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APPENDIX A

Concept Plan

STREETWORKS
DEVELOPMENT

DEVELOPMENT PROGRAM SUMMARY — Date: September 19, 2022

OVERALL PROGRAM SUMMARY

- Project Gross Area: 734,910 SF
  - Office Gross Area: 310,000 SF
  - Retail Gross Area: 27,410 SF
  - Residential Gross Area: 397,500 SF
- Residential Units: 223
  - Market-Rate: 187 (130 age-restricted, 57 non-restricted)
  - Affordable: 36 (24 age-restricted, 12 non-restricted)
- Private Structured Parking Stalls: 1,119
  - Residential: 344
  - Commercial: 775
- Private Surface Parking Stalls: 20
  - Residential: 20
- Public Structured Parking Stalls: 500
- Public Surface Parking Stalls: 168

WEST ZONE

- **L&T Multifamily** | 6 Stories (Age-restricted to 55+)
  - Gross Area: 285,110 SF
  - Total Units: 138 (117 Market-Rate, 21 Affordable)
  - Structured Parking Stalls: 280 (Subgrade)
- **Townhomes** | 3 Stories (Age-restricted to 55+)
  - Gross Area: 33,500 SF
  - Total Units: 16 (13 Market-Rate, 3 Affordable)
  - Structured Parking Stalls: 26 (Above-grade)
  - Surface Parking Stalls: 20
- **Clark & North Multifamily** | 4 Stories
  - Gross Area: 43,000 SF
  - Total Units: 34 (28 Market-Rate, 6 Affordable)
  - Structured Parking Stalls: 38 (Above-grade)
- **L&T Adaptive Reuse Office** | 4 Stories
  - Gross Area: 100,000 SF
  - Structured Parking Stalls: 220 (Subgrade)
- **L&T Adaptive Reuse Retail** | 1 Story
  - Gross Area: 13,300 SF
  - Structured Parking Stalls: 30 (Subgrade)

NORTH ZONE

- **Loft Residential** | 5 Stories
  - Gross Area: 35,890 SF
  - Total Units: 35 (29 Market-Rate, 6 Affordable)
- **Loft Retail** | 1 Story
  - Gross Area: 2,110 SF
- **Public Parking Garage** | 5 Stories
  - Structured Parking Stalls: 300 (Above-grade)
  - Surface Parking Stalls: 68

SOUTH ZONE

- **Mass Timber Building Office** | 6 Stories
  - Gross Area: 210,000 SF
  - Structured Parking Stalls: 525 (Above-grade and Subgrade)
- **Mass Timber Building Retail** | 1 Story
  - Gross Area: 12,000 SF
- **Public Parking Garage** | 4 Stories
  - Structured Parking Stalls: 200 (Above-grade)
  - Surface Parking Stalls: 100


Loft Resi + Retail
Public Parking Garage (North)
Clark and North Multifamily
LT ADRU Office + Retail
Timber Office + Retail
Townhomes
Public Parking Garage (South)
L+T Multifamily

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APPENDIX B

Data Collection

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Historical ADT

Central Avenue between Sussex Street and South Avenue

https://www.njtms.org/map/tms_reports/reports/DV03S_3-9-198_4-22-2019.pdf

	Apr-19
6:00	751
7:00	1,294
8:00	1,252
9:00	1,141
15:00	1,350
16:00	1,430
17:00	1,430
18:00	1,284

North Avenue between Central Avenue and Elmer Street

https://www.njtms.org/map/tms_reports/reports/DV03S_3-4-330_4-8-2019.pdf

	Apr-19
6:00	470
7:00	1,123
8:00	1,452
9:00	1,239
15:00	1,397
16:00	1,367
17:00	1,367
18:00	1,317

Central Avenue between Lenox Avenue and Quimby Street

https://www.njtms.org/map/tms_reports/reports/DV03S_3n5h717_4-8-2019.pdf

	Apr-19
6:00	350
7:00	932
8:00	1,035
9:00	1,037
15:00	1,198
16:00	1,234
17:00	1,313
18:00	1,217

Broad Street between Central Avenue and Mountain Avenue

https://www.njtms.org/map/tms_reports/reports/DV03S_3n5h716_4-8-2019.pdf

	Apr-19
6:00	902
7:00	1,901
8:00	1,900
9:00	1,636
15:00	1,790
16:00	1,894
17:00	1,949
18:00	1,794

	Summary of April 2019
6:00	2,473
7:00	5,251
8:00	5,639
9:00	5,054
15:00	5,735
16:00	5,924
17:00	6,059
18:00	5,611

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Weekday Peak Period

Prepared by National Data & Surveying Services

E Broad St/Rte 28 & N Ave W

Peak Hour Turning Movement Count

ID: 21-340072-001
City: Westfield

Day: Wednesday
Date: 11/17/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (E Broad St/Rte 28)

	L	T	R	U	Total	
AM	73	456	6	0	718	AM
NOON	0	0	0	0	0	NOON
PM	108	422	26	0	576	PM

EASTBOUND (N Ave W)

AM	NOON	PM	
692	0	780	⇦
0	0	0	↶ 0
170	0	122	↱ 1
348	0	299	→ 1
320	0	339	↴ 0

WESTBOUND (N Ave W)

PM	NOON	AM	
6	0	5	↰ 0
436	0	409	← 2
199	0	197	↲ 0
0	0	0	↷ 0
448	0	465	⇨

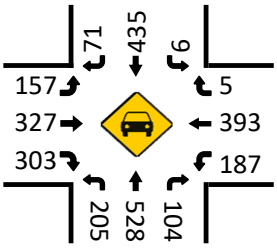
NORTHBOUND (E Broad St/Rte 28)

	L	T	R	U	Total	
PM	960	0	236	448	123	PM
NOON	0	0	0	0	0	NOON
AM	973	0	210	543	111	AM

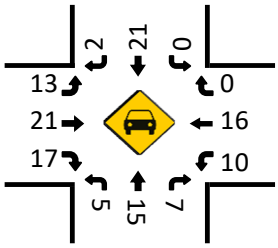
	L	T	R	U
	0.5	1	0.5	0
	0	1	1	1

CONTROL			
Signalized			
TEV	2848 AM	0 NOON	2764 PM
PHF	0.92		0.96

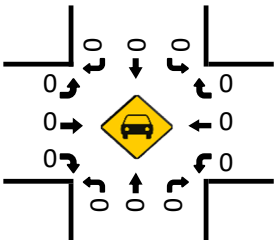
Cars (AM)



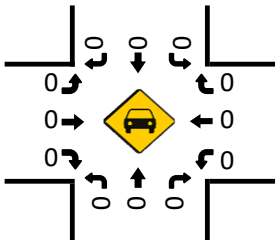
Total Trucks (AM)



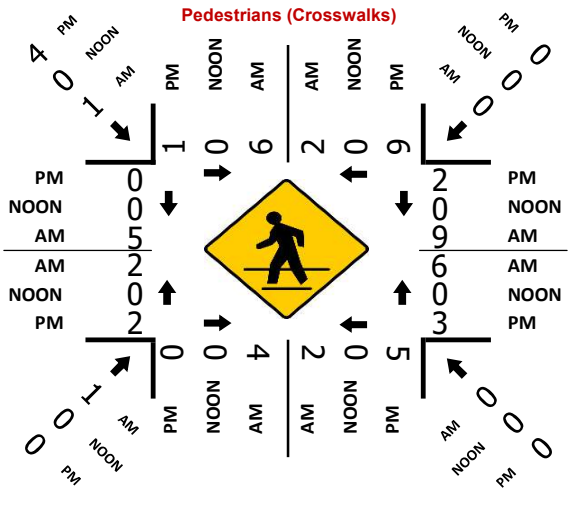
Cars (NOON)



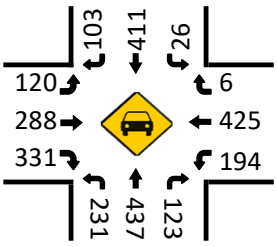
Total Trucks (NOON)



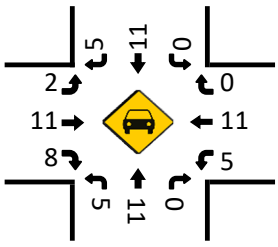
Pedestrians (Crosswalks)



Cars (PM)



Total Trucks (PM)



Prepared by National Data & Surveying Services

Rte 28 & S Ave W Roundabout

Peak Hour Turning Movement Count

ID: 21-340072-002
City: Westfield

Day: Wednesday
Date: 11/17/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	4:00 PM - 06:00 PM

CONTROL: 3-Way Yield(SB/EB/WB)

	AM	NOON	PM
TEV	2598	0	2535
PHF	0.94		0.98

SOUTHBOUND (Rte 28)

	Left	Thru	Right	U-Turn	
AM	492	0	483	0	863 AM
NOON	0	0	0	0	0 NOON
PM	521	0	440	3	785 PM

EASTBOUND (S Ave W Roundabout)

AM	NOON	PM		
795	0	905		
2	0	2	0	U-Turn
552	0	474	0	Left
439	0	391	1	Thru
0	0	0	1	Right

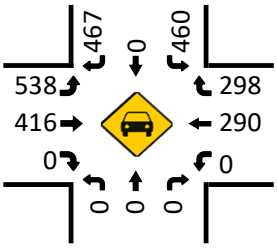
WESTBOUND (S Ave W Roundabout)

PM	NOON	AM		
308	0	311	1	Left
382	0	301	1	Thru
0	0	0	0	Right
14	0	18	0	U-Turn
845	0	940		

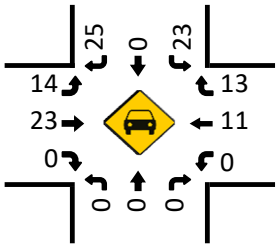
NORTHBOUND (Rte 28)

	U-Turn	Left	Thru	Right	
PM	0	0	0	0	0 PM
NOON	0	0	0	0	0 NOON
AM	0	0	0	0	0 AM

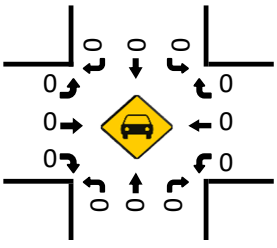
Cars (AM)



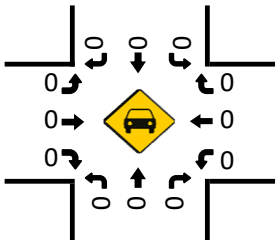
Total Trucks (AM)



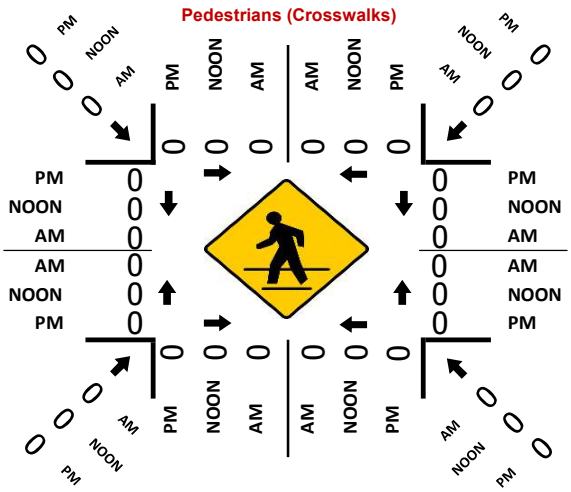
Cars (NOON)



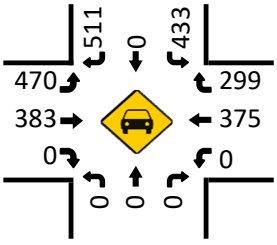
Total Trucks (NOON)



