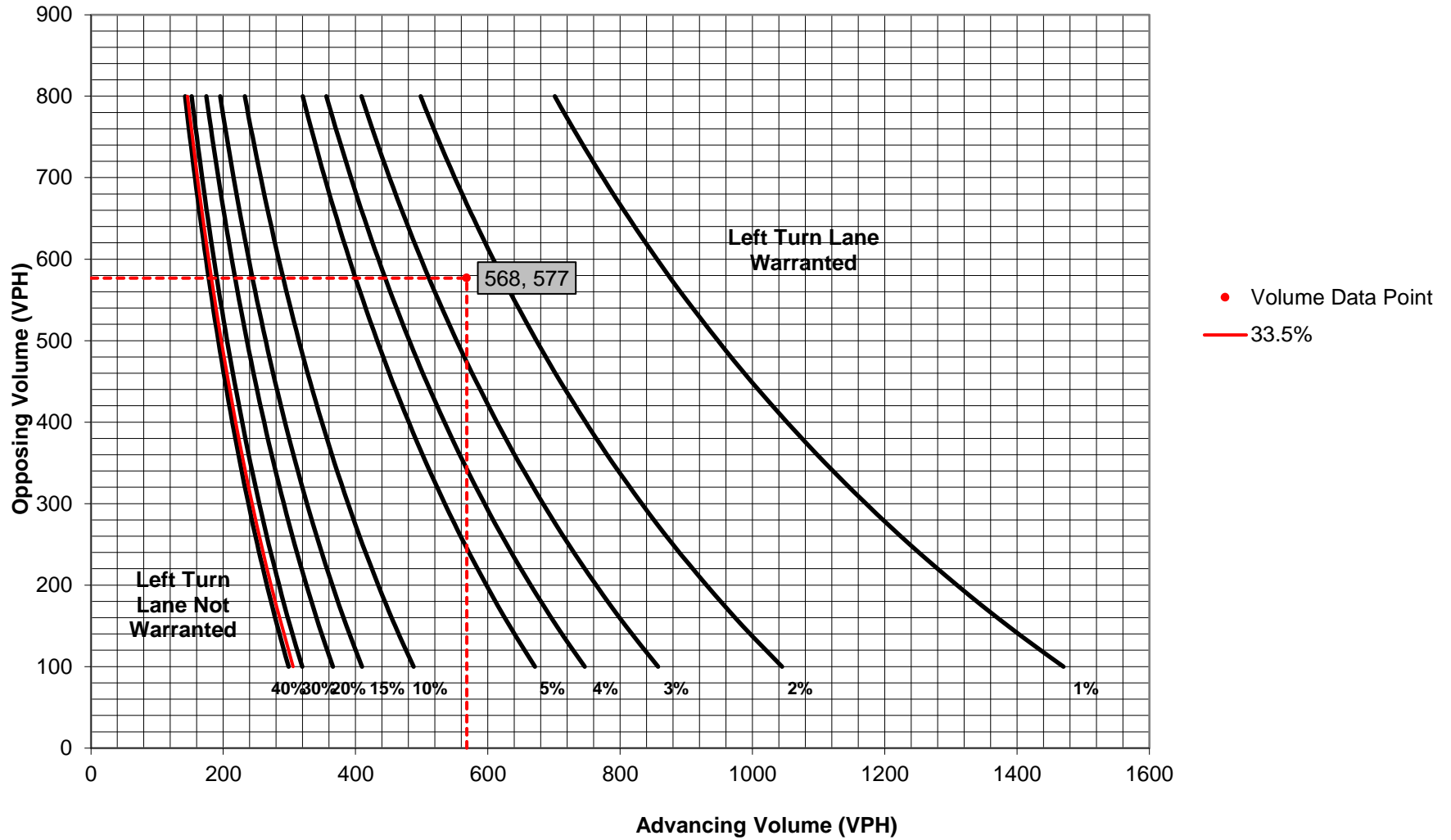
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="250"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="250"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Westbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="461"/>	
	Through	-	399	5.0%	409		Right Turn Volume: <input type="text" value="52"/>
	Right	-	51	2.0%	52		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="52"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="45"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

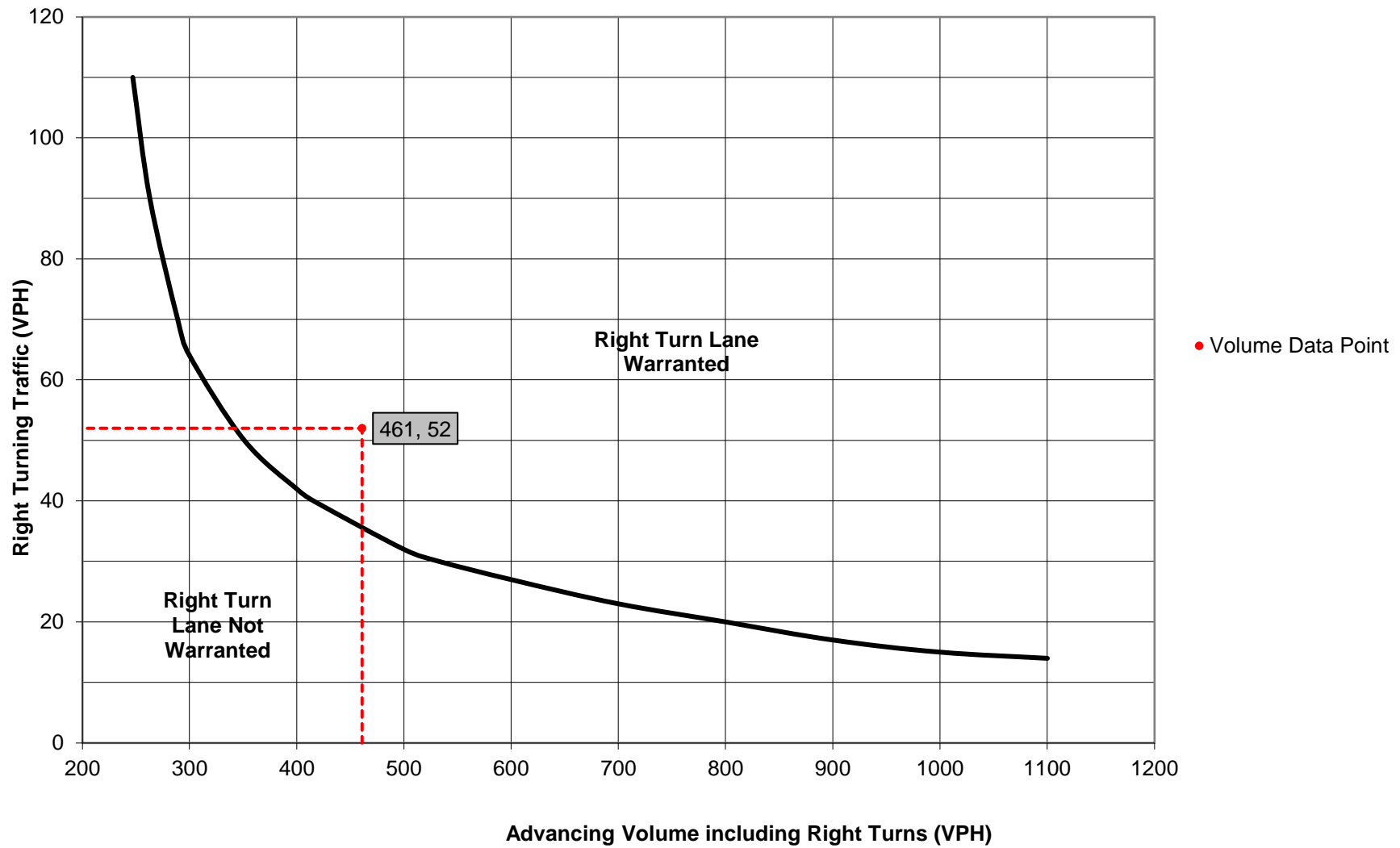
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="150"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Westbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		
Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="546"/>	
	Through	-	461	3.0%	468		Right Turn Volume: <input type="text" value="78"/>
	Right	-	77	2.0%	78		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="78"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

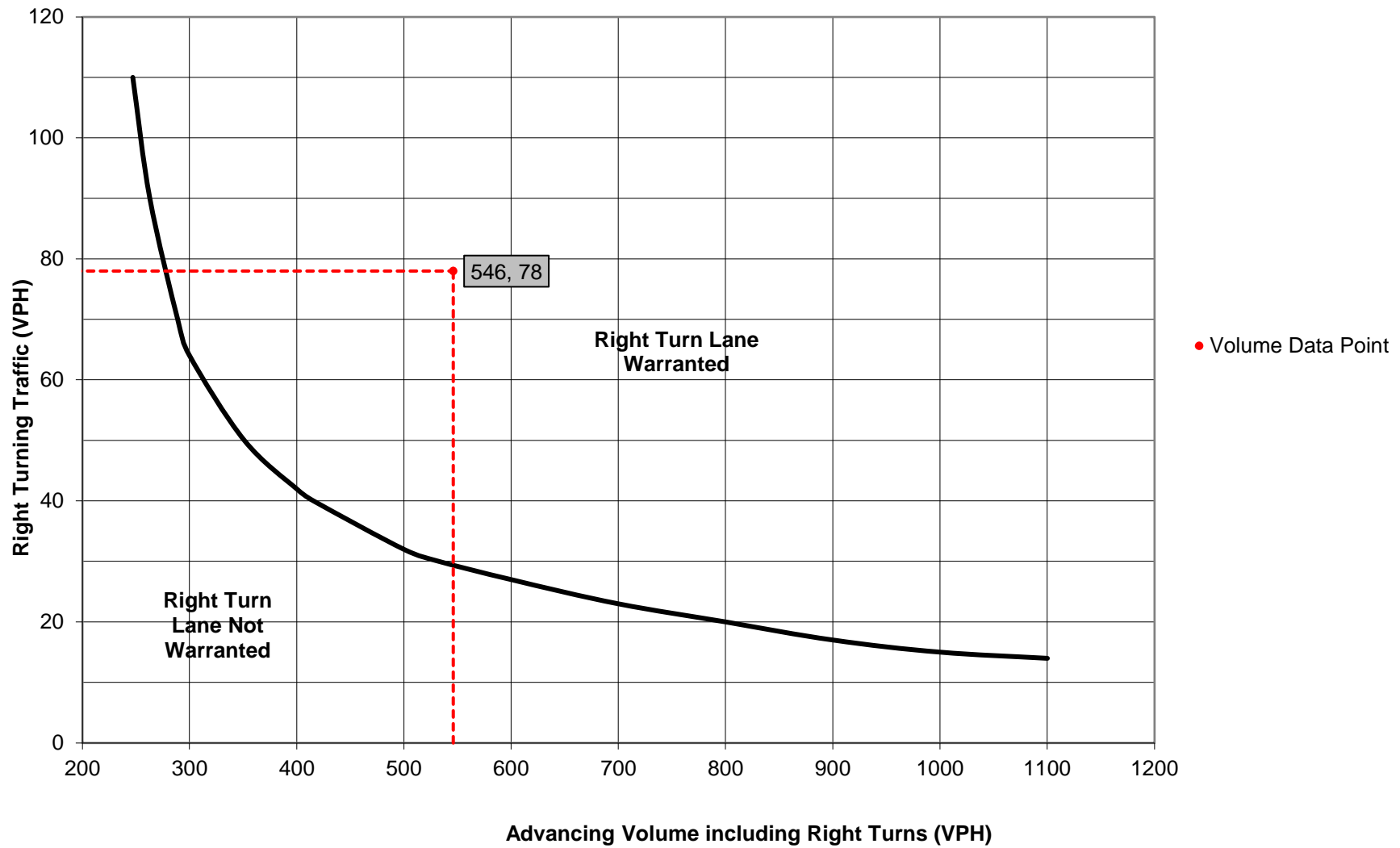
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="150"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Westbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="45"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		
Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="577"/>	
	Through	-	479	1.0%	482		Right Turn Volume: <input type="text" value="95"/>
	Right	-	94	2.0%	95		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="95"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="48"/>	Average # of Vehicles/Cycle: <input type="text" value="2.0"/>

PennDOT Publication 46, Exhibit 11-6

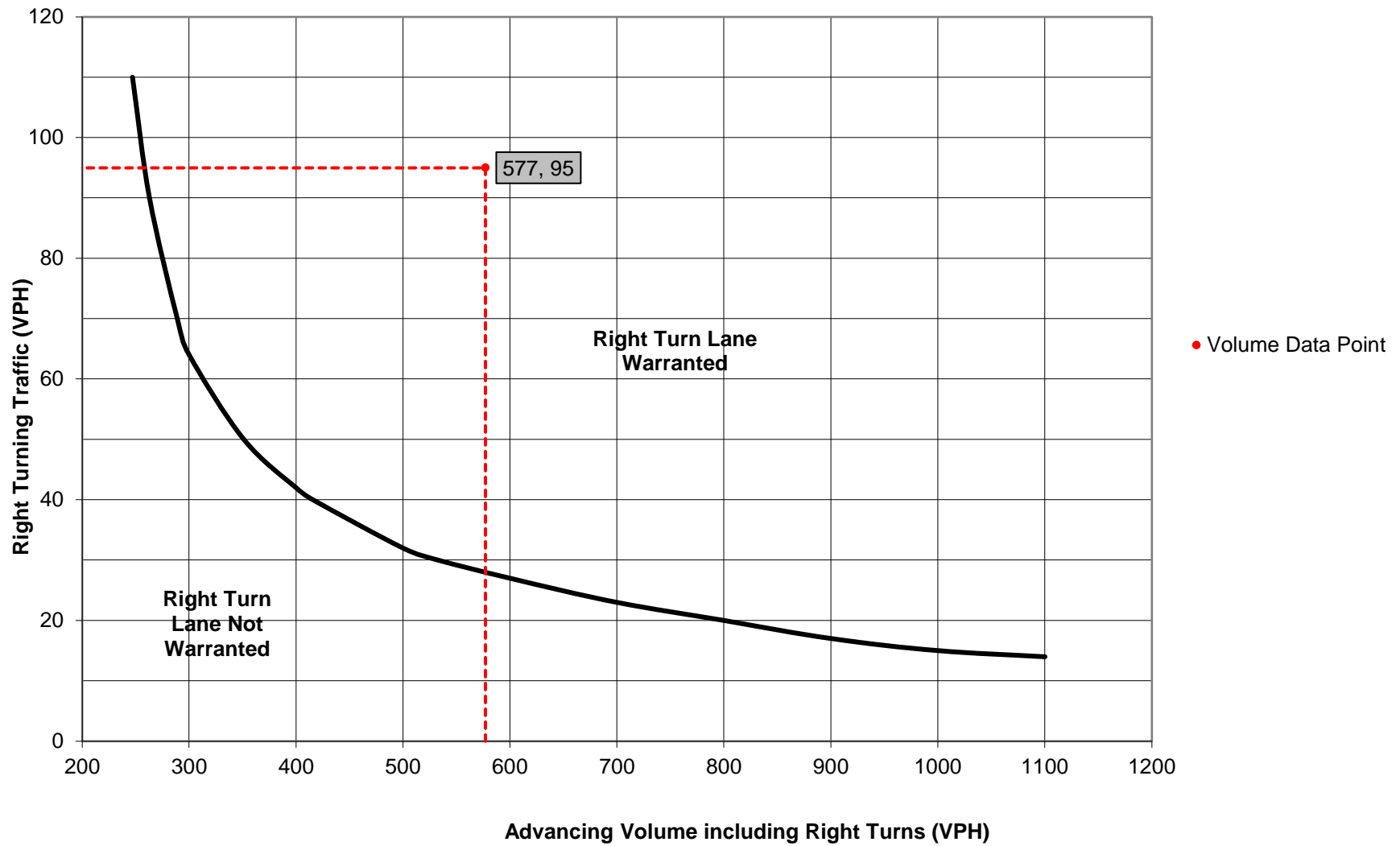
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="175"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="175"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Southbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	65	2.0%	66	Advancing Volume: <input type="text" value="209"/> Opposing Volume: <input type="text" value="1000"/> Left Turn Volume: <input type="text" value="66"/>
	Through	-	0	0.0%	0	
	Right	Yes	141	2.0%	143	
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="31.58%"/>
	Through	-	1000	0.0%	1000	
	Right	No	0	0.0%	N/A	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="66"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="45"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