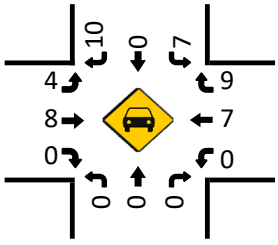
Pedestrians (Crosswalks)



Cars (PM)



Total Trucks (PM)



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Saturday Midday Peak Period

3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Elm Street Northbound							Elm Street Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 11:00AM	11	23	17	0	0	**51**	24	25	27	20	0	0	**72**	31
11:15AM	14	35	14	0	0	**63**	30	33	20	19	0	1	**73**	32
11:30AM	13	25	13	0	2	**53**	27	31	22	10	0	1	**64**	43
11:45AM	9	36	25	0	0	**70**	30	27	33	18	0	1	**79**	30
Hourly Total	47	119	69	0	2	**237**	111	116	102	67	0	3	**288**	136
12:00PM	12	32	16	0	2	**62**	38	31	32	20	0	0	**83**	45
12:15PM	16	34	22	0	0	**72**	40	25	15	22	0	0	**62**	40
12:30PM	13	45	18	0	1	**77**	41	33	34	19	0	0	**86**	39
12:45PM	11	30	28	0	3	**72**	33	31	22	18	0	0	**71**	53
Hourly Total	52	141	84	0	6	**283**	152	120	103	79	0	0	**302**	177
1:00PM	13	35	22	0	2	**72**	45	29	24	23	0	0	**76**	53
1:15PM	10	29	25	0	2	**66**	45	26	20	11	0	3	**60**	48
1:30PM	11	37	39	0	1	**88**	39	25	23	21	0	0	**69**	54
1:45PM	10	32	21	0	0	**63**	51	25	16	19	0	0	**60**	58
Hourly Total	44	133	107	0	5	**289**	180	105	83	74	0	3	**265**	213
Total	143	393	260	0	13	**809**	443	341	288	220	0	6	**855**	526
% Approach	17.7%	48.6%	32.1%	0%	1.6%	**-**	-	39.9%	33.7%	25.7%	0%	0.7%	**-**	-
% Total	3.4%	9.5%	6.3%	0%	0.3%	**19.5%**	-	8.2%	6.9%	5.3%	0%	0.1%	**20.6%**	-
Lights	143	391	259	0	13	**806**	-	341	286	215	0	6	**848**	-
% Lights	100%	99.5%	99.6%	0%	100%	**99.6%**	-	100%	99.3%	97.7%	0%	100%	**99.2%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	2	1	0	0	**3**	-	0	2	5	0	0	**7**	-
% Buses and Single-Unit Trucks	0%	0.5%	0.4%	0%	0%	**0.4%**	-	0%	0.7%	2.3%	0%	0%	**0.8%**	-
Pedestrians	-	-	-	-	-	-	439	-	-	-	-	-	-	505
% Pedestrians	-	-	-	-	-	-	99.1%	-	-	-	-	-	-	96.0%
Bicycles on Crosswalk	-	-	-	-	-	-	4	-	-	-	-	-	-	21
% Bicycles on Crosswalk	-	-	-	-	-	-	0.9%	-	-	-	-	-	-	4.0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

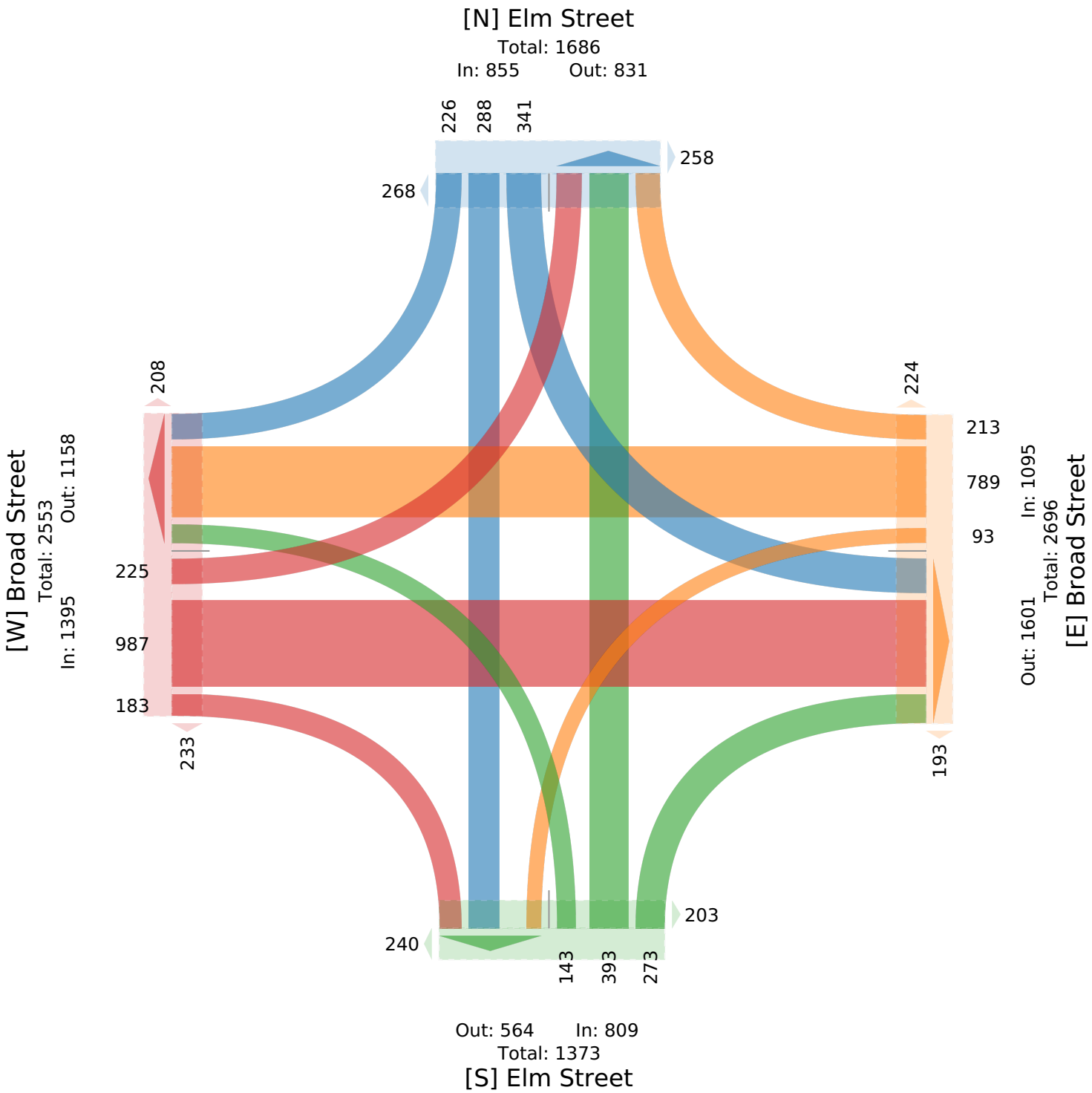
Leg Direction	Broad Street Eastbound							Broad Street Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:00AM	20	72	10	0	1	**103**	21	8	60	20	0	0	**88**	26	**314**
11:15AM	26	91	11	0	1	**129**	19	7	68	14	0	0	**89**	32	**354**
11:30AM	26	90	10	0	4	**130**	31	5	59	16	0	0	**80**	33	**327**
11:45AM	19	79	8	0	1	**107**	22	12	70	19	0	0	**101**	34	**357**
Hourly Total	91	332	39	0	7	**469**	93	32	257	69	0	0	**358**	125	**1352**
12:00PM	12	95	20	0	4	**131**	55	7	73	26	0	1	**107**	29	**383**
12:15PM	17	93	19	0	2	**131**	36	5	73	10	0	0	**88**	30	**353**
12:30PM	26	76	15	0	3	**120**	54	7	61	22	0	0	**90**	34	**373**
12:45PM	13	78	20	0	1	**112**	33	11	62	19	0	0	**92**	41	**347**
Hourly Total	68	342	74	0	10	**494**	178	30	269	77	0	1	**377**	134	**1456**
1:00PM	7	80	17	0	2	**106**	46	9	80	13	0	0	**102**	30	**356**
1:15PM	16	82	9	0	2	**109**	39	9	65	13	0	0	**87**	34	**322**
1:30PM	23	79	9	0	1	**112**	43	8	53	20	0	0	**81**	42	**350**
1:45PM	20	72	11	0	2	**105**	42	5	65	20	0	0	**90**	52	**318**
Hourly Total	66	313	46	0	7	**432**	170	31	263	66	0	0	**360**	158	**1346**
Total	225	987	159	0	24	**1395**	441	93	789	212	0	1	**1095**	417	**4154**
% Approach	16.1%	70.8%	11.4%	0%	1.7%	**-**	-	8.5%	72.1%	19.4%	0%	0.1%	**-**	-	**-**
% Total	5.4%	23.8%	3.8%	0%	0.6%	**33.6%**	-	2.2%	19.0%	5.1%	0%	0%	**26.4%**	-	**-**
Lights	220	976	157	0	24	**1377**	-	91	777	212	0	1	**1081**	-	4112
% Lights	97.8%	98.9%	98.7%	0%	100%	**98.7%**	-	97.8%	98.5%	100%	0%	100%	**98.7%**	-	99.0%
Articulated Trucks	0	1	0	0	0	**1**	-	1	3	0	0	0	**4**	-	5
% Articulated Trucks	0%	0.1%	0%	0%	0%	**0.1%**	-	1.1%	0.4%	0%	0%	0%	**0.4%**	-	0.1%
Buses and Single-Unit Trucks	5	10	2	0	0	**17**	-	1	9	0	0	0	**10**	-	37
% Buses and Single-Unit Trucks	2.2%	1.0%	1.3%	0%	0%	**1.2%**	-	1.1%	1.1%	0%	0%	0%	**0.9%**	-	0.9%
Pedestrians	-	-	-	-	-	-	436	-	-	-	-	-	-	402	
% Pedestrians	-	-	-	-	-	-	98.9%	-	-	-	-	-	-	96.4%	-
Bicycles on Crosswalk	-	-	-	-	-	-	5	-	-	-	-	-	-	15	
% Bicycles on Crosswalk	-	-	-	-	-	-	1.1%	-	-	-	-	-	-	3.6%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Elm Street Northbound							Elm Street Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 11:45AM	9	36	25	0	0	**70**	30	27	33	18	0	1	**79**	30
12:00PM	12	32	16	0	2	**62**	38	31	32	20	0	0	**83**	45
12:15PM	16	34	22	0	0	**72**	40	25	15	22	0	0	**62**	40
12:30PM	13	45	18	0	1	**77**	41	33	34	19	0	0	**86**	39
Total	50	147	81	0	3	**281**	149	116	114	79	0	1	**310**	154
% Approach	17.8%	52.3%	28.8%	0%	1.1%	**-**	-	37.4%	36.8%	25.5%	0%	0.3%	**-**	-
% Total	3.4%	10.0%	5.5%	0%	0.2%	**19.2%**	-	7.9%	7.8%	5.4%	0%	0.1%	**21.1%**	-
PHF	0.781	0.817	0.810	-	0.375	**0.912**	-	0.879	0.838	0.898	-	0.250	**0.901**	-
Lights	50	146	80	0	3	**279**	-	116	113	77	0	1	**307**	-
% Lights	100%	99.3%	98.8%	0%	100%	**99.3%**	-	100%	99.1%	97.5%	0%	100%	**99.0%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	1	1	0	0	**2**	-	0	1	2	0	0	**3**	-
% Buses and Single-Unit Trucks	0%	0.7%	1.2%	0%	0%	**0.7%**	-	0%	0.9%	2.5%	0%	0%	**1.0%**	-
Pedestrians	-	-	-	-	-	-	149	-	-	-	-	-	-	145
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	94.2%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	9
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	5.8%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

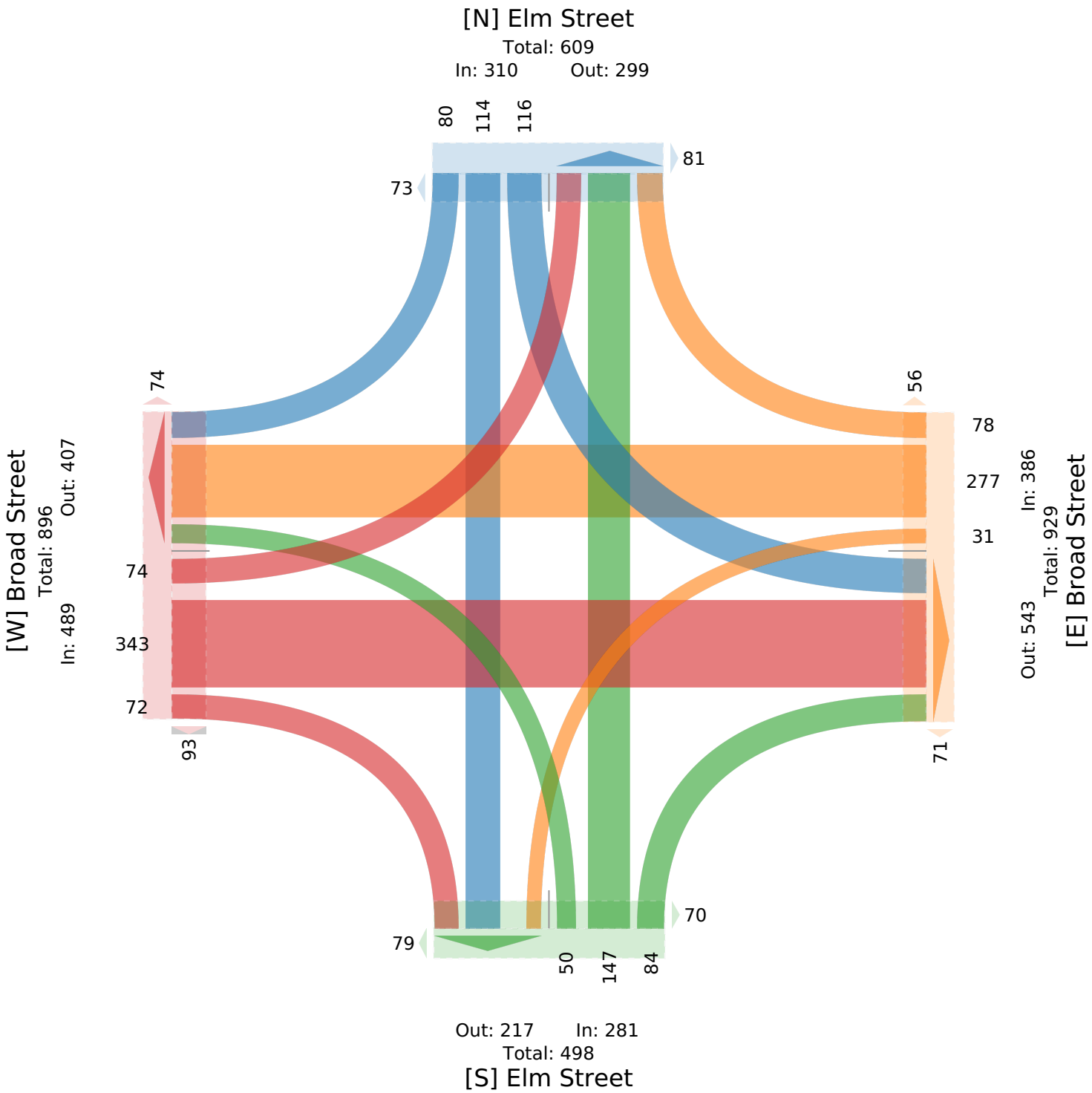
Leg Direction	Broad Street Eastbound							Broad Street Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:45AM	19	79	8	0	1	**107**	22	12	70	19	0	0	**101**	34	**357**
12:00PM	12	95	20	0	4	**131**	55	7	73	26	0	1	**107**	29	**383**
12:15PM	17	93	19	0	2	**131**	36	5	73	10	0	0	**88**	30	**353**
12:30PM	26	76	15	0	3	**120**	54	7	61	22	0	0	**90**	34	**373**
Total	74	343	62	0	10	**489**	167	31	277	77	0	1	**386**	127	**1466**
% Approach	15.1%	70.1%	12.7%	0%	2.0%	**-**	-	8.0%	71.8%	19.9%	0%	0.3%	**-**	-	**-**
% Total	5.0%	23.4%	4.2%	0%	0.7%	**33.4%**	-	2.1%	18.9%	5.3%	0%	0.1%	**26.3%**	-	**-**
PHF	0.712	0.903	0.775	-	0.625	**0.933**	-	0.646	0.949	0.740	-	0.250	**0.902**	-	0.957
Lights	72	339	62	0	10	**483**	-	31	273	77	0	1	**382**	-	1451
% Lights	97.3%	98.8%	100%	0%	100%	**98.8%**	-	100%	98.6%	100%	0%	100%	**99.0%**	-	99.0%
Articulated Trucks	0	0	0	0	0	**0**	-	0	1	0	0	0	**1**	-	1
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0.4%	0%	0%	0%	**0.3%**	-	0.1%
Buses and Single-Unit Trucks	2	4	0	0	0	**6**	-	0	3	0	0	0	**3**	-	14
% Buses and Single-Unit Trucks	2.7%	1.2%	0%	0%	0%	**1.2%**	-	0%	1.1%	0%	0%	0%	**0.8%**	-	1.0%
Pedestrians	-	-	-	-	-	-	167	-	-	-	-	-	-	122	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	96.1%	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	5	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	3.9%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Elm Street Northbound							Elm Street Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 1:00PM	13	35	22	0	2	**72**	45	29	24	23	0	0	**76**	53
1:15PM	10	29	25	0	2	**66**	45	26	20	11	0	3	**60**	48
1:30PM	11	37	39	0	1	**88**	39	25	23	21	0	0	**69**	54
1:45PM	10	32	21	0	0	**63**	51	25	16	19	0	0	**60**	58
Total	44	133	107	0	5	**289**	180	105	83	74	0	3	**265**	213
% Approach	15.2%	46.0%	37.0%	0%	1.7%	**-**	-	39.6%	31.3%	27.9%	0%	1.1%	**-**	-
% Total	3.3%	9.9%	7.9%	0%	0.4%	**21.5%**	-	7.8%	6.2%	5.5%	0%	0.2%	**19.7%**	-
PHF	0.846	0.899	0.686	-	0.625	**0.821**	-	0.905	0.865	0.804	-	0.250	**0.872**	-
Lights	44	133	107	0	5	**289**	-	105	82	72	0	3	**262**	-
% Lights	100%	100%	100%	0%	100%	**100%**	-	100%	98.8%	97.3%	0%	100%	**98.9%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	0	0	0	0	**0**	-	0	1	2	0	0	**3**	-
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	1.2%	2.7%	0%	0%	**1.1%**	-
Pedestrians	-	-	-	-	-	-	176	-	-	-	-	-	-	208
% Pedestrians	-	-	-	-	-	-	97.8%	-	-	-	-	-	-	97.7%
Bicycles on Crosswalk	-	-	-	-	-	-	4	-	-	-	-	-	-	5
% Bicycles on Crosswalk	-	-	-	-	-	-	2.2%	-	-	-	-	-	-	2.3%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

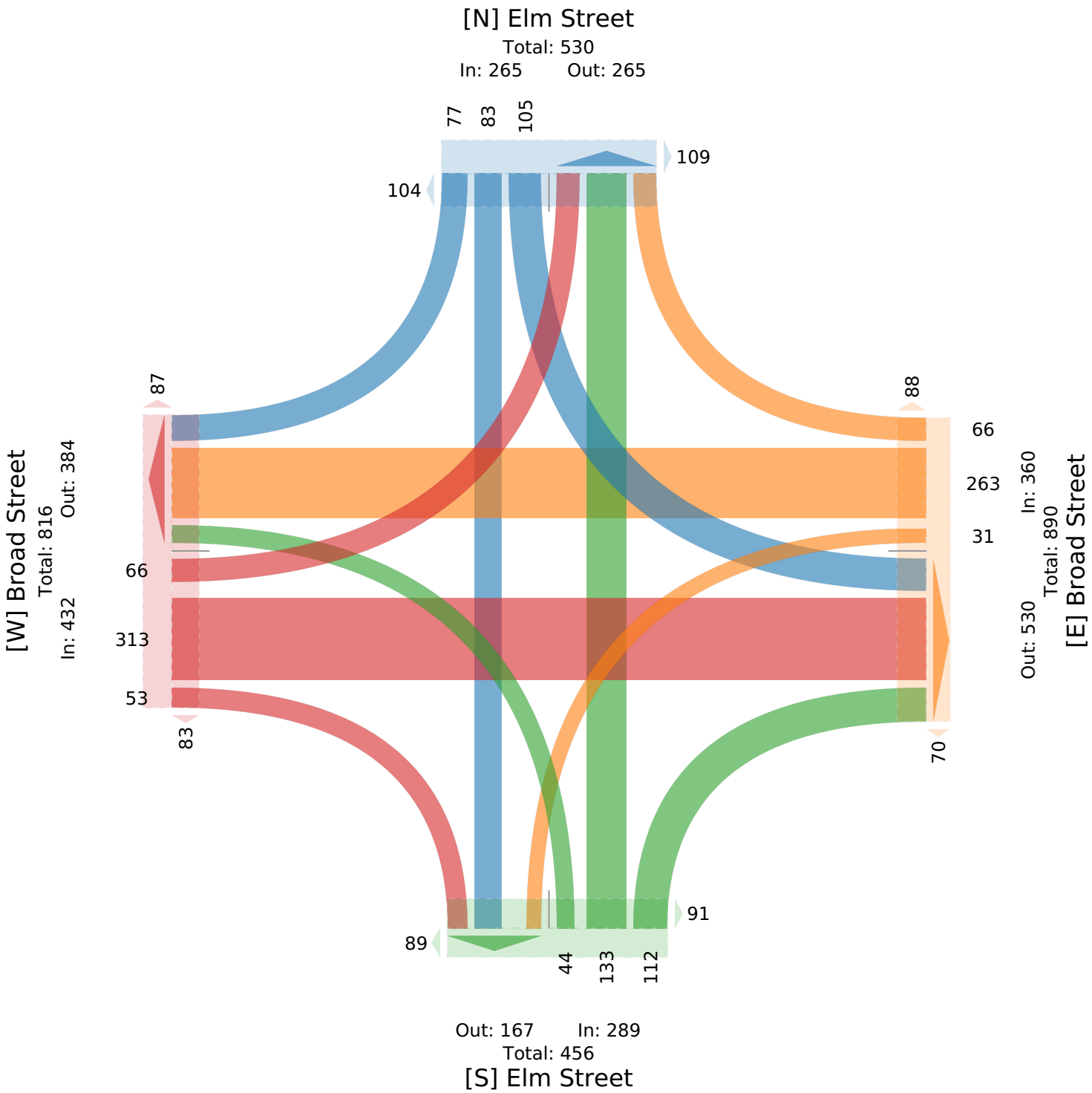
Leg Direction	Broad Street Eastbound							Broad Street Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 1:00PM	7	80	17	0	2	**106**	46	9	80	13	0	0	**102**	30	**356**
1:15PM	16	82	9	0	2	**109**	39	9	65	13	0	0	**87**	34	**322**
1:30PM	23	79	9	0	1	**112**	43	8	53	20	0	0	**81**	42	**350**
1:45PM	20	72	11	0	2	**105**	42	5	65	20	0	0	**90**	52	**318**
Total	66	313	46	0	7	**432**	170	31	263	66	0	0	**360**	158	**1346**
% Approach	15.3%	72.5%	10.6%	0%	1.6%	**-**	-	8.6%	73.1%	18.3%	0%	0%	**-**	-	-
% Total	4.9%	23.3%	3.4%	0%	0.5%	**32.1%**	-	2.3%	19.5%	4.9%	0%	0%	**26.7%**	-	-
PHF	0.717	0.954	0.676	-	0.875	**0.964**	-	0.861	0.822	0.825	-	-	**0.882**	-	0.945
Lights	64	310	44	0	7	**425**	-	31	259	66	0	0	**356**	-	1332
% Lights	97.0%	99.0%	95.7%	0%	100%	**98.4%**	-	100%	98.5%	100%	0%	0%	**98.9%**	-	99.0%
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-	0%
Buses and Single-Unit Trucks	2	3	2	0	0	**7**	-	0	4	0	0	0	**4**	-	14
% Buses and Single-Unit Trucks	3.0%	1.0%	4.3%	0%	0%	**1.6%**	-	0%	1.5%	0%	0%	0%	**1.1%**	-	1.0%
Pedestrians	-	-	-	-	-	-	166	-	-	-	-	-	-	149	
% Pedestrians	-	-	-	-	-	-	97.6%	-	-	-	-	-	-	94.3%	-
Bicycles on Crosswalk	-	-	-	-	-	-	4	-	-	-	-	-	-	9	
% Bicycles on Crosswalk	-	-	-	-	-	-	2.4%	-	-	-	-	-	-	5.7%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