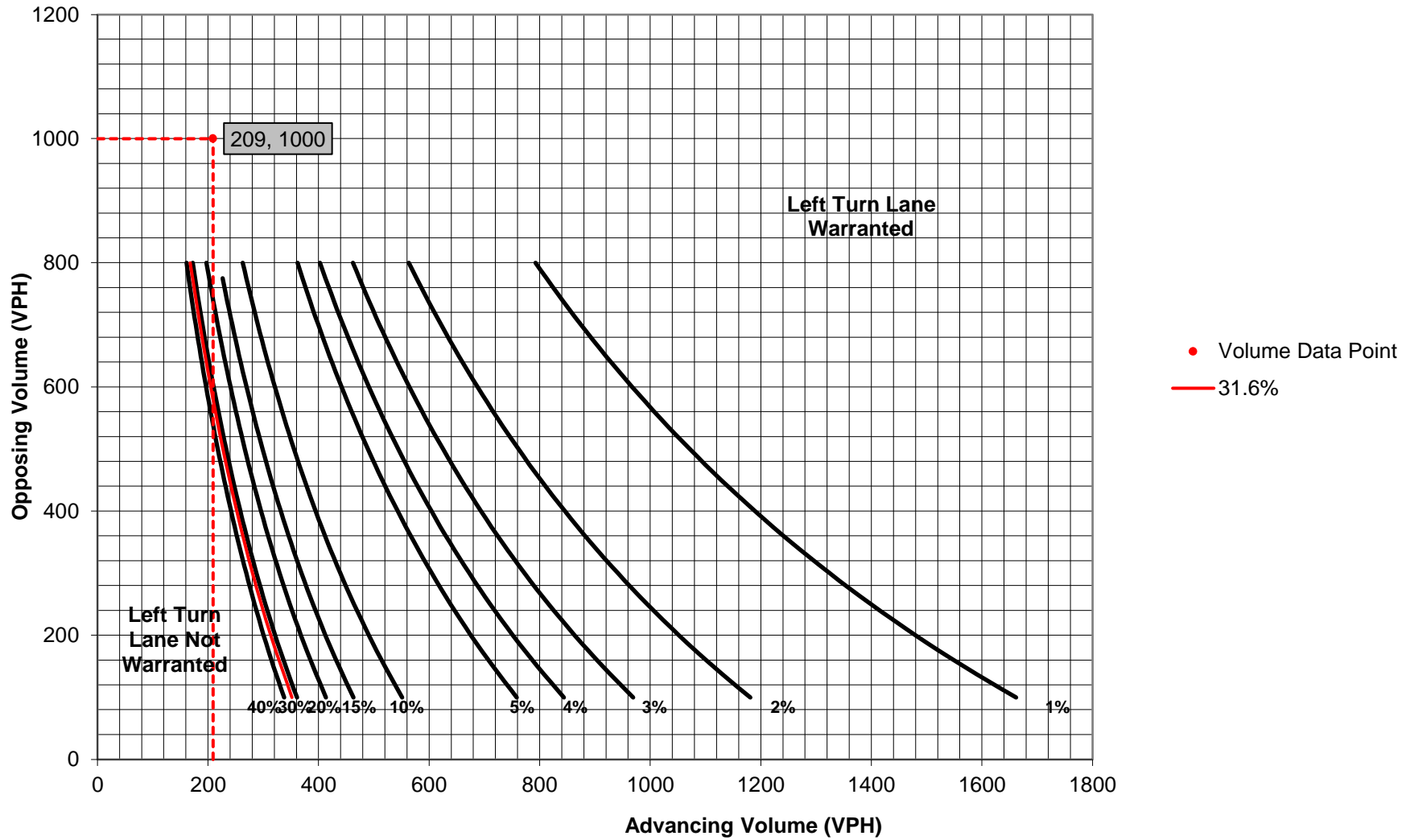
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="75"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="75"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Southbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	150	2.0%	152	Advancing Volume: <input type="text" value="482"/> Opposing Volume: <input type="text" value="600"/> Left Turn Volume: <input type="text" value="152"/>
	Through	-	0	0.0%	0	
	Right	Yes	326	2.0%	330	
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="31.54%"/>
	Through	-	600	0.0%	600	
	Right	No	0	0.0%	N/A	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="152"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="3.0"/>

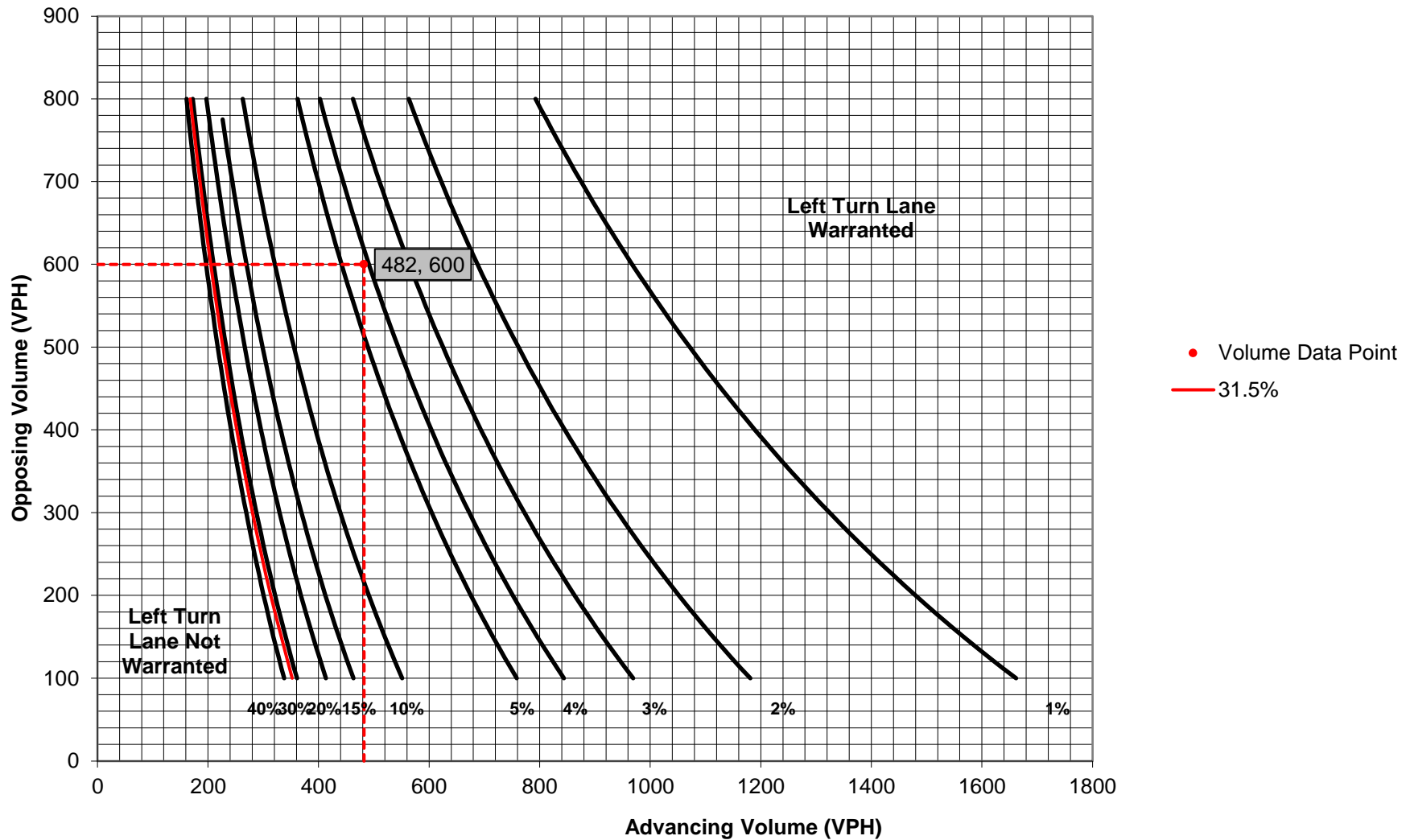
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="150"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="SR 0230 at NORLANCO Drive - Southbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	150	2.0%	152	Advancing Volume: <input type="text" value="455"/>	
	Through	-	0	0.0%	0		Opposing Volume: <input type="text" value="600"/>
	Right	Yes	300	2.0%	303		Left Turn Volume: <input type="text" value="152"/>
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="33.41%"/>	
	Through	-	600	0.0%	600		
	Right	No	0	0.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-	0	0.0%	N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="152"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="48"/>	Average # of Vehicles/Cycle: <input type="text" value="3.0"/>

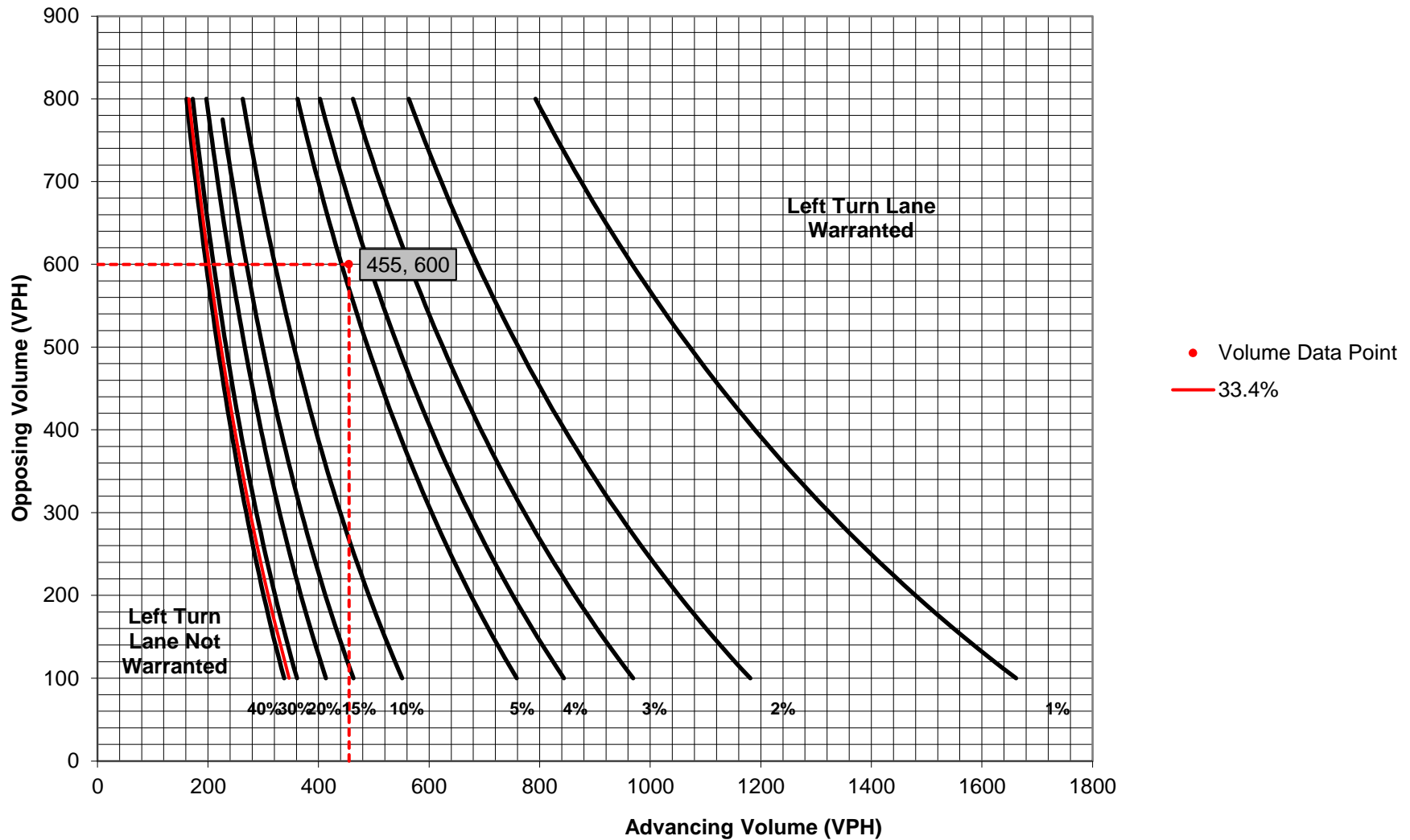
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
Turn Demand Volume						
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="150"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Right-In Only Driveway - Northbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	
	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	801	9.0%	910
	Right	-	66	2.0%	68

Advancing Volume:	978
Right Turn Volume:	68

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 80px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 80px;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 80px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 80px;" type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="68"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

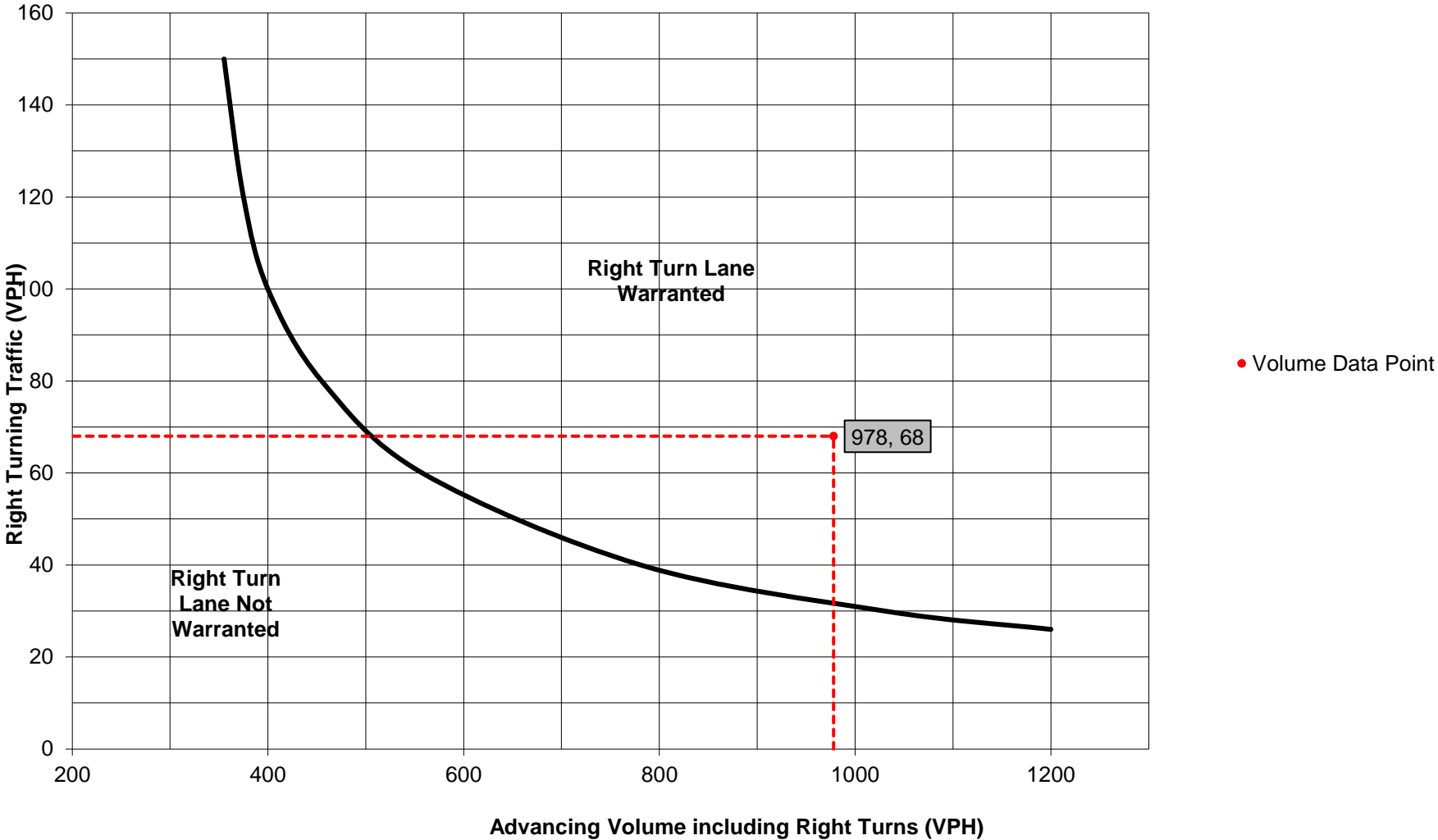
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	136	Feet
Required Right Turn Lane Storage Length:	150	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Right-In Only Driveway - Northbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		
Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="712"/>	
	Through	-	637	4.0%	676		Right Turn Volume: <input type="text" value="36"/>
	Right	-	34	2.0%	36		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="36"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	