3. Elm Street and Broad Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965693, Location: 40.65177, -74.348273, Site Code: 3

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



Imperial Traffic & Data Collection
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Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.65177, -74.348273

Count Name: 3. Elm Street and Broad Street
Site Code: 3
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	Broad Street Eastbound							Broad Street Westbound							Elm Street Northbound							Elm Street Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:00 AM	0	20	72	10	1	21	103	0	8	60	20	0	26	88	0	11	23	17	0	24	51	0	25	27	20	0	31	72	314
11:15 AM	0	26	91	11	1	19	129	0	7	68	14	0	32	89	0	14	35	14	0	30	63	0	33	20	19	1	32	73	354
11:30 AM	0	26	90	10	4	31	130	0	5	59	16	0	33	80	0	13	25	13	2	27	53	0	31	22	10	1	43	64	327
11:45 AM	0	19	79	8	1	22	107	0	12	70	19	0	34	101	0	9	36	25	0	30	70	0	27	33	18	1	30	79	357
Hourly Total	0	91	332	39	7	93	469	0	32	257	69	0	125	358	0	47	119	69	2	111	237	0	116	102	67	3	136	288	1352
12:00 PM	0	12	95	20	4	55	131	0	7	73	26	1	29	107	0	12	32	16	2	38	62	0	31	32	20	0	45	83	383
12:15 PM	0	17	93	19	2	36	131	0	5	73	10	0	30	88	0	16	34	22	0	40	72	0	25	15	22	0	40	62	353
12:30 PM	0	26	76	15	3	54	120	0	7	61	22	0	34	90	0	13	45	18	1	41	77	0	33	34	19	0	39	86	373
12:45 PM	0	13	78	20	1	33	112	0	11	62	19	0	41	92	0	11	30	28	3	33	72	0	31	22	18	0	53	71	347
Hourly Total	0	68	342	74	10	178	494	0	30	269	77	1	134	377	0	52	141	84	6	152	283	0	120	103	79	0	177	302	1456
1:00 PM	0	7	80	17	2	46	106	0	9	80	13	0	30	102	0	13	35	22	2	45	72	0	29	24	23	0	53	76	356
1:15 PM	0	16	82	9	2	39	109	0	9	65	13	0	34	87	0	10	29	25	2	45	66	0	26	20	11	3	48	60	322
1:30 PM	0	23	79	9	1	43	112	0	8	53	20	0	42	81	0	11	37	39	1	39	88	0	25	23	21	0	54	69	350
1:45 PM	0	20	72	11	2	42	105	0	5	65	20	0	52	90	0	10	32	21	0	51	63	0	25	16	19	0	58	60	318
Hourly Total	0	66	313	46	7	170	432	0	31	263	66	0	158	360	0	44	133	107	5	180	289	0	105	83	74	3	213	265	1346
Grand Total	0	225	987	159	24	441	1395	0	93	789	212	1	417	1095	0	143	393	260	13	443	809	0	341	288	220	6	526	855	4154
Approach %	0.0	16.1	70.8	11.4	1.7	-	-	0.0	8.5	72.1	19.4	0.1	-	-	0.0	17.7	48.6	32.1	1.6	-	-	0.0	39.9	33.7	25.7	0.7	-	-	-
Total %	0.0	5.4	23.8	3.8	0.6	-	33.6	0.0	2.2	19.0	5.1	0.0	-	26.4	0.0	3.4	9.5	6.3	0.3	-	19.5	0.0	8.2	6.9	5.3	0.1	-	20.6	-
Lights	0	220	976	157	24	-	1377	0	91	777	212	1	-	1081	0	143	391	259	13	-	806	0	341	286	215	6	-	848	4112
% Lights	-	97.8	98.9	98.7	100.0	-	98.7	-	97.8	98.5	100.0	100.0	-	98.7	-	100.0	99.5	99.6	100.0	-	99.6	-	100.0	99.3	97.7	100.0	-	99.2	99.0
Mediums	0	5	10	2	0	-	17	0	1	9	0	0	-	10	0	0	2	1	0	-	3	0	0	2	5	0	-	7	37
% Mediums	-	2.2	1.0	1.3	0.0	-	1.2	-	1.1	1.1	0.0	0.0	-	0.9	-	0.0	0.5	0.4	0.0	-	0.4	-	0.0	0.7	2.3	0.0	-	0.8	0.9
Articulated Trucks	0	0	1	0	0	-	1	0	1	3	0	0	-	4	0	0	0	0	0	-	0	0	0	0	0	0	-	0	5
% Articulated Trucks	-	0.0	0.1	0.0	0.0	-	0.1	-	1.1	0.4	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	0.1
Bicycles on Crosswalk	-	-	-	-	-	5	-	-	-	-	-	-	15	-	-	-	-	-	-	4	-	-	-	-	-	-	21	-	-
% Bicycles on Crosswalk	-	-	-	-	-	1.1	-	-	-	-	-	-	3.6	-	-	-	-	-	-	0.9	-	-	-	-	-	-	4.0	-	-
Pedestrians	-	-	-	-	-	436	-	-	-	-	-	-	402	-	-	-	-	-	-	439	-	-	-	-	-	-	505	-	-
% Pedestrians	-	-	-	-	-	98.9	-	-	-	-	-	-	96.4	-	-	-	-	-	-	99.1	-	-	-	-	-	-	96.0	-	-

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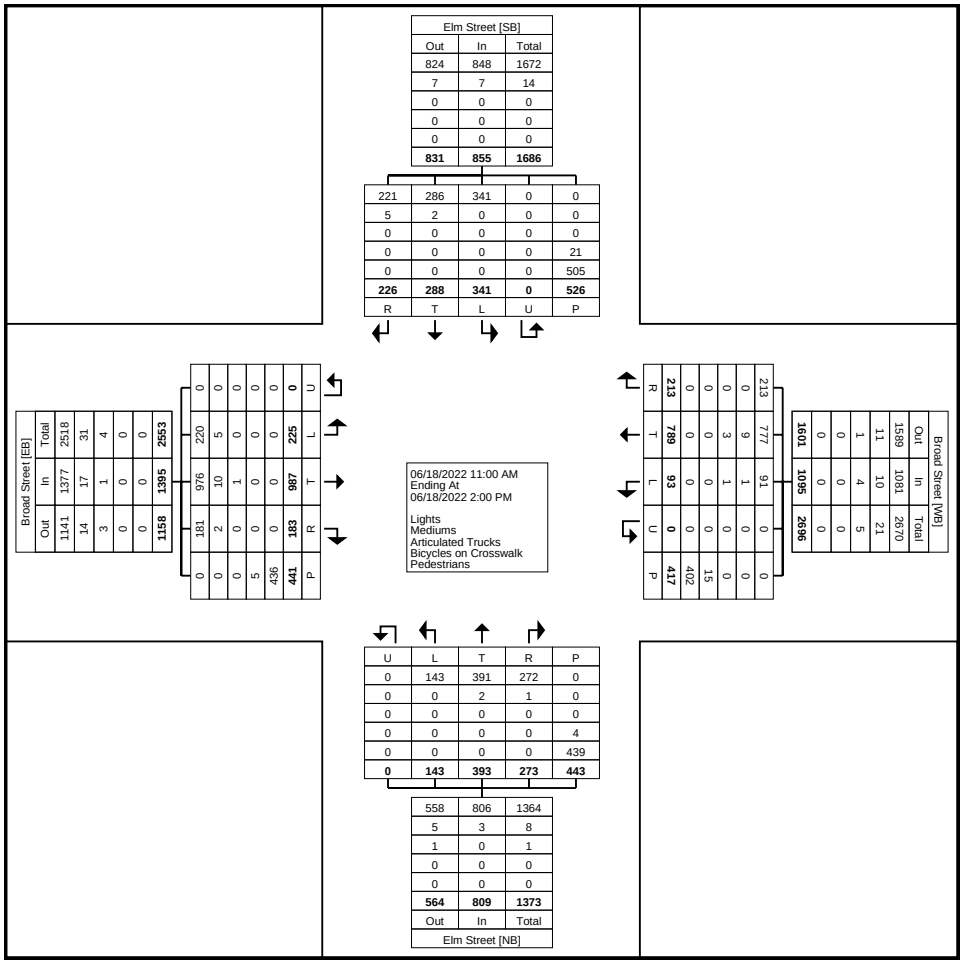
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.65177, -74.348273

Count Name: 3. Elm Street and Broad Street
Site Code: 3
Start Date: 06/18/2022
Page No: 2



Turning Movement Data Plot

Imperial Traffic & Data Collection
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Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.65177, -74.348273

Count Name: 3. Elm Street and Broad Street
Site Code: 3
Start Date: 06/18/2022
Page No: 3