PennDOT Publication 46, Exhibit 11-6

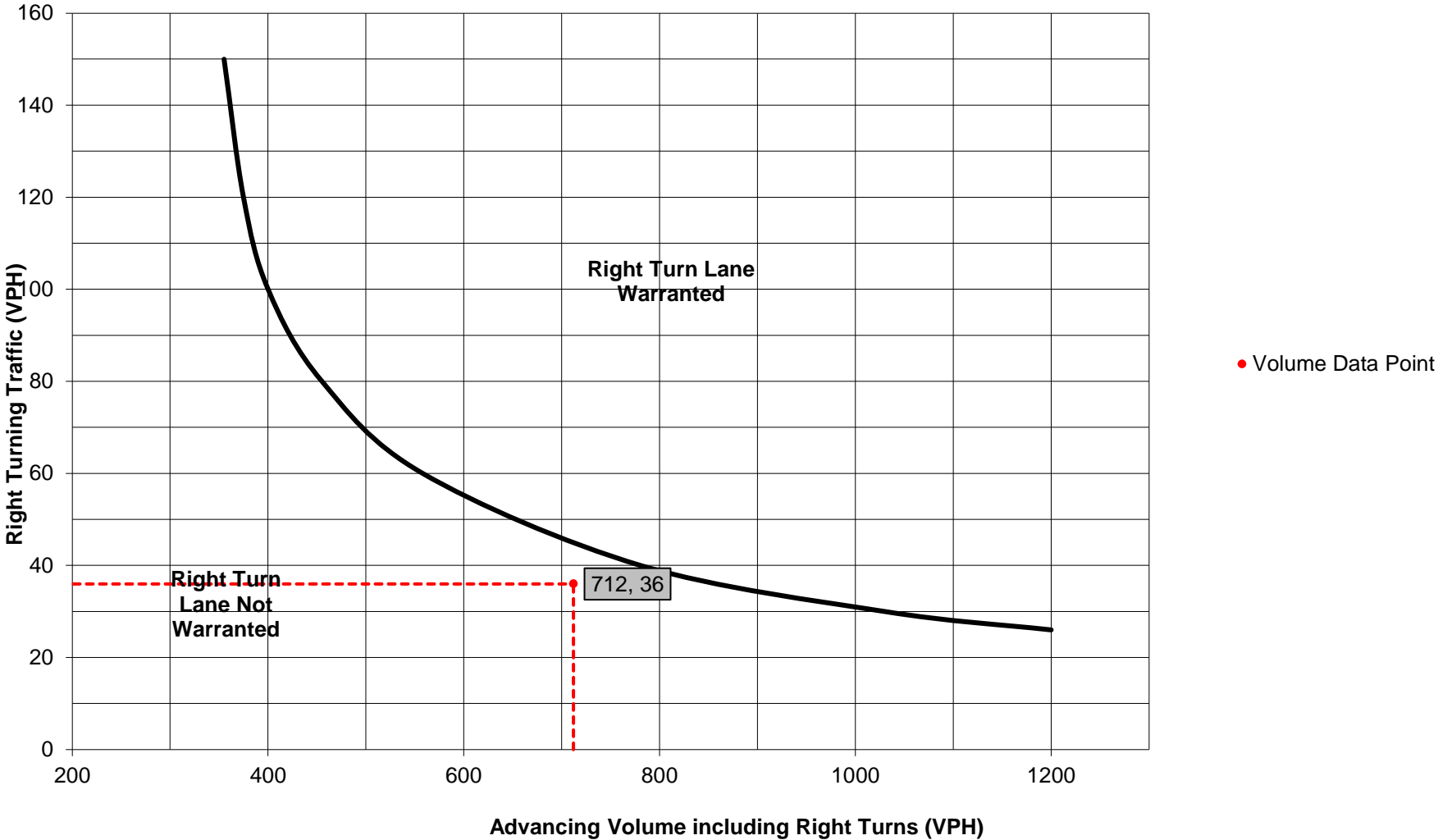
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Right-In Only Driveway - Northbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	511	2.0%	527
	Right	-	34	2.0%	36

Advancing Volume:	563
Right Turn Volume:	36

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="36"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

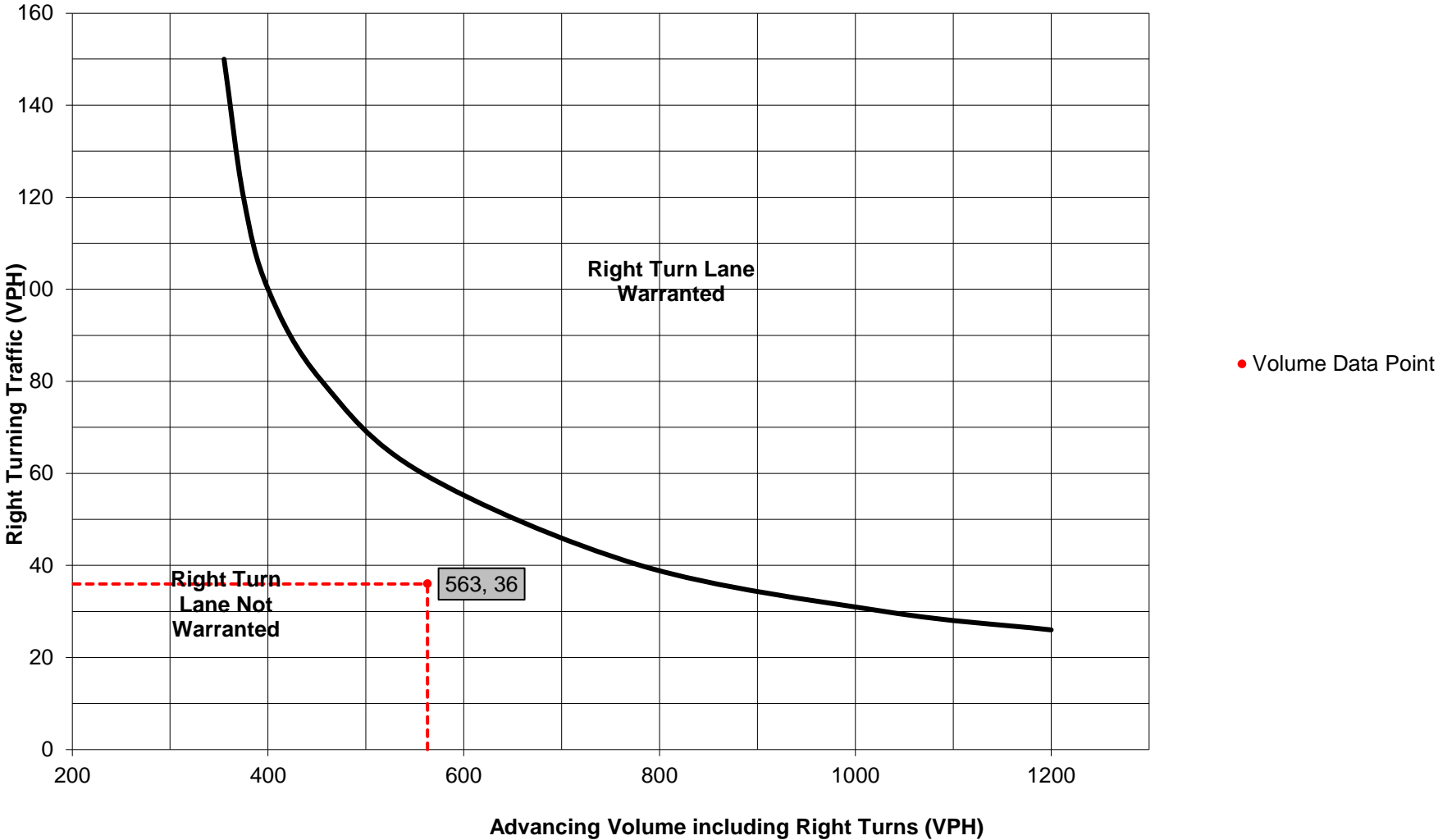
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Eastern Parcels Access - Northbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="909"/>	
	Through	-	786	9.0%	893		Right Turn Volume: <input type="text" value="16"/>
	Right	-	15	2.0%	16		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="16"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

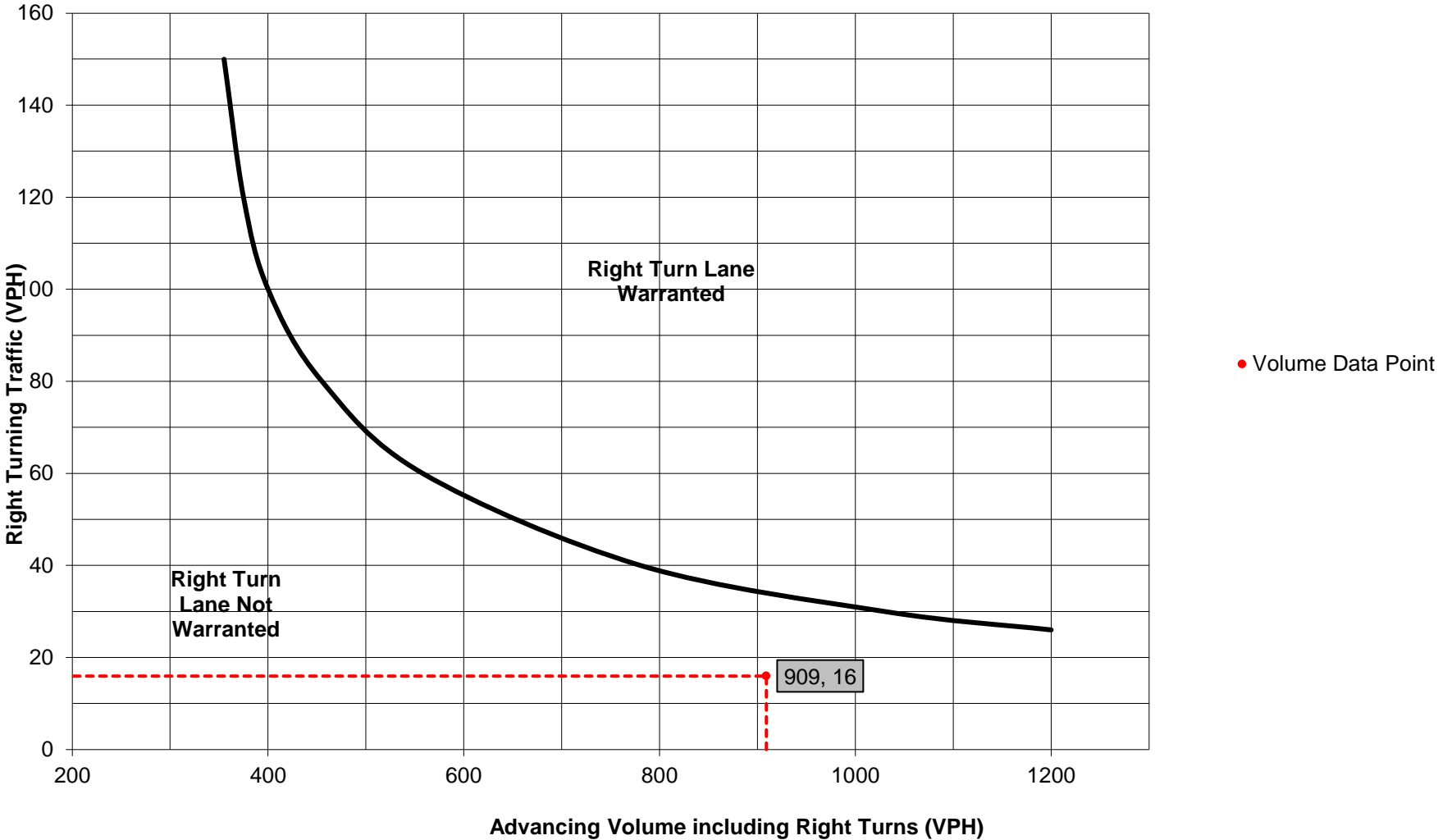
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Eastern Parcels Access - Northbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		
Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="674"/>	
	Through	-	566	4.0%	600		Right Turn Volume: <input type="text" value="74"/>
	Right	-	71	2.0%	74		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="74"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

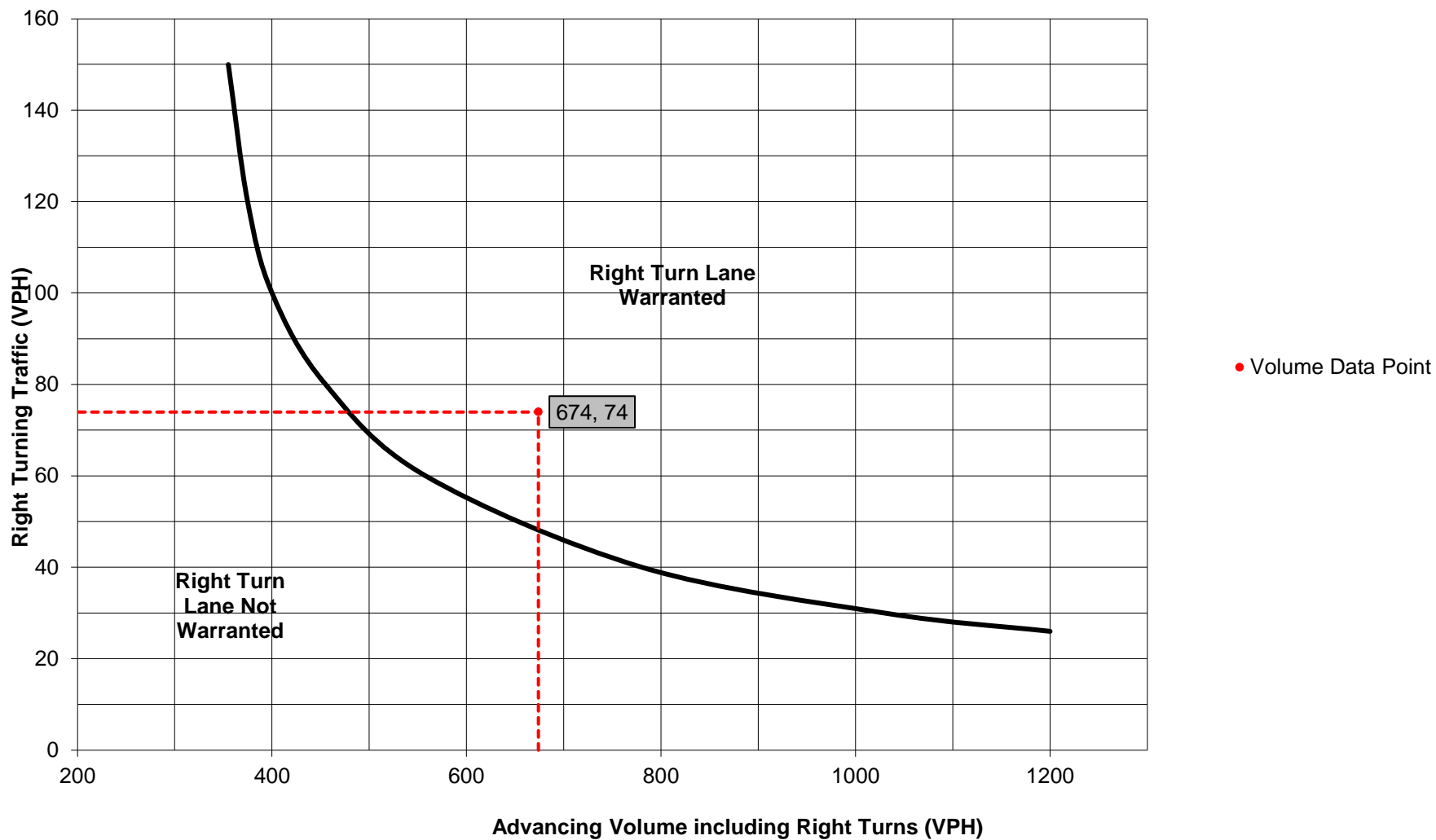
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="136"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Eastern Parcels Access - Northbound Right Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="528"/>	
	Through	-	440	2.0%	454		Right Turn Volume: <input type="text" value="74"/>
	Right	-	71	2.0%	74		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="74"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

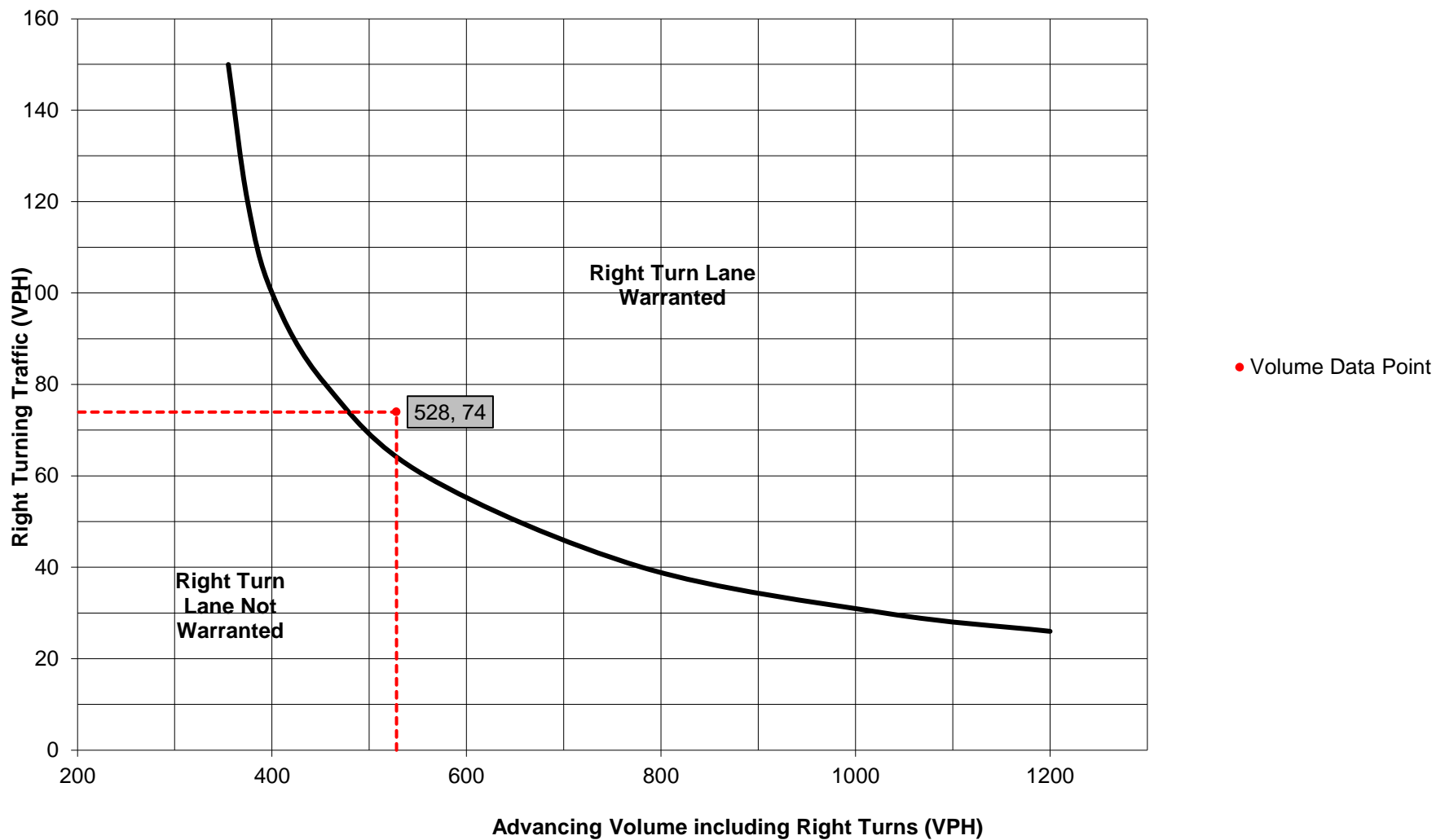
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
Turn Demand Volume						
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="136"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Eastern Parcels Access - Southbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	183	2.0%	189	Advancing Volume: <input type="text" value="783"/>	
	Through	-	516	10.0%	594		Opposing Volume: <input type="text" value="908"/>
	Right	No	0	0.0%	N/A		Left Turn Volume: <input type="text" value="189"/>
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="24.14%"/>	
	Through	-	786	9.0%	893		
	Right	Yes	15	0.0%	15		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-	0	0.0%	N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 2"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="189"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="3.0"/>