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Broad Street Eastbound							Broad Street Westbound							Elm Street Northbound							Elm Street Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:45 AM	0	19	79	8	1	22	107	0	12	70	19	0	34	101	0	9	36	25	0	30	70	0	27	33	18	1	30	79	357
12:00 PM	0	12	95	20	4	55	131	0	7	73	26	1	29	107	0	12	32	16	2	38	62	0	31	32	20	0	45	83	383
12:15 PM	0	17	93	19	2	36	131	0	5	73	10	0	30	88	0	16	34	22	0	40	72	0	25	15	22	0	40	62	353
12:30 PM	0	26	76	15	3	54	120	0	7	61	22	0	34	90	0	13	45	18	1	41	77	0	33	34	19	0	39	86	373
Total	0	74	343	62	10	167	489	0	31	277	77	1	127	386	0	50	147	81	3	149	281	0	116	114	79	1	154	310	1466
Approach %	0.0	15.1	70.1	12.7	2.0	-	-	0.0	8.0	71.8	19.9	0.3	-	-	0.0	17.8	52.3	28.8	1.1	-	-	0.0	37.4	36.8	25.5	0.3	-	-	-
Total %	0.0	5.0	23.4	4.2	0.7	-	33.4	0.0	2.1	18.9	5.3	0.1	-	26.3	0.0	3.4	10.0	5.5	0.2	-	19.2	0.0	7.9	7.8	5.4	0.1	-	21.1	-
PHF	0.000	0.712	0.903	0.775	0.625	-	0.933	0.000	0.646	0.949	0.740	0.250	-	0.902	0.000	0.781	0.817	0.810	0.375	-	0.912	0.000	0.879	0.838	0.898	0.250	-	0.901	0.957
Lights	0	72	339	62	10	-	483	0	31	273	77	1	-	382	0	50	146	80	3	-	279	0	116	113	77	1	-	307	1451
% Lights	-	97.3	98.8	100.0	100.0	-	98.8	-	100.0	98.6	100.0	100.0	-	99.0	-	100.0	99.3	98.8	100.0	-	99.3	-	100.0	99.1	97.5	100.0	-	99.0	99.0
Mediums	0	2	4	0	0	-	6	0	0	3	0	0	-	3	0	0	1	1	0	-	2	0	0	1	2	0	-	3	14
% Mediums	-	2.7	1.2	0.0	0.0	-	1.2	-	0.0	1.1	0.0	0.0	-	0.8	-	0.0	0.7	1.2	0.0	-	0.7	-	0.0	0.9	2.5	0.0	-	1.0	1.0
Articulated Trucks	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1
% Articulated Trucks	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.4	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	0.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	5	-	-	-	-	-	-	0	-	-	-	-	-	-	9	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	3.9	-	-	-	-	-	-	0.0	-	-	-	-	-	-	5.8	-	-
Pedestrians	-	-	-	-	-	167	-	-	-	-	-	-	122	-	-	-	-	-	-	149	-	-	-	-	-	-	145	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	96.1	-	-	-	-	-	-	100.0	-	-	-	-	-	-	94.2	-	-

Imperial Traffic & Data Collection
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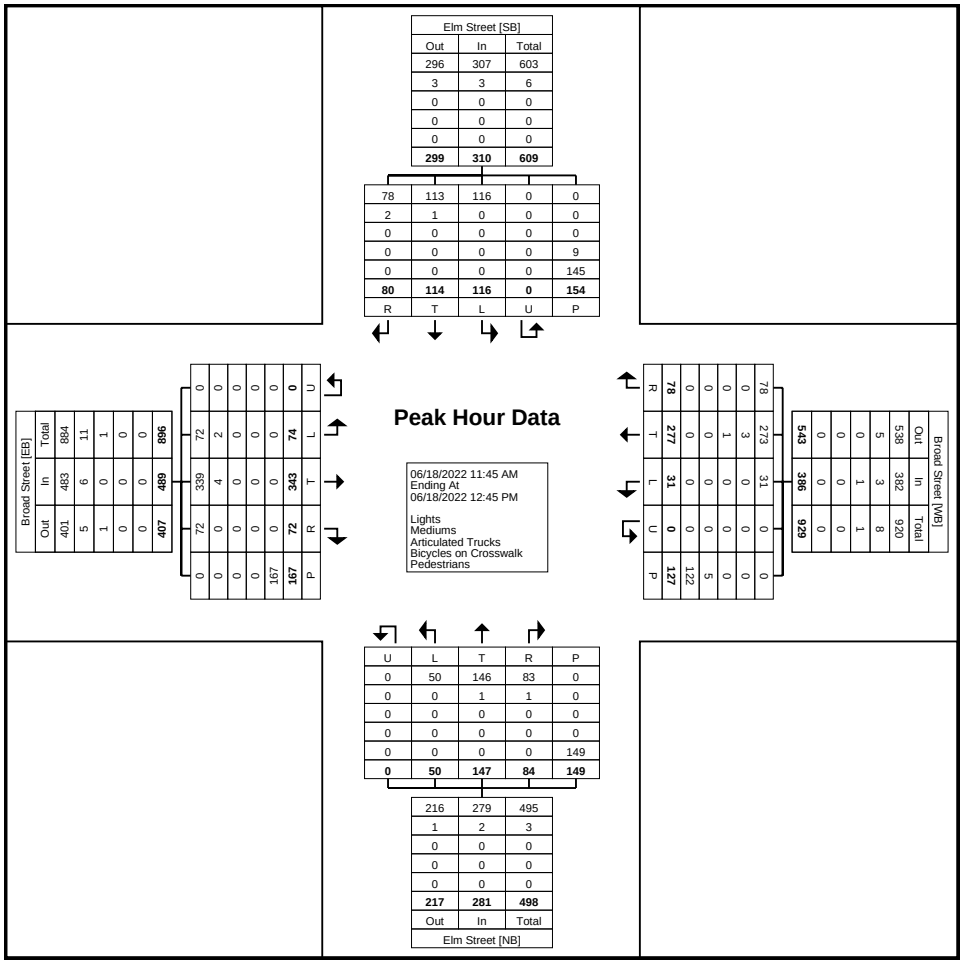
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.65177, -74.348273

Count Name: 3. Elm Street and Broad Street
Site Code: 3
Start Date: 06/18/2022



Turning Movement Peak Hour Data Plot (11:45 AM)

4. Central Avenue and Broad Street - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965695, Location: 40.652475, -74.347613, Site Code: 4

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

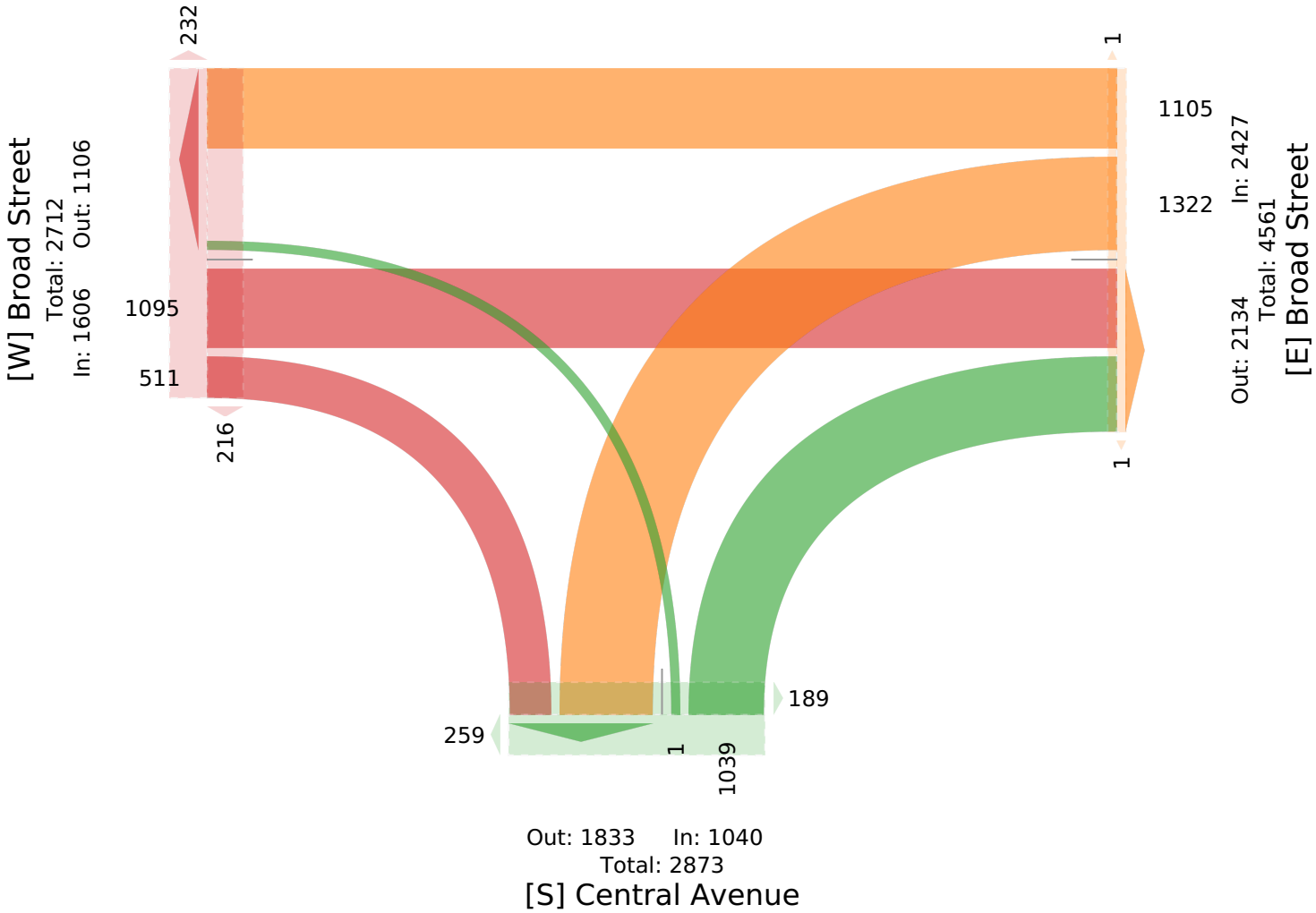
Leg Direction	Central Avenue Northbound						Broad Street Eastbound						Broad Street Westbound					
Time	L	R	U	RR	**App**	Ped*	T	R	U	RR	**App**	Ped*	L	T	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	0	82	0	1	**83**	18	79	36	0	0	**115**	26	115	85	0	**200**	0	**398**
11:15AM	0	88	0	0	**88**	14	95	42	0	0	**137**	24	110	90	0	**200**	0	**425**
11:30AM	0	96	0	1	**97**	39	87	44	0	0	**131**	26	107	81	0	**188**	0	**416**
11:45AM	1	86	0	1	**88**	47	111	28	0	1	**140**	30	117	99	0	**216**	0	**444**
Hourly Total	1	352	0	3	**356**	118	372	150	0	1	**523**	106	449	355	0	**804**	0	**1683**
12:00PM	0	91	0	3	**94**	51	95	47	0	2	**144**	47	111	111	0	**222**	0	**460**
12:15PM	0	96	0	1	**97**	41	99	43	0	1	**143**	32	120	84	0	**204**	0	**444**
12:30PM	0	74	0	7	**81**	45	96	35	0	0	**131**	53	107	98	0	**205**	0	**417**
12:45PM	0	69	0	3	**72**	39	94	40	0	2	**136**	50	108	95	0	**203**	1	**411**
Hourly Total	0	330	0	14	**344**	176	384	165	0	5	**554**	182	446	388	0	**834**	1	**1732**
1:00PM	0	81	0	0	**81**	44	82	45	0	4	**131**	32	107	103	0	**210**	0	**422**
1:15PM	0	91	0	0	**91**	33	85	50	0	1	**136**	24	109	90	0	**199**	0	**426**
1:30PM	0	93	0	0	**93**	41	90	49	0	4	**143**	46	106	77	0	**183**	0	**419**
1:45PM	0	75	0	0	**75**	36	82	37	0	0	**119**	58	105	92	0	**197**	1	**391**
Hourly Total	0	340	0	0	**340**	154	339	181	0	9	**529**	160	427	362	0	**789**	1	**1658**
Total	1	1022	0	17	**1040**	448	1095	496	0	15	**1606**	448	1322	1105	0	**2427**	2	**5073**
% Approach	0.1%	98.3%	0%	1.6%	**-**	-	68.2%	30.9%	0%	0.9%	**-**	-	54.5%	45.5%	0%	**-**	-	**-**
% Total	0%	20.1%	0%	0.3%	**20.5%**	-	21.6%	9.8%	0%	0.3%	**31.7%**	-	26.1%	21.8%	0%	**47.8%**	-	**-**
Lights	1	1013	0	17	**1031**	-	1084	492	0	15	**1591**	-	1298	1091	0	**2389**	-	5011
% Lights	100%	99.1%	0%	100%	**99.1%**	-	99.0%	99.2%	0%	100%	**99.1%**	-	98.2%	98.7%	0%	**98.4%**	-	98.8%
Articulated Trucks	0	0	0	0	**0**	-	3	0	0	0	**3**	-	4	3	0	**7**	-	10
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.3%	0%	0%	0%	**0.2%**	-	0.3%	0.3%	0%	**0.3%**	-	0.2%
Buses and Single-Unit Trucks	0	9	0	0	**9**	-	8	4	0	0	**12**	-	20	11	0	**31**	-	52
% Buses and Single-Unit Trucks	0%	0.9%	0%	0%	**0.9%**	-	0.7%	0.8%	0%	0%	**0.7%**	-	1.5%	1.0%	0%	**1.3%**	-	1.0%
Pedestrians	-	-	-	-	-	439	-	-	-	-	-	441	-	-	-	-	2	
% Pedestrians	-	-	-	-	-	98.0%	-	-	-	-	-	98.4%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	9	-	-	-	-	-	7	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	2.0%	-	-	-	-	-	1.6%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

4. Central Avenue and Broad Street - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965695, Location: 40.652475, -74.347613, Site Code: 4

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



4. Central Avenue and Broad Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965695, Location: 40.652475, -74.347613, Site Code: 4

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Central Avenue Northbound						Broad Street Eastbound						Broad Street Westbound					
Time	L	R	U	RR	**App**	Ped*	T	R	U	RR	**App**	Ped*	L	T	U	**App**	Ped*	**Int**
2022-06-18 11:45AM	1	86	0	1	**88**	47	111	28	0	1	**140**	30	117	99	0	**216**	0	**444**
12:00PM	0	91	0	3	**94**	51	95	47	0	2	**144**	47	111	111	0	**222**	0	**460**
12:15PM	0	96	0	1	**97**	41	99	43	0	1	**143**	32	120	84	0	**204**	0	**444**
12:30PM	0	74	0	7	**81**	45	96	35	0	0	**131**	53	107	98	0	**205**	0	**417**
Total	1	347	0	12	**360**	184	401	153	0	4	**558**	162	455	392	0	**847**	0	**1765**
% Approach	0.3%	96.4%	0%	3.3%	**-**	-	71.9%	27.4%	0%	0.7%	**-**	-	53.7%	46.3%	0%	**-**	-	-
% Total	0.1%	19.7%	0%	0.7%	**20.4%**	-	22.7%	8.7%	0%	0.2%	**31.6%**	-	25.8%	22.2%	0%	**48.0%**	-	-
PHF	0.250	0.904	-	0.429	**0.928**	-	0.903	0.814	-	0.500	**0.969**	-	0.948	0.883	-	**0.954**	-	0.959
Lights	1	346	0	12	**359**	-	397	151	0	4	**552**	-	446	388	0	**834**	-	1745
% Lights	100%	99.7%	0%	100%	**99.7%**	-	99.0%	98.7%	0%	100%	**98.9%**	-	98.0%	99.0%	0%	**98.5%**	-	98.9%
Articulated Trucks	0	0	0	0	**0**	-	1	0	0	0	**1**	-	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.2%	0%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	1	0	0	**1**	-	3	2	0	0	**5**	-	9	4	0	**13**	-	19
% Buses and Single-Unit Trucks	0%	0.3%	0%	0%	**0.3%**	-	0.7%	1.3%	0%	0%	**0.9%**	-	2.0%	1.0%	0%	**1.5%**	-	1.1%
Pedestrians	-	-	-	-	-	181	-	-	-	-	-	160	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	98.4%	-	-	-	-	-	98.8%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	1.6%	-	-	-	-	-	1.2%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

4. Central Avenue and Broad Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965695, Location: 40.652475, -74.347613, Site Code: 4

Provided by: Imperial Traffic & Data Collection
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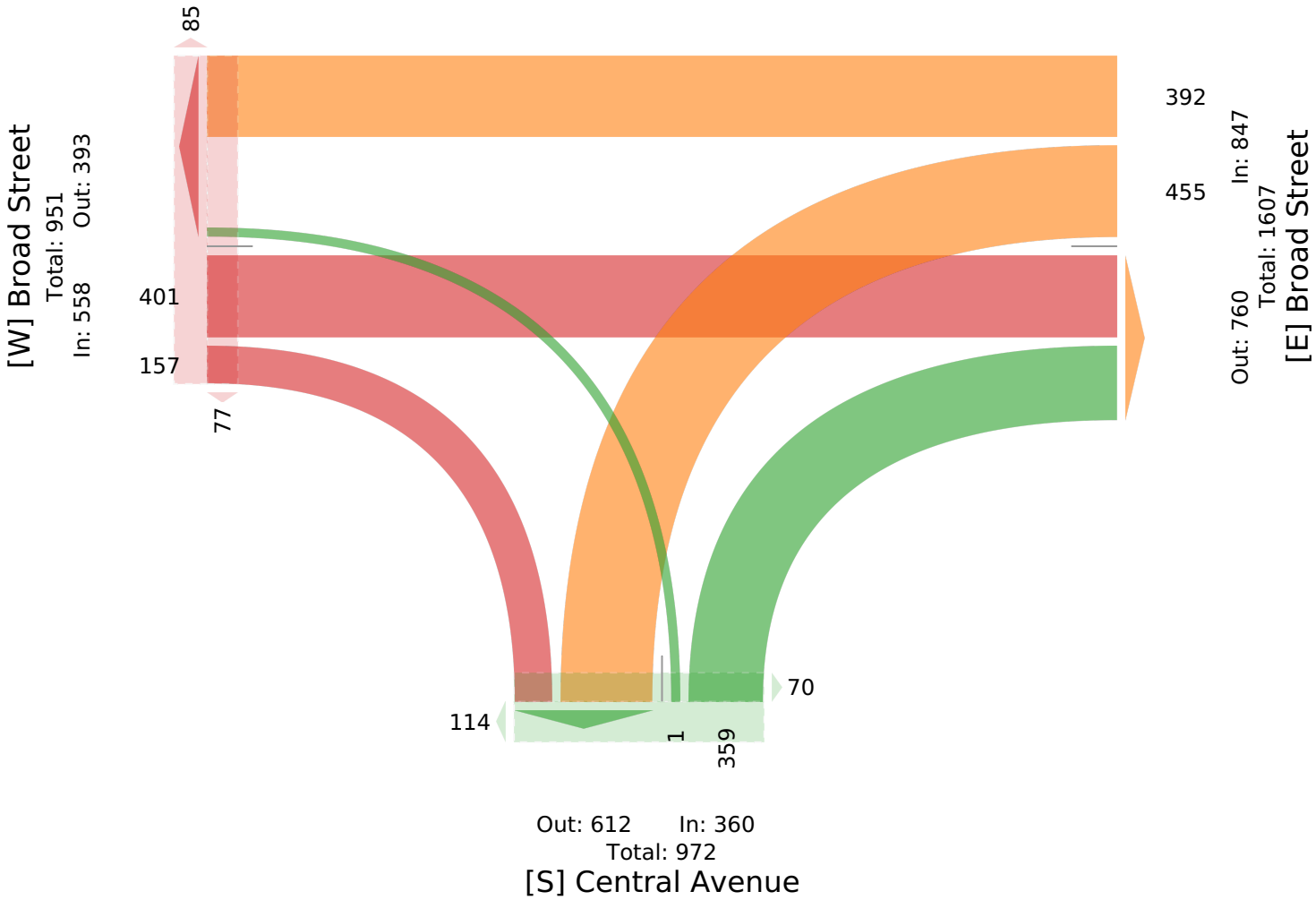

4. Central Avenue and Broad Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965695, Location: 40.652475, -74.347613, Site Code: 4

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Central Avenue Northbound						Broad Street Eastbound						Broad Street Westbound					
Time	L	R	U	RR	**App**	Ped*	T	R	U	RR	**App**	Ped*	L	T	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	0	81	0	0	**81**	44	82	45	0	4	**131**	32	107	103	0	**210**	0	**422**
1:15PM	0	91	0	0	**91**	33	85	50	0	1	**136**	24	109	90	0	**199**	0	**426**
1:30PM	0	93	0	0	**93**	41	90	49	0	4	**143**	46	106	77	0	**183**	0	**419**
1:45PM	0	75	0	0	**75**	36	82	37	0	0	**119**	58	105	92	0	**197**	1	**391**
Total	0	340	0	0	**340**	154	339	181	0	9	**529**	160	427	362	0	**789**	1	**1658**
% Approach	0%	100%	0%	0%	**-**	-	64.1%	34.2%	0%	1.7%	**-**	-	54.1%	45.9%	0%	**-**	-	**-**
% Total	0%	20.5%	0%	0%	**20.5%**	-	20.4%	10.9%	0%	0.5%	**31.9%**	-	25.8%	21.8%	0%	**47.6%**	-	**-**
PHF	-	0.914	-	-	**0.914**	-	0.942	0.905	-	0.563	**0.925**	-	0.979	0.879	-	**0.939**	-	0.973
Lights	0	338	0	0	**338**	-	336	180	0	9	**525**	-	423	358	0	**781**	-	1644
% Lights	0%	99.4%	0%	0%	**99.4%**	-	99.1%	99.4%	0%	100%	**99.2%**	-	99.1%	98.9%	0%	**99.0%**	-	99.2%
Articulated Trucks	0	0	0	0	**0**	-	1	0	0	0	**1**	-	2	1	0	**3**	-	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.3%	0%	0%	0%	**0.2%**	-	0.5%	0.3%	0%	**0.4%**	-	0.2%
Buses and Single-Unit Trucks	0	2	0	0	**2**	-	2	1	0	0	**3**	-	2	3	0	**5**	-	10
% Buses and Single-Unit Trucks	0%	0.6%	0%	0%	**0.6%**	-	0.6%	0.6%	0%	0%	**0.6%**	-	0.5%	0.8%	0%	**0.6%**	-	0.6%
Pedestrians	-	-	-	-	-	151	-	-	-	-	-	156	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	98.1%	-	-	-	-	-	97.5%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	4	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	1.9%	-	-	-	-	-	2.5%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

4. Central Avenue and Broad Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965695, Location: 40.652475, -74.347613, Site Code: 4