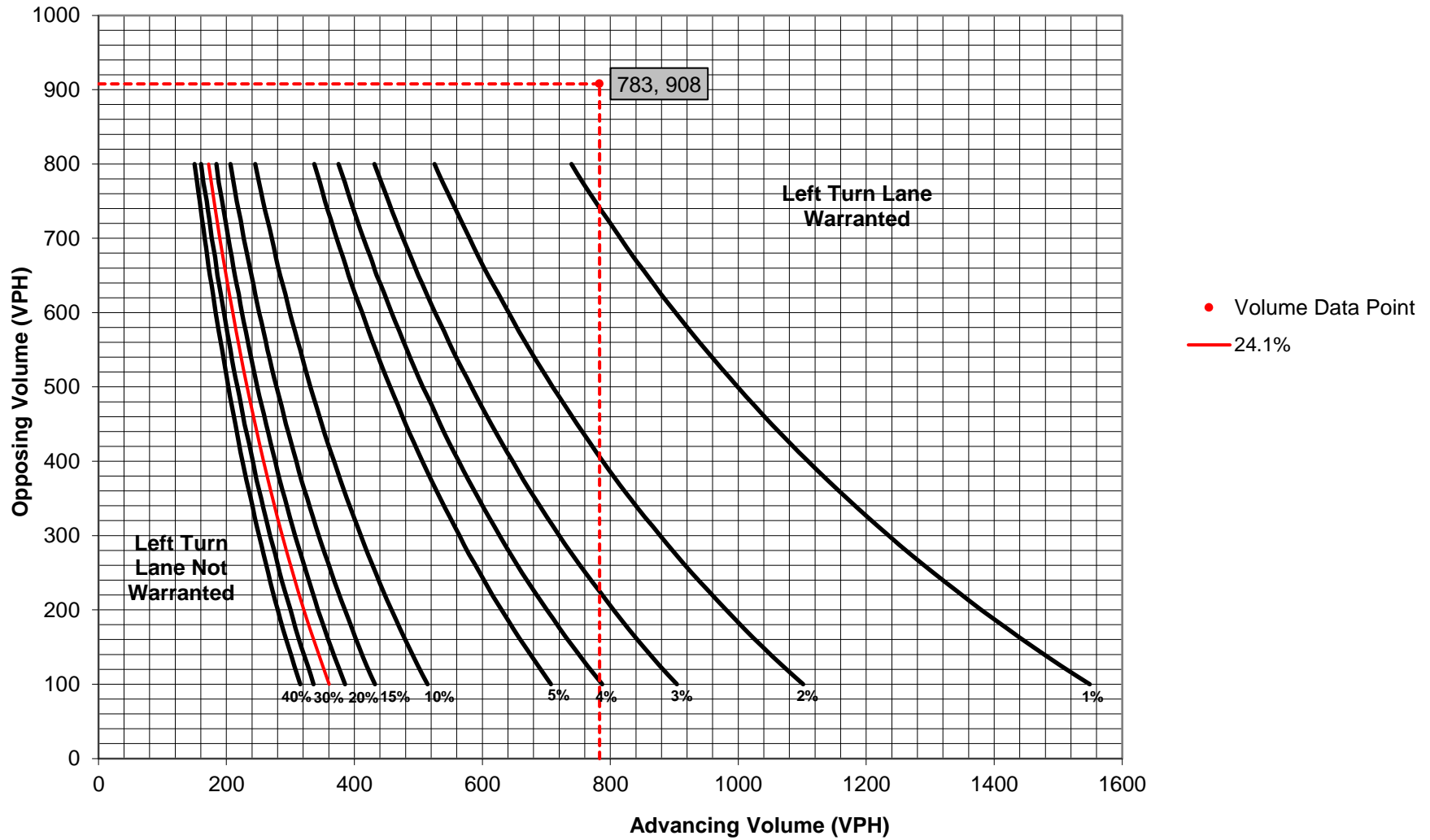
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="211"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="225"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Eastern Parcels Access - Southbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	282	2.0%	291	Advancing Volume: <input type="text" value="1080"/>	
	Through	-	755	3.0%	789		Opposing Volume: <input type="text" value="674"/>
	Right	No	0	0.0%	N/A		Left Turn Volume: <input type="text" value="291"/>
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="26.94%"/>	
	Through	-	566	4.0%	600		
	Right	Yes	71	2.0%	74		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-	0	0.0%	N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 2"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="291"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="5.0"/>

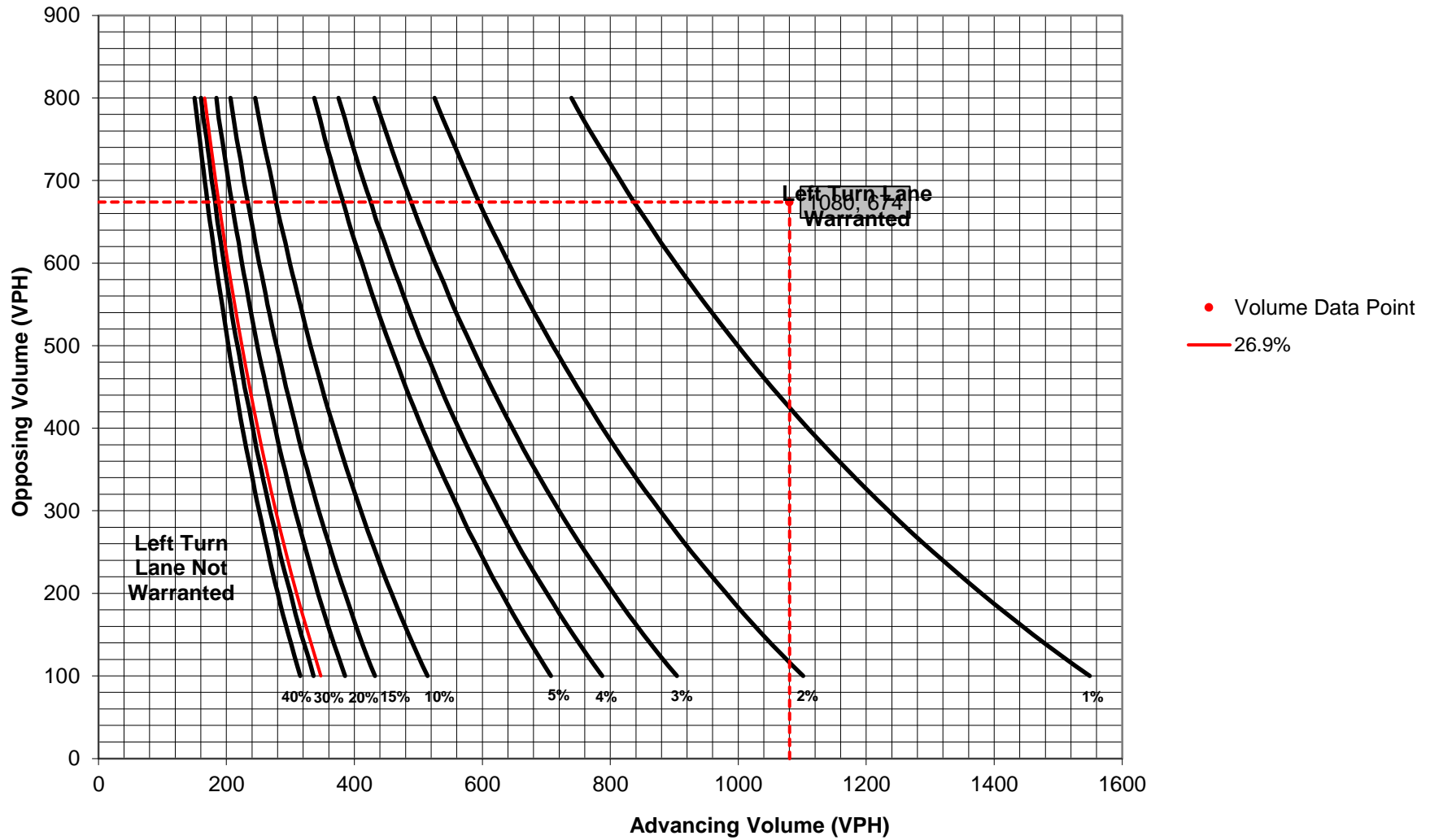
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
Turn Demand Volume						
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="261"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="275"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Mt. Joy Twp."/>	Analysis Date: <input type="text" value="2/23/2023"/>
County: <input type="text" value="Lancaster County"/>	Conducted By: <input type="text" value="GEC"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text"/>
	Agency/Company Name: <input type="text" value="GME"/>
Intersection & Approach Description: <input type="text" value="Cloverleaf Road at Eastern Parcels Access - Southbound Left Turn"/>	
Analysis Period: <input type="text" value="2029 Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="40"/>	Type of Analysis: <input type="text" value="Left Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	281	2.0%	290	Advancing Volume: <input type="text" value="720"/>	
	Through	-	411	3.0%	430		Opposing Volume: <input type="text" value="541"/>
	Right	No	0	0.0%	N/A		Left Turn Volume: <input type="text" value="290"/>
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="40.28%"/>	
	Through	-	440	4.0%	467		
	Right	Yes	71	2.0%	74		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	0	0.0%	N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-	0	0.0%	N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 2"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="290"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="5.0"/>

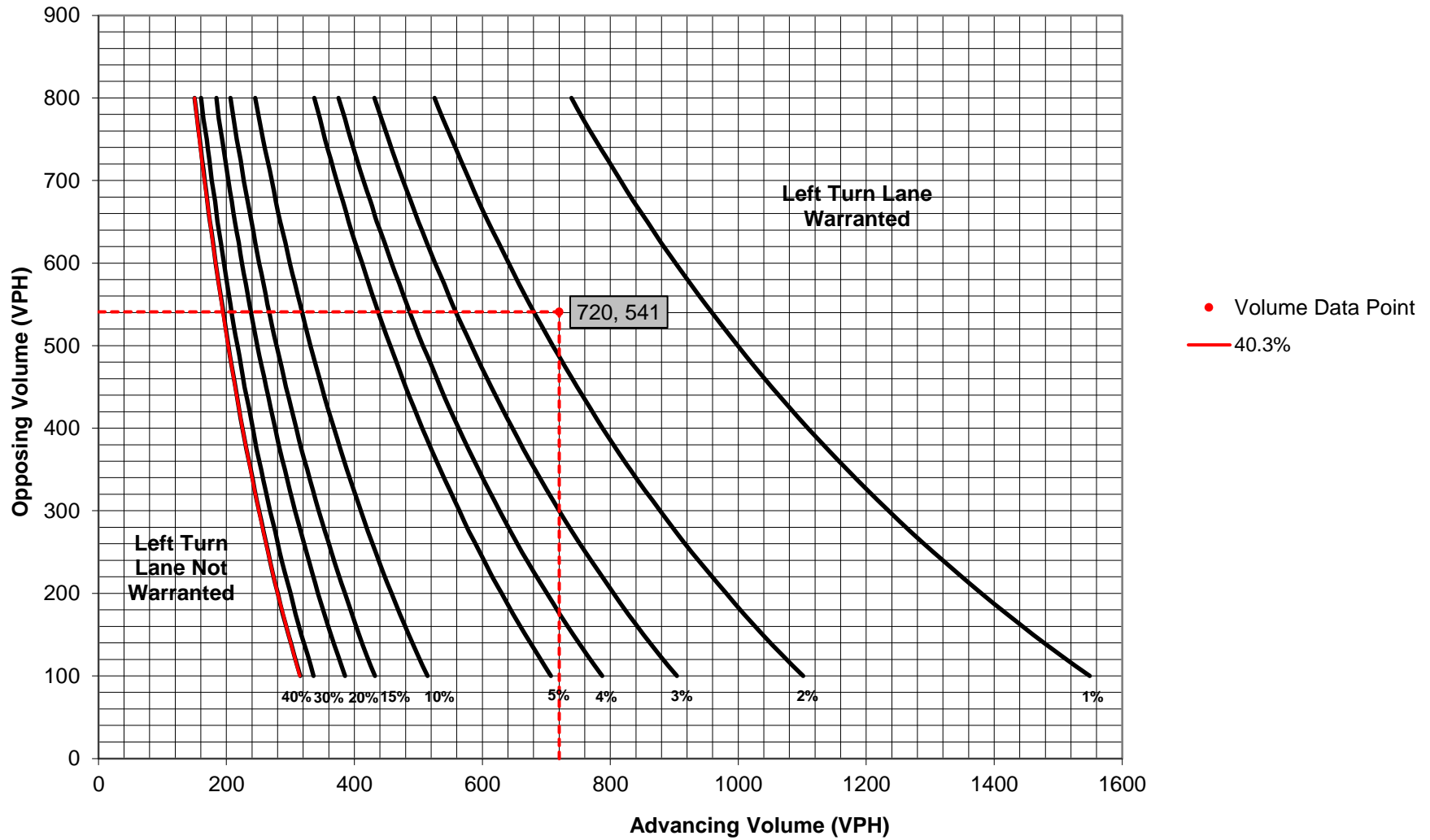
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
Turn Demand Volume						
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="261"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="275"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



APPENDIX N

SIGHT DISTANCE ANALYSIS WORKSHEETS

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

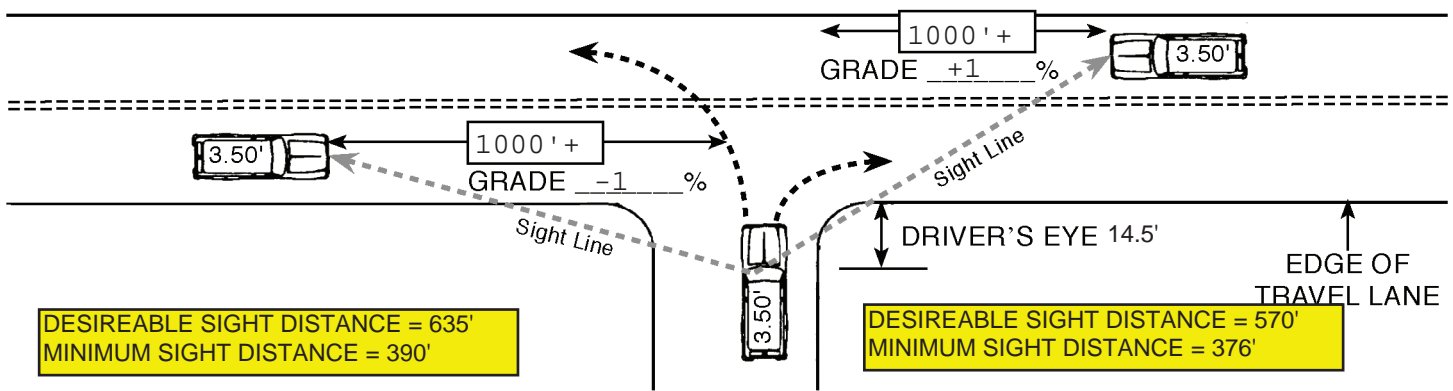
APPLICANT Penmark APPLICATION NO. _____

S.R. 0230 SEG. 0150 OFFSET 1308 LEGAL SPEED LIMIT 45 MPH

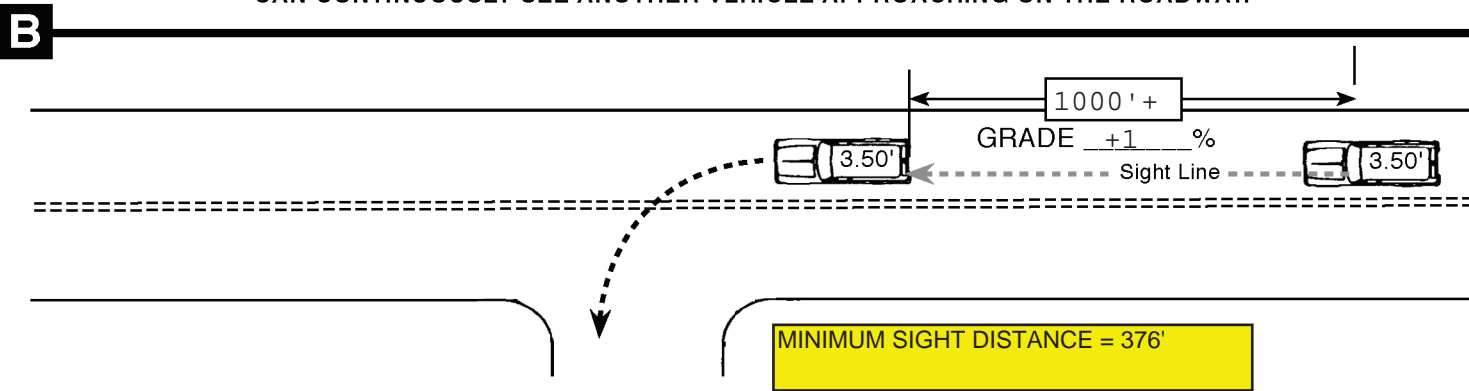
MEASURED BY Grove Miller Engineering, Inc. DATE 03/22/2022

FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

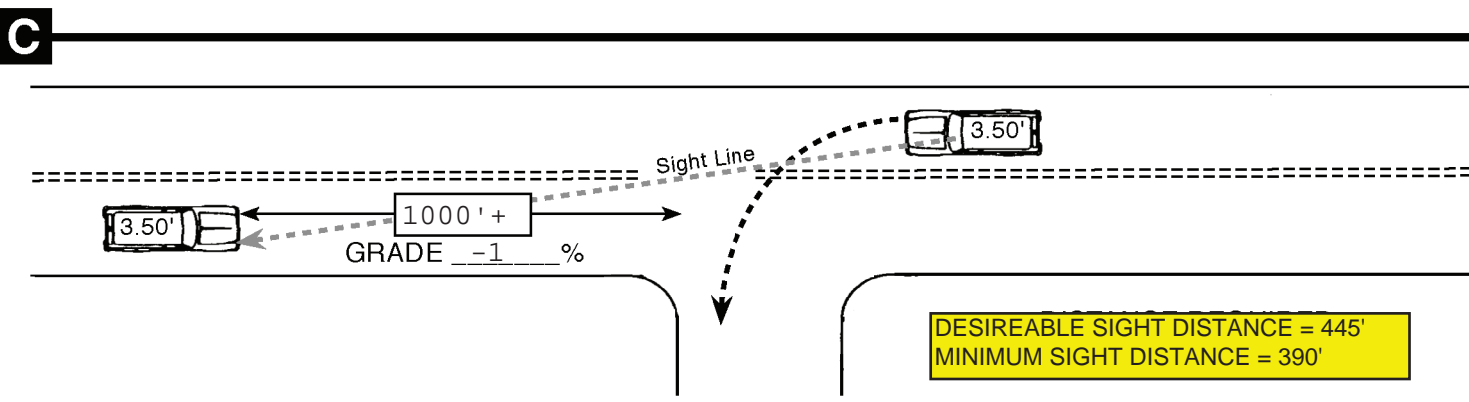
A SR 0230 & PROPOSED ACCESS DRIVE



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

APPLICANT Penmark APPLICATION NO. _____

S.R. 0010 SEG. 0140 OFFSET 0690 LEGAL SPEED LIMIT 40 MPH

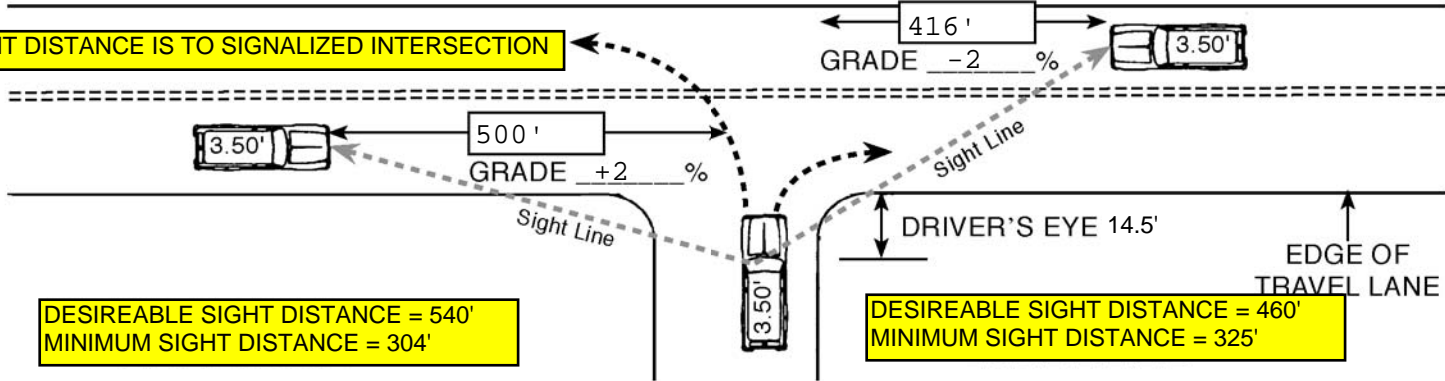
MEASURED BY D. C. Gohn Associates, Inc. DATE 04/14/2022

FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

SR 4025 & EASTERN PARCELS ACCESS

A

SIGHT DISTANCE IS TO SIGNALIZED INTERSECTION

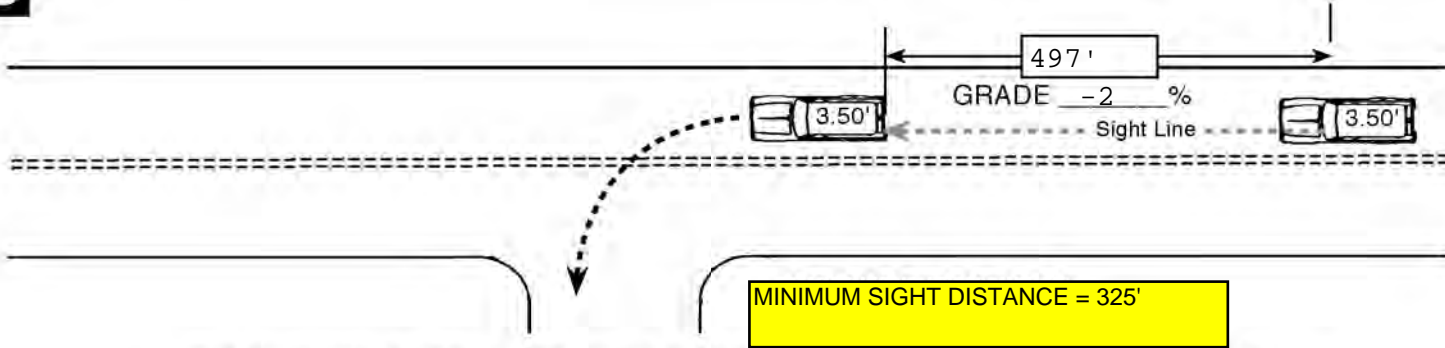


DESIREABLE SIGHT DISTANCE = 540'
 MINIMUM SIGHT DISTANCE = 304'

DESIREABLE SIGHT DISTANCE = 460'
 MINIMUM SIGHT DISTANCE = 325'

THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

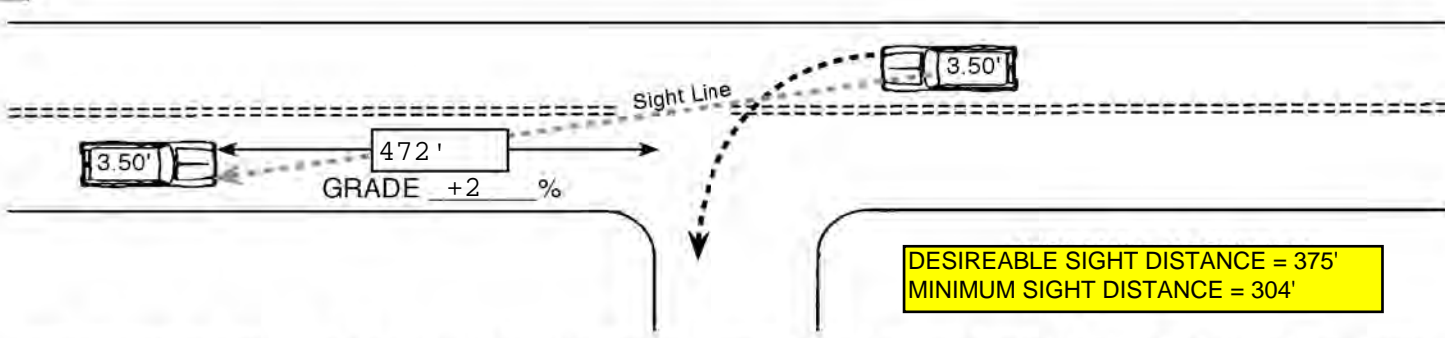
B



MINIMUM SIGHT DISTANCE = 325'

THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.

C



DESIREABLE SIGHT DISTANCE = 375'
 MINIMUM SIGHT DISTANCE = 304'

THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

APPENDIX O

TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

STUDY AND ANALYSIS INFORMATION

Municipality: Mt Joy Township
 County: Cumberland County
 PennDOT Engineering District: 8

Analysis Date: 9/28/2022
 Conducted By: GEC
 Agency/Company Name: GME

Analysis Information

Data Collection Date: 2024 Build
 Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number: SR 0230
 Major Street Approach #1 Direction: E-Bound
 Major Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 1 LANE(S)
 Speed Limit or 85th Percentile Speed on the Major Street: 45 MPH

Minor Street Information

Minor Street Name and Route Number: Proposed Access Drive
 Minor Street Approach #1 Direction: S-Bound
 Minor Street Approach #2 Direction: N/A

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	No	N/A
Warrant 3, Peak Hour	Yes	Yes
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A
Warrant PA-1, ADT Volume Warrant	No	N/A
Warrant PA-2, Midblock and Trail Crossings	No	N/A

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	Yes
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

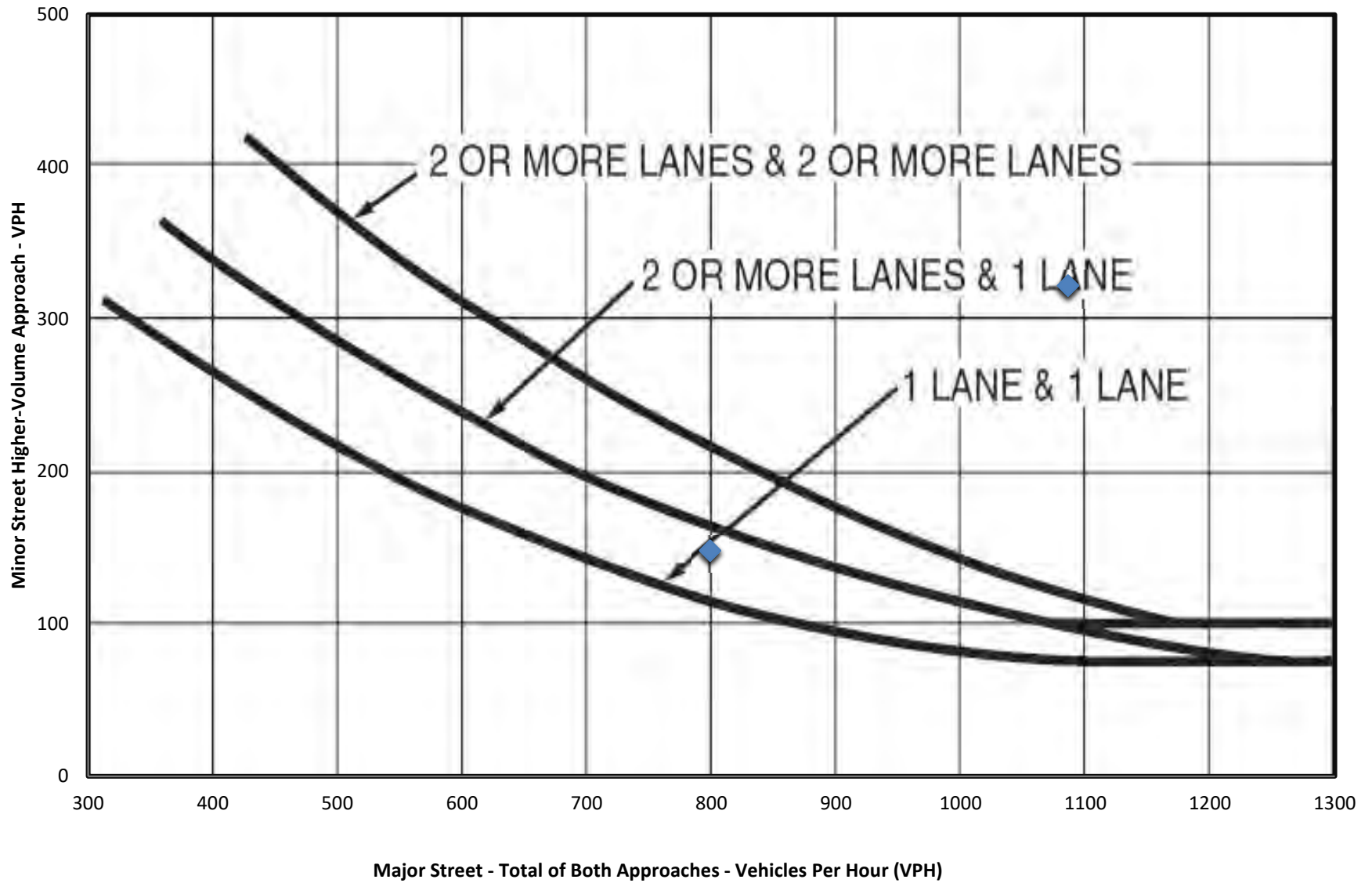
**If applicable, attach all supporting calculations and documentation.*

Total Number of Unique Hours Met On Figure 4C-4
2

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	799	148	Met
6:30 AM	799	148	Met
6:45 AM	799	148	Met
7:00 AM	799	148	Met
7:15 AM	0	0	
7:30 AM	0	0	
7:45 AM	0	0	
8:00 AM	0	0	
8:15 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
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1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	1086	322	Met
3:30 PM	1086	322	Met
3:45 PM	1086	322	Met
4:00 PM	1086	322	Met
4:15 PM	0	0	
4:30 PM	0	0	
4:45 PM	0	0	
5:00 PM	0	0	
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5:30 PM	0	0	
5:45 PM	0	0	
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6:45 PM	0	0	
7:00 PM	0	0	
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7:45 PM	0	0	
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8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

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



APPENDIX P

CORRESPONDENCE

February 24, 2016



Capital Improvements Plan

Mount Joy Township, Lancaster County PA

Prepared by Justin S. Evans, AICP, Community Development Director

159 Merts Drive—Elizabethtown, PA 17022

T: 717.367.8917 **E:** justin@mtjoytwp.org



Introduction

Mount Joy Township and its Traffic Impact Fee Advisory Committee updated the Land Use Assumptions Report and Roadway Sufficiency Analysis Report in order to revise the traffic impact fee in compliance with the requirements of the Municipal Planning Code (MPC). These updates to the original 2004 reports are intended to evaluate a reasonable land use build-out scenario and associated traffic projections for a ten-year planning horizon. Revisions to the Capital Improvements Plan (CIP) take into account the recommendations of the Roadway Sufficiency Analysis, improvements made since 2004, and additional considerations that were incorporated into the March 2013 Official Map. All transportation improvements included in the CIP are contained in the Transportation Service Area (TSA) shown in Figure 1.

Transportation improvements contained in the CIP are intended to maintain the Township's preferred level of service (LOS), which is LOS D. Each improvement considers actions necessary to maintain a LOS D in existing and base conditions that do not account for new development as identified in the Land Use Assumptions Report, which cannot be funded by traffic impact fees. Improvements to address the projected traffic conditions resulting from new development are eligible to be funded by the fees. The Roadway Sufficiency Analysis sets forth the basis to differentiate between eligible and ineligible improvements.

The remainder of this report addresses the necessary components of a CIP as set forth in §504-A(e)(i) of the MPC:

- (i) A description of the existing highways, roads and streets within the transportation service area and the road improvements required to update, improve, expand or replace such highways, roads and streets in order to meet the preferred level of service and usage and stricter safety, efficiency, environmental or regulatory standards *not attributable to new development*. [emphasis added]
- (ii) A plan specifying the road improvements within the transportation service area *attributable to forecasted pass-through traffic* so as to maintain the preferred level of service after existing deficiencies identified by the roadway sufficiency analysis have been remedied. [emphasis added]
- (iii) A plan specifying the road improvements or portions thereof within the transportation service area *attributable to the projected future development*, consistent with the adopted land use assumptions, in order to maintain the preferred level of service after accommodation for pass-through traffic and after existing deficiencies identified in the roadway sufficiency analysis have been remedied. [emphasis added]
- (iv) The projected costs of the road improvements to be included in the transportation capital improvements plan, calculating separately for each project by the following categories:
 - (A) The costs or portion thereof associated with correcting existing deficiencies as specified in subparagraph (i).
 - (B) The costs or portions thereof attributable to providing road improvements to accommodate forecasted pass-through trips as specified in subparagraph (ii).
 - (C) The costs of providing necessary road improvements or portions thereof attributable to projected future development as specified in subparagraph (iii); provided that no more than 50% of the cost of the improvements to any highway, road or street which qualifies as a State Highway or portion of the rural State Highway System as provided in section 102 of the act of June 1, 1945 (P.L. 1242, No. 428), known as the "State Highway Law" may be included.
- (v) A projected timetable and proposed budget for constructing each road improvement contained in the plan.



- (vi) The proposed source of funding for each capital improvement included in the road plan. This shall include anticipated revenue from the Federal Government, State government, municipality, impact fees and any other source. The estimated revenue for each capital improvement in the plan which is to be provided by impact fees shall be identified separately for each project.

Improvements

Figure 2 lists the costs for the improvements recommended in the Roadway Sufficiency Analysis in order to mitigate 2014 Existing, 2024 Base, and 2024 Projected Conditions deficiencies, respectively. The improvements contained in Figure 2 have been specified to meet LOS D for the TSA as set forth in the MPC.

The approval of the CIP by the Board of Supervisors in no way obligates the Township to complete all of the roadway improvements it contains. The improvements contained in the initial CIP may change over time due to changes in the land use assumptions. Furthermore, the improvements may not be completed due to lack of available funding from state and federal programs and/or lack of revenue generated by the collection of impact fees. Note that improvements to state or federal-aid highways must be approved by PENNDOT and in some cases the Federal Highway Administration before the project can be completed. Improvements may vary based on these necessary approvals.

Although some improvements designated in the CIP may not be implemented due to the reasons listed above, they cannot be excluded per the MPC. The identification of improvements must be objective based on the results of the required background analyses (i.e., the Land Use Assumptions Report and the Roadway Sufficiency Analysis) rather than being subjectively determined. These improvements are necessary to improve roadway capacity in the TSA to LOS D and are not comprehensive of all needed capacity improvements within Mount Joy Township.

There may be other improvements identified by the Township as higher priorities such as safety, reconstruction of existing roads, widening of shoulders, public transportation, and bicycle and pedestrian facilities. Although these types of improvements may be higher priorities of the Township and/or PennDOT, they cannot be funded by impact fees. Therefore, safety and maintenance improvements must be implemented through other mechanisms.

Cost Estimates

Cost estimates were assessed for the engineering/design, right-of-way acquisition, and construction aspects of each improvement in the CIP. A 10% contingency was added to each of the estimates to account for unexpected costs associated with each project. These estimates are included in Figure 2 for the 2014 Existing, 2024 Base and 2024 Projected Conditions improvements located in the TSA.

Two improvement scenarios were explored in the 2004 CIP: “Existing Transportation Network” and “Existing Transportation Network with Merts Drive Extension”. The latter scenario factored in new roadway construction that would alleviate current and anticipated traffic volumes on Cloverleaf Road. Critical strides have been made since that time to relocate the eastbound Route 283 off-ramp and extend Merts Drive (to be renamed North Conifer Drive) between the new off-ramp and Cloverleaf Road.

This Roadway Sufficiency Analysis updates the 2004 scenarios noted above. As regional planning has matured and private development has progressed in the Township, the scenarios have evolved to incorporate a broader focus and are now called “With New Roads” and “Without New Roads”. The primary objectives of the With New Roads



option are to “reduce motorists’ dependency on Cloverleaf Road...[and] create a more direct route between Route 743 and the residential areas to the southeast.” The CIP is designed around the decision to implement this scenario, which is generally consistent with the approach used in the 2004 plan. The majority of the programmed transportation improvements involve intersections, but the following roadway projects key to the “With New Roads” scenario are also included:

- ▲ Construct new eastbound off-ramp for the Route 283/Cloverleaf Road interchange [“B” on Figure 1]
- ▲ Extend Eagle Parkway from the Campus Road/Schwanger Road intersection to Route 230 [“F” on Figure 1]
- ▲ Construct North Conifer Drive between relocated eastbound Route 283/Cloverleaf Road off-ramp and Cloverleaf Road [“L” on Figure 1]
- ▲ Extend Buckingham Boulevard between Route 241 and Old Hershey Road [“T” on Figure 1]
- ▲ Widen Route 230 for additional through lane(s) generally between Anchor Road and Cloverleaf Road to achieve LOS D [included in #8, #9, #10, #11, & #12 on Figure 1]

Cost Estimate Summary

- ▲ Costs of 2014 Existing Condition improvements total: \$681,340
- ▲ Costs of 2024 Base Condition improvements total: \$0
- ▲ Costs of 2024 Projected Condition improvements total: \$23,983,947
 - ▼ \$8,868,266 to be funded by impact fees (37.0% of total)
 - ▼ \$15,115,681 to be funded by other sources (63.0% of total)

TOTAL OF ALL IMPROVEMENTS = \$24,665,287

Funding Sources and Implementation Schedule

The MPC stipulates that a CIP must identify funding sources for each improvement, and provide a timetable for when it will be completed. In addition to impact fees, federal, state, and Township funds are considered as viable funding sources for the capital improvements. Recognizing that nearly all of the improvements involve state roads, the CIP pays adheres to MPC §504-A(e)(1)(iv)(C) which limits 50% of the total costs of the 2024 Projected Conditions improvements in the traffic impact fee equation.

As shown in Figure 3, the CIP assumed that the funding for 2014 Existing and 2024 Base Conditions improvements would be the responsibility of the Township. If additional sources of funding become available for these improvements, the CIP can be amended to reflect these changes as often as once per year. For Projected Conditions improvements involving only Township roads, it is assumed that 100% of the costs can be funded with traffic impact fees. Where Projected Conditions improvements involve a state road(s), no more than 50% of the cost can be funded by impact fees. The remaining 50% needs to be funded by another source(s).

Many factors contribute to the prioritization of the roadway improvements, some of which are beyond control of the Township. The most influential factors are summarized to include:



- ▲ **Ease of Implementation** – since the Township will be required to return impact fees designated for a particular improvement if construction is not started within three years of its scheduled date in the CIP, then “low hanging fruit” projects will generally be prioritized higher.
- ▲ **Availability of Future Funds** – a lack of sufficient funding can significantly delay a project or group of projects and impact implementation of the plan.
- ▲ **Likelihood of Land Development** – the potential for development on a large parcel may have a significant impact on the transportation network. However, if it is not likely to be developed later into the ten-year planning horizon, then the improvements associated with development of the site should be prioritized lower. On the other hand, improvements associated with or proximate to a development that is expected to be constructed in the next several years should warrant higher priority.
- ▲ **Physical Constraints** – Improvements that may be hampered by environmental or right-of-way constraints should be given a higher priority. Because extensive review, permitting, and/or land acquisition may be necessary, the design stage for such projects should begin early in order keep such projects on track.

Since all but one of the study area intersections programmed with improvements to accommodate the 2024 Projected Condition include at least one state highway (#21 – Schwanger Road/Campus Road and Eagle Parkway), state and federal funding will play a crucial role. Acquiring federal and state funding can take significant amounts of time to obtain, so it is recommended that the Township take steps to secure these funds immediately. As these dollars become available for a given project, the implementation schedule can be reassessed and the CIP revised accordingly.

One project in particular, #18 – Cloverleaf Road and Steelway Drive/PA 283 WB Ramps, is expected to rely heavily on federal and state funding to bring to fruition. The construction of two new ramps for the Cloverleaf Road interchange and other associated improvements is estimated to cost \$10,946,864 and would require the complete replacement of the PA 283 bridge decks (which are not included in the cost estimate for improvement #18). Due to the magnitude of this project and the challenge of securing the additional funds, a lower proportion of impact fee money is programmed into the improvement funding schedule for #18 in Figure 3. An 80/20 split between federal/state transportation dollars and impact fees deviates from the standard 50/50 split because of these differentiating circumstances. This atypical arrangement is proposed as part of the balancing act between funding the Capital Improvements Plan and the risk of overburdening the impact fee payers.

Because of the uncertainty created by the above factors, Figure 3 in the original CIP assumed a start date of 2004 for obtaining funding on all projects. Completion dates of 2011 were assumed for engineering, 2012 for right-of-way acquisition, and 2013 for construction. As part of this update, actual timelines for projects that are in the process or realistically programmed are provided. All other improvements that have not been initiated will have a similar logic applied to them as in the 2004 CIP. A start date of 2014 for obtaining funding will be used, as will 2022 for engineering, 2023 for right-of-way acquisition, and 2023 for construction. The Township is not restricted from beginning projects before the scheduled time, yet will be penalized if construction of a certain project is commenced more than three years later than the scheduled construction date. Therefore, this plan allows the greatest flexibility and can be revised as often as once a year with more accurate timelines as circumstances become clearer.



Future Revisions to the CIP

To ensure consistency between land use changes and roadway improvements, the CIP should be reviewed and updated periodically. After adoption of the CIP and the traffic impact fee ordinance, the Township may make revisions to the CIP under certain conditions. §504-A(e)(4) of the MPC authorizes the Board of Supervisors to request that the Traffic Impact Fee Advisory Committee review the CIP and impact fee no more frequently than once a year and recommend changes based only on the following:

- (i) New subsequent development which has occurred in the [Township].
- (ii) Capital improvements contained in the [CIP], the construction of which has been completed.
- (iii) Unavoidable delays beyond the responsibility or control of the municipality in the construction of capital improvements contained in the plan.
- (iv) Significant changes in the land use assumptions.
- (v) Changes in the estimated costs of the proposed transportation capital improvements, which may be recalculated by applying the construction cost index as published in the American City/County Magazine or the Engineering News Record.
- (vi) Significant changes in the projected revenue from all sources listed needed for the construction of the transportation capital improvements.

This plan may require revision if impact fees are spent on improvements that are not identified in the CIP. The MPC allows the Township to use traffic impact fees on improvements within the TSA that are not on the CIP. Municipalities are also permitted to provide a credit towards an applicant's impact fee for the costs of alternative projects that were not on the CIP but are completed at the applicant's expense. The criteria in MPC §505-A(d) apply to such situations:

- (1) The applicant has provided written consent to use of its collected impact fees, or the provision of such credit against the applicant's impact fees, for specific transportation projects which are not included in the [CIP].
- (2) The alternative transportation projects, whether highway or multimodal, have as their purpose the reduction of traffic congestion or the removal of vehicle trips from the roadway network.
- (3) The municipality amends its [CIP] components...to provide replacement of the collected impact fees transferred to transportation projects outside the approved [CIP] from sources other than impact fees or developer contributions within three years of completion of the alternative projects to which the transferred fees were applied or for which credit was provided...

Traffic Impact Fee Determination

To update the per-trip impact fee for a new development within the TSA, the total improvement costs attributable to new development (determined in Figure 3) is divided by the total number of P.M. peak hour trips generated by the anticipated land developments identified in the Land Use Assumptions Report. It is estimated that a total cost of \$8,868,266 will be attributable to new development in the TSA and can be funded by impact fees. A pro rata share of the cost to create the Roadway Sufficiency Analysis Report also may be assessed to the impact fee. Based on a review of the existing, base, and projected improvement costs, 37.0% of that total is attributable to new



development. Therefore, 37.0% of the cost to complete the Roadway Sufficiency Analysis Report (total cost: \$7,267) can be included in the overall amount used to derive the traffic impact fee (\$2,689).

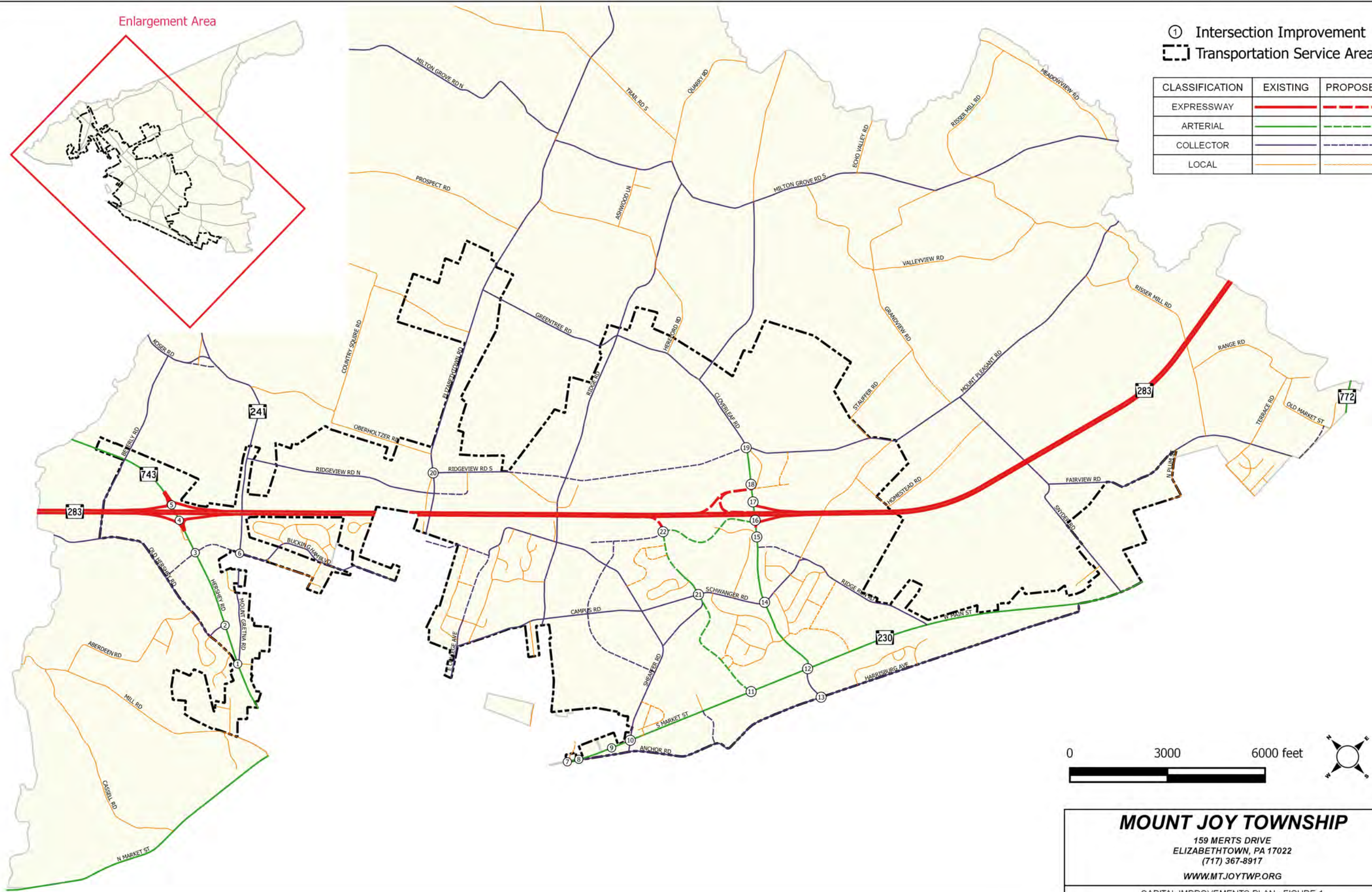
After combining the pro-rated cost of preparing the Roadway Sufficiency Analysis and the applicable portions of the estimates to construct the transportation improvements, the adjusted total cost attributable to new development is \$8,870,955. The calculation for the P.M. peak hour trip impact fee is shown below:

$$\frac{\$8,870,955 \text{ (Costs attributable to new development)}}{5,023 \text{ (New P.M. peak trips generated by new development in TSA)}} = \$1,766$$

Enlargement Area

- ① Intersection Improvement
- ⬡ Transportation Service Area

CLASSIFICATION	EXISTING	PROPOSED
EXPRESSWAY		
ARTERIAL		
COLLECTOR		
LOCAL		



MOUNT JOY TOWNSHIP
 159 MERTS DRIVE
 ELIZABETHTOWN, PA 17022
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CAPITAL IMPROVEMENTS PLAN - FIGURE 1