Provided by: Imperial Traffic & Data Collection
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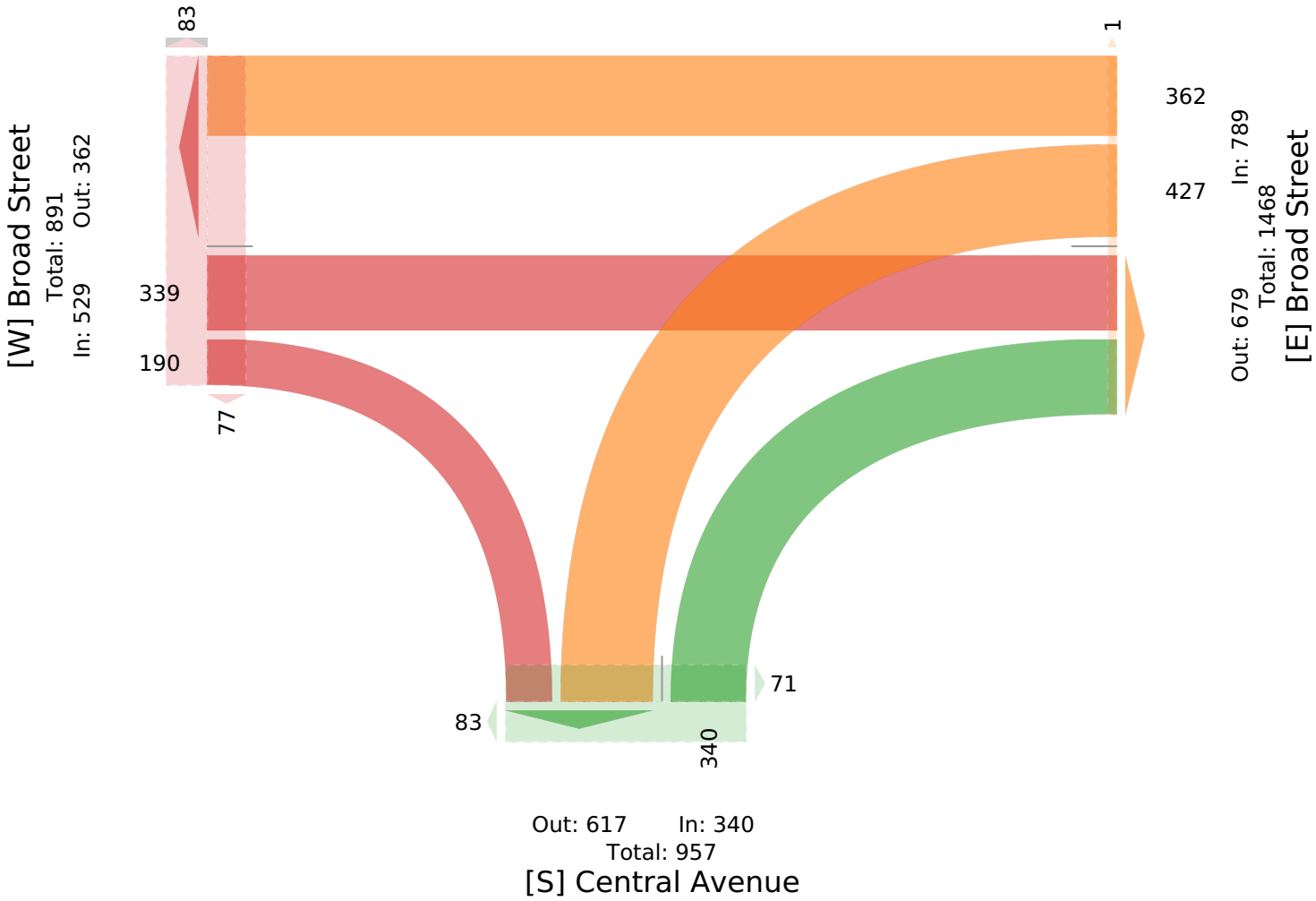

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.652475, -74.347613

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Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 4. Central Avenue and Broad Street
Site Code: 4
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	Broad Street Eastbound						Broad Street Westbound					Central Avenue Northbound						Int. Total
	U-Turn	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Right on Red	Peds	App. Total	
11:00 AM	0	79	36	0	26	115	0	115	85	0	200	0	0	82	1	18	83	398
11:15 AM	0	95	42	0	24	137	0	110	90	0	200	0	0	88	0	14	88	425
11:30 AM	0	87	44	0	26	131	0	107	81	0	188	0	0	96	1	39	97	416
11:45 AM	0	111	28	1	30	140	0	117	99	0	216	0	1	86	1	47	88	444
Hourly Total	0	372	150	1	106	523	0	449	355	0	804	0	1	352	3	118	356	1683
12:00 PM	0	95	47	2	47	144	0	111	111	0	222	0	0	91	3	51	94	460
12:15 PM	0	99	43	1	32	143	0	120	84	0	204	0	0	96	1	41	97	444
12:30 PM	0	96	35	0	53	131	0	107	98	0	205	0	0	74	7	45	81	417
12:45 PM	0	94	40	2	50	136	0	108	95	1	203	0	0	69	3	39	72	411
Hourly Total	0	384	165	5	182	554	0	446	388	1	834	0	0	330	14	176	344	1732
1:00 PM	0	82	45	4	32	131	0	107	103	0	210	0	0	81	0	44	81	422
1:15 PM	0	85	50	1	24	136	0	109	90	0	199	0	0	91	0	33	91	426
1:30 PM	0	90	49	4	46	143	0	106	77	0	183	0	0	93	0	41	93	419
1:45 PM	0	82	37	0	58	119	0	105	92	1	197	0	0	75	0	36	75	391
Hourly Total	0	339	181	9	160	529	0	427	362	1	789	0	0	340	0	154	340	1658
Grand Total	0	1095	496	15	448	1606	0	1322	1105	2	2427	0	1	1022	17	448	1040	5073
Approach %	0.0	68.2	30.9	0.9	-	-	0.0	54.5	45.5	-	-	0.0	0.1	98.3	1.6	-	-	-
Total %	0.0	21.6	9.8	0.3	-	31.7	0.0	26.1	21.8	-	47.8	0.0	0.0	20.1	0.3	-	20.5	-
Lights	0	1084	492	15	-	1591	0	1298	1091	-	2389	0	1	1013	17	-	1031	5011
% Lights	-	99.0	99.2	100.0	-	99.1	-	98.2	98.7	-	98.4	-	100.0	99.1	100.0	-	99.1	98.8
Mediums	0	8	4	0	-	12	0	20	11	-	31	0	0	9	0	-	9	52
% Mediums	-	0.7	0.8	0.0	-	0.7	-	1.5	1.0	-	1.3	-	0.0	0.9	0.0	-	0.9	1.0
Articulated Trucks	0	3	0	0	-	3	0	4	3	-	7	0	0	0	0	-	0	10
% Articulated Trucks	-	0.3	0.0	0.0	-	0.2	-	0.3	0.3	-	0.3	-	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	7	-	-	-	-	0	-	-	-	-	-	9	-	-
% Bicycles on Crosswalk	-	-	-	-	1.6	-	-	-	-	0.0	-	-	-	-	-	2.0	-	-
Pedestrians	-	-	-	-	441	-	-	-	-	2	-	-	-	-	-	439	-	-
% Pedestrians	-	-	-	-	98.4	-	-	-	-	100.0	-	-	-	-	-	98.0	-	-

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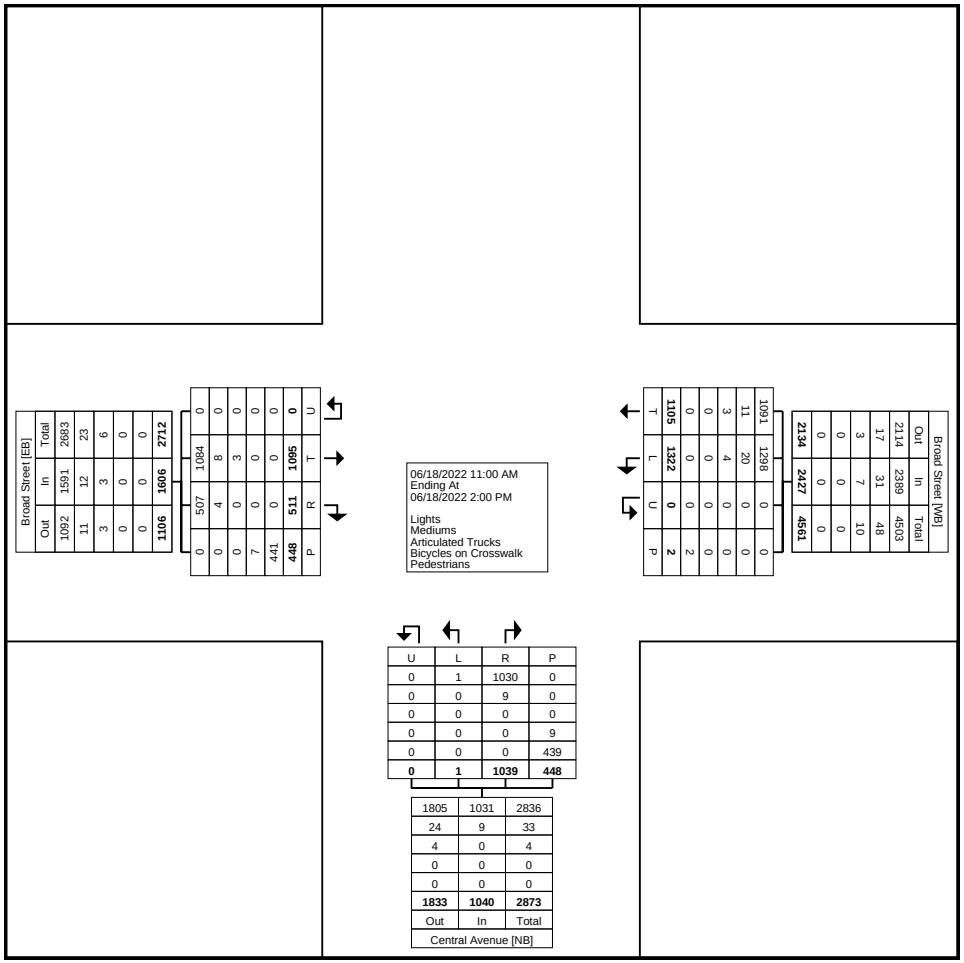
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.652475, -74.347613

Count Name: 4. Central Avenue and Broad Street
Site Code: 4
Start Date: 06/18/2022
Page No: 2



Turning Movement Data Plot

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.652475, -74.347613

Count Name: 4. Central Avenue and Broad Street
Site Code: 4
Start Date: 06/18/2022
Page No: 3

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Broad Street Eastbound						Broad Street Westbound					Central Avenue Northbound						
	U-Turn	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Right on Red	Peds	App. Total	Int. Total
11:45 AM	0	111	28	1	30	140	0	117	99	0	216	0	1	86	1	47	88	444
12:00 PM	0	95	47	2	47	144	0	111	111	0	222	0	0	91	3	51	94	460
12:15 PM	0	99	43	1	32	143	0	120	84	0	204	0	0	96	1	41	97	444
12:30 PM	0	96	35	0	53	131	0	107	98	0	205	0	0	74	7	45	81	417
Total	0	401	153	4	162	558	0	455	392	0	847	0	1	347	12	184	360	1765
Approach %	0.0	71.9	27.4	0.7	-	-	0.0	53.7	46.3	-	-	0.0	0.3	96.4	3.3	-	-	-
Total %	0.0	22.7	8.7	0.2	-	31.6	0.0	25.8	22.2	-	48.0	0.0	0.1	19.7	0.7	-	20.4	-
PHF	0.000	0.903	0.814	0.500	-	0.969	0.000	0.948	0.883	-	0.954	0.000	0.250	0.904	0.429	-	0.928	0.959
Lights	0	397	151	4	-	552	0	446	388	-	834	0	1	346	12	-	359	1745
% Lights	-	99.0	98.7	100.0	-	98.9	-	98.0	99.0	-	98.5	-	100.0	99.7	100.0	-	99.7	98.9
Mediums	0	3	2	0	-	5	0	9	4	-	13	0	0	1	0	-	1	19
% Mediums	-	0.7	1.3	0.0	-	0.9	-	2.0	1.0	-	1.5	-	0.0	0.3	0.0	-	0.3	1.1
Articulated Trucks	0	1	0	0	-	1	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	-	0.2	0.0	0.0	-	0.2	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	1.2	-	-	-	-	-	-	-	-	-	-	1.6	-	-
Pedestrians	-	-	-	-	160	-	-	-	-	0	-	-	-	-	-	181	-	-
% Pedestrians	-	-	-	-	98.8	-	-	-	-	-	-	-	-	-	-	98.4	-	-