TRANSPORTATION IMPROVEMENTS - DECEMBER 2015

FIGURE 2: COST ESTIMATE OF IMPROVEMENTS

Map #	Location	Existing Improvements		Base Improvements		Projected Improvements	
		Description	Price	Description	Price	Description	Price
1	Route 743, Holly Street and Route 241	Modify traffic signal timings	\$6,000			Construct dual-lane roundabout	\$663,730
						ROW Acquisition	\$73,350
						Utility Relocation	\$84,505
						Inspection/Legal/Mobilization (18.5%)	\$122,790
						Survey and Engineering (15%)	\$99,560
		Contingency (10%)	\$600			Contingency (10%)	\$104,393
		TOTAL	\$6,600			TOTAL	\$1,148,328
2	Route 743 and Veterans Drive					Signalize intersection	\$133,000
						Utility Relocation	\$10,000
						Inspection/Legal/Mobilization (18.5%)	\$24,605
						Survey and Engineering (15%)	\$19,950
						Contingency (10%)	\$18,756
		TOTAL				TOTAL	\$206,311
3	Route 743 and Buckingham Boulevard					Signalize intersection	\$160,000
						Construct WB right turn lane	\$57,839
						Construct 2nd NB thru lane	\$356,500
						Construct SB left turn lane	\$136,230
						ROW Acquisition	\$13,776
						Utility Relocation	\$40,000
						Inspection/Legal/Mobilization (18.5%)	\$131,455
				Survey and Engineering (15%)	\$106,585		
				Contingency (10%)	\$100,239		
		TOTAL				TOTAL	\$1,102,624
4	Route 743 and PA 283 EB Ramps	Signalize intersection	\$160,000			Add SB left turn phase	\$10,000
		Utility Relocation	\$10,000				
		Inspection/Legal/Mobilization (18.5%)	\$29,600				
		Survey and Engineering (15%)	\$24,000				
		Contingency (10%)	\$22,360			Contingency (10%)	\$1,000
		TOTAL	\$245,960			TOTAL	\$11,000
5	Route 743 and PA 283 WB Ramps					Modify traffic signal timings	\$6,000
						Contingency (10%)	\$600
		TOTAL				TOTAL	\$6,600
6	Route 241 and Buckingham Boulevard					Construct EB & WB left turn lanes	\$249,012
						Implement all-way stop control	\$1,000
						ROW Acquisition	\$5,740
						Utility Relocation	\$10,000
						Inspection/Legal/Mobilization (18.5%)	\$46,252
				Survey and Engineering (15%)	\$37,502		
				Contingency (10%)	\$34,951		
		TOTAL				TOTAL	\$384,457
7	Route 230 and Carey Lane					Convert WB right to shared thru/rt	\$18,910
						Construct 2nd WB receiving lane	\$119,295
						Inspection/Legal/Mobilization (18.5%)	\$25,568
						Survey and Engineering (15%)	\$20,731
				Contingency (10%)	\$18,450		
		TOTAL				TOTAL	\$202,954
8	Route 230 and Anchor Road					Construct 2nd WB thru lane	\$741,520
						Utility Relocation	\$40,000
						Inspection/Legal/Mobilization (18.5%)	\$137,181
						Survey and Engineering (15%)	\$111,228
						Contingency (10%)	\$102,993
		TOTAL				TOTAL	\$1,132,922

FIGURE 2: COST ESTIMATE OF IMPROVEMENTS

Map #	Location	Existing Improvements		Base Improvements		Projected Improvements	
		Description	Price	Description	Price	Description	Price
9	Route 230 and Market Street Square					Convert WB right to shared thru/rt	\$18,910
						Construct 2nd WB receiving lane	\$119,295
						<i>Inspection/Legal/Mobilization (18.5%)</i>	\$25,568
						<i>Survey and Engineering (15%)</i>	\$20,731
						<i>Contingency (10%)</i>	\$18,450
						TOTAL	\$202,954
10	Route 230 and Scheaffer Road					Modify traffic signal timings	\$6,000
						Construct 2nd WB thru lane	\$741,520
						Utility Relocation	\$100,000
						<i>Inspection/Legal/Mobilization (18.5%)</i>	\$138,291
						<i>Survey and Engineering (15%)</i>	\$112,128
						<i>Contingency (10%)</i>	\$109,794
				TOTAL	\$1,207,733		
11	Route 230 and Eagle Parkway					Signalize intersection	\$120,000
						Construct 2nd WB thru lane	\$741,520
						Construct SB left & right turn lanes	\$194,069
						ROW Acquisition	\$2,296
						Utility Relocation	\$70,000
						<i>Inspection/Legal/Mobilization (18.5%)</i>	\$195,284
				<i>Survey and Engineering (15%)</i>	\$158,338		
				<i>Contingency (10%)</i>	\$148,151		
				TOTAL	\$1,629,658		
12	Route 230 and Cloverleaf Road/Colebrook Road					Modify traffic signal timings	\$6,000
						Add WB left turn phase	\$10,000
						Construct 2nd EB/WB thru lane	\$1,251,620
						Construct NB right turn lane	\$157,389
						ROW Acquisition	\$22,960
						Utility Relocation	\$130,000
				<i>Inspection/Legal/Mobilization (18.5%)</i>	\$263,627		
				<i>Survey and Engineering (15%)</i>	\$213,751		
				<i>Contingency (10%)</i>	\$205,535		
				TOTAL	\$2,260,882		
13	Colebrook Road and Harrisburg Avenue					Signalize intersection	\$160,000
						Synchronize with Cloverleaf signals	\$10,000
						Construct NB & SB left turn lanes	\$249,012
						ROW Acquisition	\$170,000
						Utility Relocation	\$40,000
						<i>Inspection/Legal/Mobilization (18.5%)</i>	\$77,517
				<i>Survey and Engineering (15%)</i>	\$62,852		
				<i>Contingency (10%)</i>	\$76,938		
				TOTAL	\$846,319		
14	Cloverleaf Road and Schwanger Road	Modify traffic signal timings	\$6,000				
		<i>Contingency (10%)</i>	\$600				
		TOTAL	\$6,600			TOTAL	\$0
15	Cloverleaf Road and Merts Drive	Signalize intersection	\$120,000			Remove traffic signal	\$1,000
		Utility Relocation	\$10,000			Close intersection	\$9,575
		<i>Inspection/Legal/Mobilization (18.5%)</i>	\$22,200			<i>Inspection/Legal/Mobilization (18.5%)</i>	\$1,956
		<i>Survey and Engineering (15%)</i>	\$18,000			<i>Survey and Engineering (15%)</i>	\$1,586
		<i>Contingency (10%)</i>	\$17,020			<i>Contingency (10%)</i>	\$1,412
		TOTAL	\$187,220			TOTAL	\$15,529

FIGURE 2: COST ESTIMATE OF IMPROVEMENTS

Map #	Location	Existing Improvements		Base Improvements		Projected Improvements	
		Description	Price	Description	Price	Description	Price
16	Cloverleaf Road and PA 283 EB Ramps	Signalize intersection	\$160,000			Reconstruct EB ramp as N. Conifer	\$122,295
						Provide EB left, thru & right lanes	\$186,165
						Construct NB left & right turn lanes	\$194,069
						Construct SB right turn lane	\$57,839
		Inspection/Legal/Mobilization (18.5%)	\$29,600			Inspection/Legal/Mobilization (18.5%)	\$103,668
		Survey and Engineering (15%)	\$24,000			Survey and Engineering (15%)	\$84,055
		Contingency (10%)	\$21,360			Contingency (10%)	\$74,809
		TOTAL	\$234,960			TOTAL	\$822,900
17	Cloverleaf Road and PA 283 WB Ramps					Remove traffic signal	\$1,000
						Convert off-ramp to right turn only	\$2,300
						Inspection/Legal/Mobilization (18.5%)	\$611
						Survey and Engineering (15%)	\$495
						Contingency (10%)	\$441
		TOTAL				TOTAL	\$4,846
18	Cloverleaf Road and Steelway Drive/PA 283 WB Ramps					Signalize intersection	\$160,000
						Construct NB & SB left turn lanes	\$260,736
						Construct WB cloverleaf on & offramps	\$6,091,050
						ROW Acquisition	\$1,218,460
						Utility Relocation	\$40,000
						Inspection/Legal/Mobilization (18.5%)	\$1,204,680
				Survey and Engineering (15%)	\$976,768		
				Contingency (10%)	\$995,169		
		TOTAL				TOTAL	\$10,946,864
19	Cloverleaf Road and Mt. Pleasant Road					Construct EB right turn lane	\$46,406
						ROW Acquisition	\$8,610
						Utility Relocation	\$10,000
						Inspection/Legal/Mobilization (18.5%)	\$8,585
						Survey and Engineering (15%)	\$6,961
				Contingency (10%)	\$8,056		
		TOTAL				TOTAL	\$88,618
20	Elizabethtown Road and Ridgeview Road South					Construct EB right turn lane	\$46,406
						ROW Acquisition	\$8,610
						Utility Relocation	\$10,000
						Inspection/Legal/Mobilization (18.5%)	\$8,585
						Survey and Engineering (15%)	\$6,961
				Contingency (10%)	\$8,056		
		TOTAL				TOTAL	\$88,618
21	Schwanger Road/Campus Road and Eagle Parkway					Signalize intersection	\$160,000
						Restripe for NB & EB left turn lanes	\$550
						Construct SB right turn lane	\$57,839
						Inspection/Legal/Mobilization (18.5%)	\$40,402
				Survey and Engineering (15%)	\$32,758		
				Contingency (10%)	\$29,155		
		TOTAL				TOTAL	\$320,704
22	Conifer Drive, Eagle Parkway and PA 283 EB Off-ramp					Signalize intersection	\$160,000
						Construct EB right turn lane	\$57,839
						Construct WB left turn lane	\$136,230
						Construct NB channelized right turn	\$57,839
						Construct SB left & right turn lanes	\$194,069
						Provide WB & NB left turn lanes	\$272,460
						ROW Acquisition	\$57,400
						Inspection/Legal/Mobilization (18.5%)	\$162,511
						Survey and Engineering (15%)	\$131,766
				Contingency (10%)	\$123,011		
		TOTAL				TOTAL	\$1,353,125

FIGURE 3: IMPROVEMENT FUNDING

Map #	Location	Road ID #	Proposed Improvement(s)	Costs Attributable to:			Total Costs	Proposed Funding		Project Schedule	
				Existing Deficiencies	Base Conditions	New Development					
1	Route 743, Holly Street and Route 241	SR 0743 T-610 SR 0241	Modify traffic signal timings Construct dual-lane roundabout					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$6,600	RIGHT-OF-WAY	2023
								IMPACT FEES	\$574,164	CONSTRUCTION	2023
								OTHER	\$574,164		
				\$6,600		\$1,148,328	\$1,154,928	TOTAL	\$1,154,928		
2	Route 743 and Veterans Drive	SR 0743 T-301	Signalize intersection					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2015
								MUNICIPALITY	\$103,155	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$103,155	CONSTRUCTION	2016
								OTHER	\$0		
						\$206,311	\$206,311	TOTAL	\$206,311		
3	Route 743 and Buckingham Boulevard	SR 0743 T-333	Signalize intersection Construct WB right turn lane Construct 2nd NB thru lane Construct SB left turn lane					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2018
								MUNICIPALITY	\$0	RIGHT-OF-WAY	2019
								IMPACT FEES	\$551,312	CONSTRUCTION	2020
								OTHER	\$551,312		
						\$1,102,624	\$1,102,624	TOTAL	\$1,102,624		
4	Route 743 and PA 283 EB Ramps	SR 0743 SR 0283	Signalize intersection Add SB left turn phase					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$245,960	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$5,500	CONSTRUCTION	2023
								OTHER	\$5,500		
				\$245,960		\$11,000	\$256,960	TOTAL	\$256,960		
5	Route 743 and PA 283 WB Ramps	SR 0743 SR 0283	Modify traffic signal timings					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$0	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$3,300	CONSTRUCTION	2023
								OTHER	\$3,300		
						\$6,600	\$6,600	TOTAL	\$6,600		
6	Route 241 and Buckingham Boulevard	SR 0214 T-333	Construct EB & WB left turn lanes Implement all-way stop control (western part of intersection in Elizabethtown Borough)					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2018
								MUNICIPALITY	\$0	RIGHT-OF-WAY	2019
								IMPACT FEES	\$192,228	CONSTRUCTION	2020
								OTHER	\$192,228		
						\$384,457	\$384,457	TOTAL	\$384,457		
7	Route 230 and Carey Lane	SR 0230	Convert WB right to shared thru/rt Construct 2nd WB receiving lane					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$0	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$101,477	CONSTRUCTION	2023
								OTHER	\$101,477		
						\$202,954	\$202,954	TOTAL	\$202,954		

FIGURE 3: IMPROVEMENT FUNDING

Map #	Location	Road ID #	Proposed Improvement(s)	Costs Attributable to:			Total Costs	Proposed Funding		Project Schedule	
				Existing Deficiencies	Base Conditions	New Development					
8	Route 230 and Anchor Road	SR 0230 SR 4018	Construct 2nd WB thru lane					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$0	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$566,461	CONSTRUCTION	2023
								OTHER	\$566,461		
								TOTAL	\$1,132,922		
9	Route 230 and Market Street Square	SR 0230	Convert WB right to shared thru/rt Construct 2nd WB receiving lane					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$0	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$101,477	CONSTRUCTION	2023
								OTHER	\$101,477		
								TOTAL	\$202,954		
10	Route 230 and Scheaffer Road	SR 0230 T-888	Modify traffic signal timings Construct 2nd WB thru lane					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$0	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$603,867	CONSTRUCTION	2023
								OTHER	\$603,867		
								TOTAL	\$1,207,733		
11	Route 230 and Eagle Parkway	SR 0230	Signalize intersection Construct 2nd WB thru lane Construct SB left & right turn lanes					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2021
								MUNICIPALITY	\$0	RIGHT-OF-WAY	2021
								IMPACT FEES	\$814,829	CONSTRUCTION	2022
								OTHER	\$814,829		
								TOTAL	\$1,629,658		
12	Route 230 and Cloverleaf Road/ Colebrook Road	SR 0230 SR 4025	Modify traffic signal timings Add WB left turn phase Construct 2nd EB/WB thru lane Construct NB right turn lane Underground gasoline storage tank/Structure demolition					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$0	RIGHT-OF-WAY	2023
								IMPACT FEES	\$1,130,441	CONSTRUCTION	2023
								OTHER	\$1,130,441		
								TOTAL	\$2,260,882		
13	Colebrook Road and Harrisburg Avenue	SR 4025 SR 4018	Signalize intersection Synchronize with Cloverleaf signals Construct NB & SB left turn lanes (southern part of intersection is in West Donegal Township)					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$0	RIGHT-OF-WAY	2023
								IMPACT FEES	\$423,160	CONSTRUCTION	2023
								OTHER	\$423,160		
								TOTAL	\$846,319		
14	Cloverleaf Road and Schwanger Road	SR 4025 T-843	Modify traffic signal timings					FEDERAL	\$0	FUNDING	2014
								PENNDOT	\$0	ENGINEERING	2022
								MUNICIPALITY	\$6,600	RIGHT-OF-WAY	n/a
								IMPACT FEES	\$0	CONSTRUCTION	2023
								OTHER	\$0		
								TOTAL	\$6,600		

FIGURE 3: IMPROVEMENT FUNDING

Map #	Location	Road ID #	Proposed Improvement(s)	Costs Attributable to:			Total Costs	Proposed Funding	Project Schedule
				Existing Deficiencies	Base Conditions	New Development			
15	Cloverleaf Road and Merts Drive	SR 4025 T-833	Signalize intersection Remove traffic signal Close intersection					FEDERAL \$0 FUNDING 2014	
								PENNDOT \$0 ENGINEERING 2016	
							MUNICIPALITY \$187,220 RIGHT-OF-WAY n/a		
							IMPACT FEES \$7,765 CONSTRUCTION 2018		
							OTHER \$7,765		
				\$187,220		\$15,529	\$202,749	TOTAL \$202,749	
16	Cloverleaf Road and PA 283 EB Ramps	SR 4025 SR 0283	Signalize intersection Reconstruct EB ramp as N. Conifer Provide EB left, thru & right lanes Construct NB left & right turn lanes Construct SB right turn lane					FEDERAL \$0 FUNDING 2014	
								PENNDOT \$0 ENGINEERING 2016	
							MUNICIPALITY \$234,960 RIGHT-OF-WAY n/a		
							IMPACT FEES \$411,450 CONSTRUCTION 2018		
							OTHER \$411,450		
				\$234,960		\$822,900	\$1,057,860	TOTAL \$1,057,860	
17	Cloverleaf Road and PA 283 WB Ramps	SR 4025 SR 0283	Remove traffic signal Convert off-ramp to right turn only					FEDERAL \$0 FUNDING 2014	
								PENNDOT \$0 ENGINEERING 2022	
							MUNICIPALITY \$0 RIGHT-OF-WAY n/a		
							IMPACT FEES \$2,423 CONSTRUCTION 2023		
							OTHER \$2,423		
							\$4,846	TOTAL \$4,846	
18	Cloverleaf Road and Steelway Drive/PA 283 WB Ramps	SR 4025 T-834 SR 0283	Signalize intersection Construct NB & SB left turn lanes Construct cloverleaf ramp for WB					FEDERAL \$8,757,491 FUNDING 2014	
								PENNDOT \$0 ENGINEERING 2022	
							MUNICIPALITY \$0 RIGHT-OF-WAY 2023		
							IMPACT FEES \$2,189,373 CONSTRUCTION 2023		
							OTHER \$0		
							\$10,946,864	TOTAL \$10,946,864	
19	Cloverleaf Road and Mt. Pleasant Road	SR 4025 SR 4010	Construct EB right turn lane					FEDERAL \$0 FUNDING 2014	
								PENNDOT \$0 ENGINEERING 2022	
							MUNICIPALITY \$0 RIGHT-OF-WAY 2023		
							IMPACT FEES \$44,309 CONSTRUCTION 2023		
							OTHER \$44,309		
							\$88,618	TOTAL \$88,618	
20	Elizabethtown Road and Ridgeview Road South	SR 4008 T-889	Construct EB right turn lane					FEDERAL \$0 FUNDING 2014	
								PENNDOT \$0 ENGINEERING 2022	
							MUNICIPALITY \$0 RIGHT-OF-WAY 2023		
							IMPACT FEES \$44,309 CONSTRUCTION 2023		
							OTHER \$44,309		
							\$88,618	TOTAL \$88,618	
21	Schwanger Road/Campus Road and Eagle Parkway	T-843 T-887	Signalize intersection Restripe for NB & EB left turn lanes Construct SB right turn lane					FEDERAL \$0 FUNDING 2014	
								PENNDOT \$0 ENGINEERING 2021	
							MUNICIPALITY \$0 RIGHT-OF-WAY n/a		
							IMPACT FEES \$320,704 CONSTRUCTION 2022		
							OTHER \$0		
							\$320,704	TOTAL \$320,704	

FIGURE 3: IMPROVEMENT FUNDING

Costs Attributable to:

Map #	Location	Road ID #	Proposed Improvement(s)	Costs Attributable to:			Total Costs	Proposed Funding		Project Schedule	
				Existing Deficiencies	Base Conditions	New Development					
22	Conifer Drive, Eagle Parkway and PA 283 EB Off-ramp	SR 0283	Signalize intersection					FEDERAL	\$0	FUNDING	2014
			Construct EB right turn lane					PENNDOT	\$0	ENGINEERING	2016
			Construct WB left turn lane					MUNICIPALITY	\$0	RIGHT-OF-WAY	2018
			Construct NB channelized right turn					IMPACT FEES	\$676,562	CONSTRUCTION	2018
			Construct SB left & right turn lanes					OTHER	\$676,562		
			Provide WB & NB left turn lanes			\$1,353,125	\$1,353,125	TOTAL	\$1,353,125		

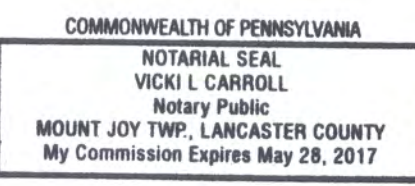
	Existing Deficiencies	Base Conditions	New Development	Total Costs	
TOTALS:	\$681,340	\$0	\$23,983,947	\$24,665,287	\$8,868,266 Applicable to Impact Fee

RECORDING STATEMENT
COMMONWEALTH OF PENNSYLVANIA
COUNTY OF LANCASTER

ON THIS 20th DAY OF June, 2016 BEFORE ME, THE UNDERSIGNED OFFICER, A NOTARY PUBLIC IN AND FOR THE AFORESAID COMMONWEALTH AND COUNTY PERSONALLY APPEARED Lisa S. Heiber WHO ACKNOWLEDGED HIMSELF/HERSELF TO BE THE CHAIRMAN OF THE BOARD OF SUPERVISORS OF THE TOWNSHIP OF MOUNT JOY, LANCASTER COUNTY, PENNSYLVANIA, AND THAT HE/SHE, AS SUCH OFFICER, BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING OFFICIAL MAP BY SIGNING THE NAME OF SUCH TOWNSHIP BY HIMSELF/HERSELF AS SUCH OFFICER AS THE ACT AND DEED OF THE TOWNSHIP AND FOR THE PURPOSE OF RECORDING THE OFFICIAL MAP AS REQUIRED BY THE PENNSYLVANIA MUNICIPALITIES PLANNING CODE.

IN WITNESS WHEREOF, I SET MY HAND AND OFFICIAL SEAL.

Wicki L. Carroll
NOTARY PUBLIC



TOWNSHIP CERTIFICATION
THIS MAP IS CERTIFIED AS THE ORIGINAL OFFICIAL MAP OF MOUNT JOY TOWNSHIP AS ADOPTED BY THE MOUNT JOY TOWNSHIP BOARD OF SUPERVISORS, LANCASTER COUNTY, PENNSYLVANIA, ON June 20, 2016

Lisa S. Heiber
CHAIRMAN/MOUNT JOY TOWNSHIP BOARD OF SUPERVISORS

Patricia J. Bailey
SECRETARY/MOUNT JOY TOWNSHIP



GENERAL NOTES:

ALL ARTERIALS ARE CONTROLLED ACCESS IN ACCORDANCE WITH ARTERIAL STREET DESIGN CRITERIA WITHIN CHAPTER 119, SUBDIVISION AND LAND DEVELOPMENT, AND PENNDOT DESIGN MANUAL 2.

PROVIDE LEFT TURN LANES ON ALL APPROACHES OF SIGNALIZED INTERSECTIONS UNLESS OTHERWISE NOTED.

PROVIDE A MINIMUM 50' RIGHT-OF-WAY FOR LOCAL ROADS, 60' FOR COLLECTOR ROADS AND ARTERIALS UNLESS NOTED OTHERWISE.

PROVIDE ADDITIONAL RIGHT-OF-WAY OR EASEMENT WHERE MULTI-USE PATH OR TRAIL IS IDENTIFIED ALONG ROAD SEGMENT ON SHEET 3.

PROVIDE SLOPE EASEMENT BEYOND RIGHT-OF-WAY FOR REHABILITATION OF ALL EXISTING ROADS WHEN VERTICAL GEOMETRY ADJUSTMENT IS REQUIRED TO PROVIDE SAFE SIGHT STOPPING DISTANCE IN ACCORDANCE WITH PENNDOT DESIGN MANUAL 2.

RIGHT-OF-WAY REQUIREMENTS AT INTERSECTIONS MAY BE GREATER THAN THOSE REQUIRED FOR CORRIDORS TO PROVIDE NECESSARY TURNING LANES.

NAMES FOR PROPOSED ROADS ARE SUBJECT TO CHANGE AND MUST BE APPROVED BY LANCASTER COUNTY-WIDE COMMUNICATIONS.

LEGEND

CLASSIFICATION	EXISTING	PROPOSED
EXPRESSWAY		
ARTERIAL		
COLLECTOR		
LOCAL		

INTERCHANGE IMPROVEMENT
 INTERSECTION IMPROVEMENT
 ROADWAY IMPROVEMENT
 PARK-AND-RIDE LOT LOCATION

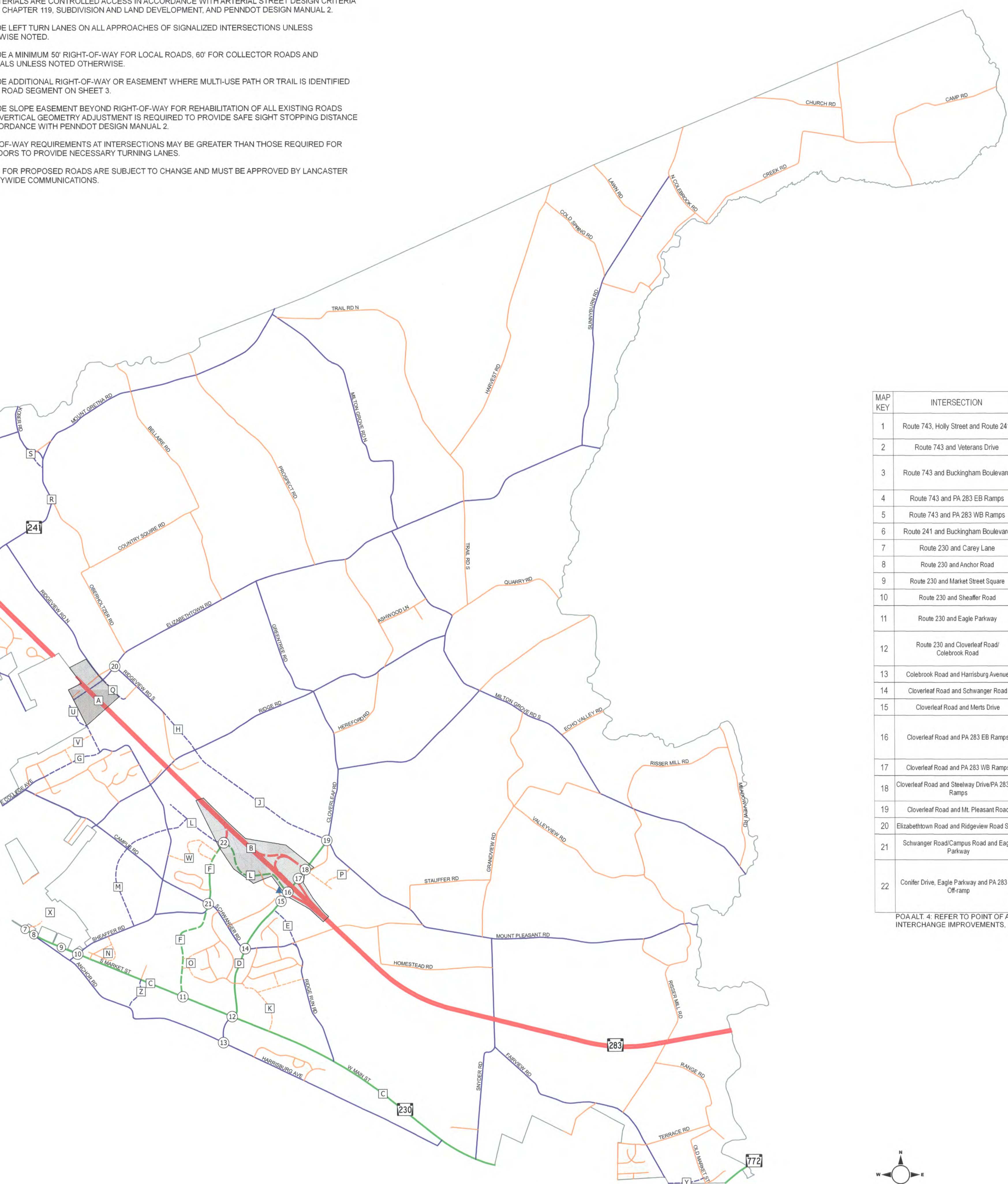
INTERSECTION IMPROVEMENTS

MAP KEY	INTERSECTION	DESCRIPTION	RIGHT-OF-WAY REQUIREMENTS	ADDITIONAL REQUIREMENTS
1	Route 743, Holly Street and Route 241	Modify traffic signal timings Construct dual-lane roundabout	Route 743: 60 ft. Holly Street: 60 ft. Route 241: 60 ft.	---
2	Route 743 and Veterans Drive	Signalize intersection	Route 743: 60 ft. Veterans Drive: 60 ft.	---
3	Route 743 and Buckingham Boulevard	Signalize intersection Construct WB right turn lane Construct 2nd NB thru lane Construct SB left turn lane	Route 743: 60 ft. Buckingham Boulevard: 60 ft.	---
4	Route 743 and PA 283 EB Ramps	Signalize intersection Add SB left turn phase	Route 743: 60 ft.	---
5	Route 743 and PA 283 WB Ramps	Modify traffic signal timings	Route 743: 60 ft.	---
6	Route 241 and Buckingham Boulevard	Construct EB & WB left turn lanes Implement all-way stop control	Buckingham Boulevard: 60 ft.	---
7	Route 230 and Carey Lane	Convert WB right turn lane to shared through/right turn lane Construct 2nd WB receiving lane	Route 230: 100 ft. Carey Lane: 50 ft. Route 230: 100 ft.	---
8	Route 230 and Anchor Road	Construct 2nd WB thru lane	Anchor Road: 60 ft.	---
9	Route 230 and Market Street Square	Convert WB right turn lane to shared through/right turn lane Construct 2nd WB receiving lane	Route 230: 100 ft.	---
10	Route 230 and Sheaffer Road	Modify traffic signal timings Construct 2nd WB thru lane	Route 230: 100 ft. Sheaffer Road: 80 ft.	---
11	Route 230 and Eagle Parkway	Signalize intersection Construct 2nd WB thru lane Construct SB left & right turn lanes	Route 230: 120 ft. Eagle Parkway: 80 ft.	Construct NB and SB approaches
12	Route 230 and Cloverleaf Road/ Colebrook Road	Modify traffic signal timings Add WB left turn phase Construct 2nd EB/WB thru lane Construct NB right turn lane	Route 230: 120 ft. Colebrook Road: 80 ft. Colebrook Road: 60 ft.	---
13	Colebrook Road and Harrisburg Avenue	Signalize intersection & synchronize with Cloverleaf Road Construct NB & SB left turn lanes	Colebrook Road: 60 ft. Harrisburg Avenue: 60 ft.	---
14	Cloverleaf Road and Schwager Road	Modify traffic signal timings	Cloverleaf Road: 60 ft. Schwager Road: 60 ft.	---
15	Cloverleaf Road and Merts Drive	Close intersection (reroute traffic to North Conifer Drive)	Cloverleaf Road: 60 ft. Merts Drive: 100 ft (R)	Construct cul-de-sac
16	Cloverleaf Road and PA 283 EB Ramps	Signalize intersection Reconstruct EB ramp as N. Conifer Drive Provide EB left, thru & right lanes Construct NB left & right turn lanes Construct SB right turn lane	Cloverleaf Road: 120 ft.	POA Alt. 4
17	Cloverleaf Road and PA 283 WB Ramps	Remove traffic signal Existing ramp, right turn only	Cloverleaf Road: 120 ft.	POA Alt. 4
18	Cloverleaf Road and Steelway Drive/PA 283 WB Ramps	Signalize intersection Construct NB & WB left turn lanes Construct cloverleaf ramp for PA 283 WB	Cloverleaf Road: 80 ft. Steelway Drive: 50 ft.	POA Alt. 4
19	Cloverleaf Road and Mt. Pleasant Road	Construct EB right turn lane	Cloverleaf Road: 60 ft. Mt. Pleasant Road: 60 ft.	---
20	Elizabethtown Road and Ridgeview Road South	Construct EB right turn lane	Elizabethtown Road: 60 ft. Ridgeview Road South: 60 ft.	---
21	Schwager Road/Campus Road and Eagle Parkway	Signalize intersection Restripe Eagle Pkwy to provide NB & SB left turn lanes Construct SB right turn lane	Campus Road: 60 ft. Eagle Parkway: 60 ft.	---
22	Conifer Drive, Eagle Parkway and PA 283 EB Off-ramp	Signalize intersection Construct EB right turn lane Construct WB left turn lane Construct NB channelized right turn lane Construct SB left & right turn lanes Provide WB & NB left turn lanes	Conifer Drive: 60 ft. Eagle Parkway: 60 ft.	POA Alt. 4

POA ALT. 4: REFER TO POINT OF ACCESS STUDY FOR ROUTE 283/CLOVERLEAF ROAD INTERCHANGE IMPROVEMENTS, DATED OCTOBER 31, 2006.

ROADWAY IMPROVEMENTS

MAP KEY	ROADWAY	DESCRIPTION	RIGHT-OF-WAY REQUIREMENTS	ROADWAY CLASSIFICATION
A	Route 283 and Elizabethtown Road/East High Street	New interchange	---	Expressway
B	Route 283/Cloverleaf Road Interchange	Interchange reconfiguration	---	Expressway
C	Route 230 between Elizabethtown Borough and Mount Joy Borough	Construct a 2nd EB/WB through lane Maintain center left turn lane	100 feet	Arterial
D	Cloverleaf Road between Route 230 and Mt. Pleasant Road	Construct a 2nd EB/WB through lane Maintain center left turn lane	100 feet	Arterial
E	Ridge Run Road	Extend to Cloverleaf Road	60 feet	Collector
F	Eagle Parkway	Extend to Route 230 and North Conifer Drive	60 feet	Arterial
G	College Avenue	Extend to Sheaffer Road	60 feet	Collector
H	Ridgeview Road South	Realign approach to Ridge Road	60 feet	Collector
J	Ridgeview Road South	Extend from Ridge Road to Cloverleaf Road	60 feet	Collector
K	Norlanco Drive	Extend to Route 230	50 feet	Local
L	North Conifer Drive	Construct new road from Cloverleaf Road to Campus Road	60 feet	Arterial & Collector
M	South Conifer Drive	Construct new loop road from Campus Road to Sheaffer Road	60 feet	Collector
N	Sager Road/Larkspur Lane	Connect cul-de-sacs	50 feet	Local
O	Andrew Avenue/Brookfield Drive	Connect cul-de-sacs	50 feet	Local
P	Archers Lane	Extend to Mt. Pleasant Road	50 feet	Local
Q	Dairy Lane	Extend to Elizabethtown Road	60 feet	Collector
R	Mt. Gretna Road	Horizontal realignment at Oberholtzer Road	60 feet	Collector
S	Koser Road	Horizontal realignment at Mt. Gretna Road	60 feet	Collector
T	Buckingham Boulevard	Extension to Old Hershey Road	60 feet	Collector
U	Fairground Drive	Connect East College Avenue to East High Street	60 feet	Collector
V	Meadowbrook Lane	Extend to Fairground Drive	50 feet	Local
W	Canvasback Lane	Extend to Sheaffer Road	50 feet	Local
X	Carey Lane	Extend to South Mount Joy Street	50 feet	Local
Y	Birchland Avenue	Extend to Old Market Street	60 feet	Collector
Z	Jonlyn Drive	Extend to Anchor Road	60 feet	Collector



SOURCE OF BASE MAPPING: LANCASTER COUNTY GIS DEPARTMENT

ORDINANCE NUMBER	AMENDMENTS	DATE
CCXXIX	SHEETS 2A & 2B REVISED	07/19/04
CCXXII	SHEETS 2A & 2B REVISED	06/19/06
CCXXVIII	SHEETS 2A & 2B REVISED	10/16/05
CCXLII	SHEETS 2A & 2B REVISED, SHEET 3 ADDED	04/29/10
287-2010	SHEETS 2A & 2B REVISED	09/20/10
281-2013	SHEETS 2A & 2B REVISED	04/15/13
303-2016	SHEET 2 REVISED	06/20/16

MOUNT JOY TOWNSHIP

159 MERTS DRIVE
ELIZABETHTOWN, PA 17022
(717) 367-8917

WWW.MTJOYTWP.ORG

OFFICIAL MAP - SHEET 2

TRANSPORTATION FACILITIES - APRIL 2016