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Location: 40.652475, -74.347613

Count Name: 4. Central Avenue and Broad Street
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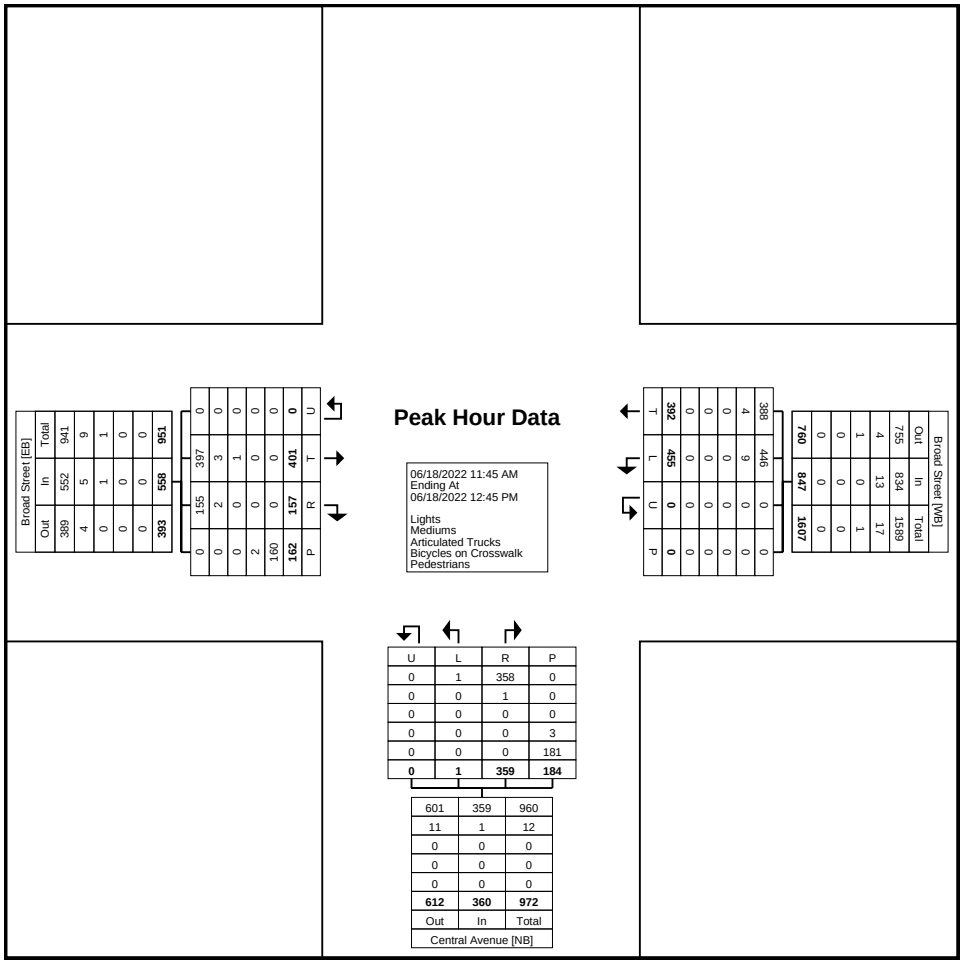

Peak Hour Data
06/18/2022 11:45 AM
Ending At
06/18/2022 12:45 PM
Lights
Mediums
Articulated Trucks
Bicycles on Crosswalk
Pedestrians
Broad Street [EB]
Total 941 9 1 0 0 951
In 552 5 1 0 0 558
Out 389 4 0 0 0 393
U 0 0 0 0 0 0
T 397 3 1 0 0 401
R 155 2 0 0 0 157
P 0 0 0 2 160 162
T 388 4 6 446
L 392 455 0 0 0 847
U 0 0 0 0 0 0 1607
P 0 0 0 0 0 0
Broad Street [WB]
Out 755 4 13 17 1589
In 834 1 0 1 0 0 0 0 0 0

6. Route 28 and South Avenue - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

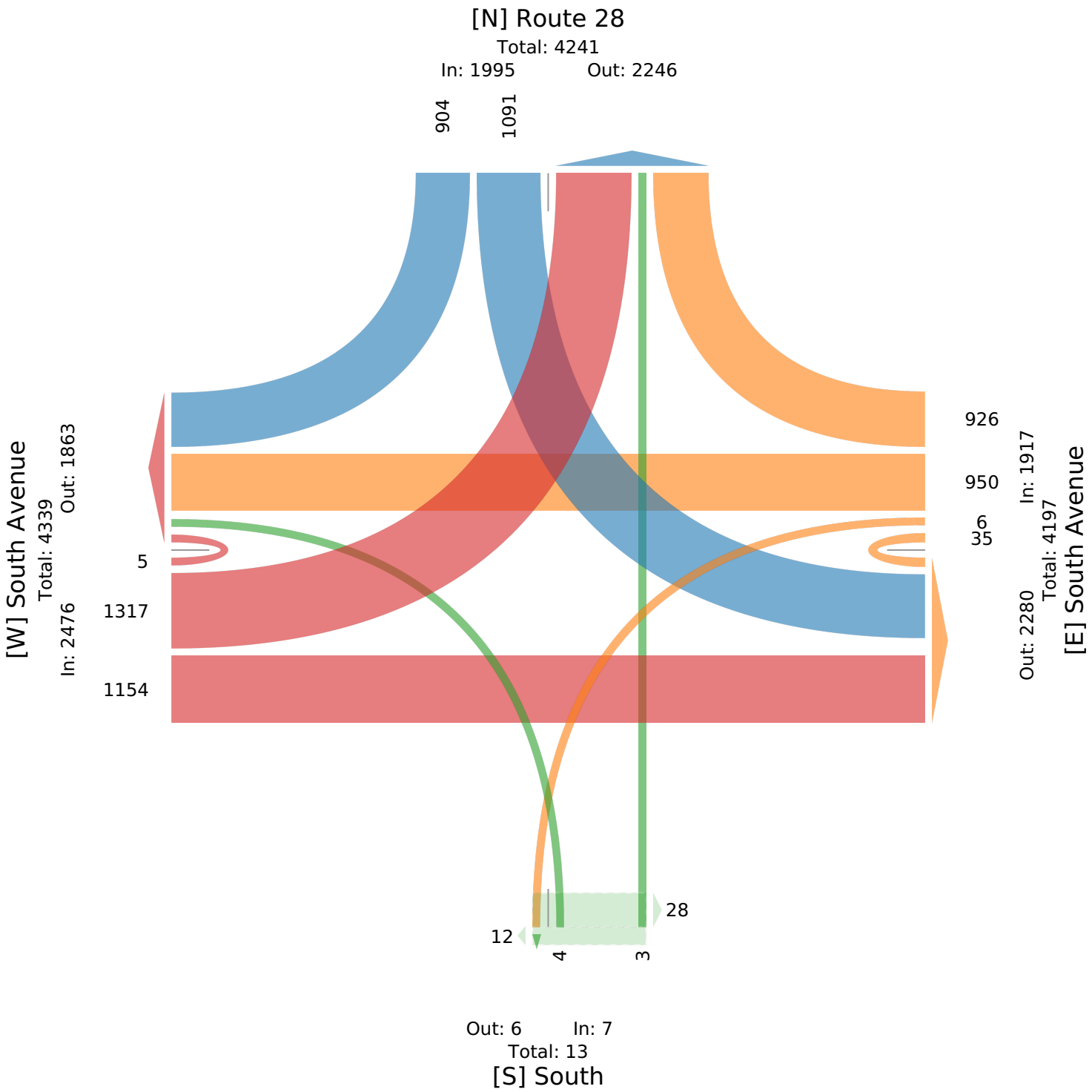
Leg / Direction	South Northbound						Route 28 Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	1	2	0	0	**3**	5	89	0	87	0	**176**	0	116	95	0	0	**211**	0	0	85	71	4	**160**	0	**550**
11:15AM	1	0	0	0	**1**	2	96	0	95	0	**191**	0	135	99	0	0	**234**	0	0	89	86	1	**176**	0	**602**
11:30AM	0	0	0	0	**0**	4	74	0	78	0	**152**	0	109	91	0	0	**200**	0	0	75	76	5	**156**	0	**508**
11:45AM	1	0	0	0	**1**	3	79	0	91	0	**170**	0	116	88	0	0	**204**	0	0	80	84	4	**168**	0	**543**
Hourly Total	3	2	0	0	**5**	14	338	0	351	0	**689**	0	476	373	0	0	**849**	0	0	329	317	14	**660**	0	**2203**
12:00PM	0	0	0	0	**0**	5	106	0	63	0	**169**	0	125	91	0	0	**216**	0	1	69	76	6	**152**	0	**537**
12:15PM	0	0	0	0	**0**	2	98	0	69	0	**167**	0	128	118	0	1	**247**	0	1	69	88	4	**162**	0	**576**
12:30PM	0	1	0	0	**1**	3	75	0	53	0	**128**	0	94	107	0	0	**201**	0	1	66	80	5	**152**	0	**482**
12:45PM	0	0	0	0	**0**	2	115	0	63	0	**178**	0	107	105	0	2	**214**	0	1	88	69	1	**159**	0	**551**
Hourly Total	0	1	0	0	**1**	12	394	0	248	0	**642**	0	454	421	0	3	**878**	0	4	292	313	16	**625**	0	**2146**
1:00PM	0	0	0	0	**0**	4	91	0	97	0	**188**	0	106	97	0	0	**203**	0	1	75	86	3	**165**	0	**556**
1:15PM	1	0	0	0	**1**	5	112	0	62	0	**174**	0	87	91	0	2	**180**	0	0	98	75	1	**174**	0	**529**
1:30PM	0	0	0	0	**0**	1	77	0	71	0	**148**	0	96	80	0	0	**176**	0	0	79	72	0	**151**	0	**475**
1:45PM	0	0	0	0	**0**	4	79	0	75	0	**154**	0	98	92	0	0	**190**	0	1	77	63	1	**142**	0	**486**
Hourly Total	1	0	0	0	**1**	14	359	0	305	0	**664**	0	387	360	0	2	**749**	0	2	329	296	5	**632**	0	**2046**
Total	4	3	0	0	**7**	40	1091	0	904	0	**1995**	0	1317	1154	0	5	**2476**	0	6	950	926	35	**1917**	0	**6395**
% Approach	57.1%	42.9%	0%	0%	**-**	-	54.7%	0%	45.3%	0%	**-**	-	53.2%	46.6%	0%	0.2%	**-**	-	0.3%	49.6%	48.3%	1.8%	**-**	-	-
% Total	0.1%	0%	0%	0%	**0.1%**	-	17.1%	0%	14.1%	0%	**31.2%**	-	20.6%	18.0%	0%	0.1%	**38.7%**	-	0.1%	14.9%	14.5%	0.5%	**30.0%**	-	-
Lights	4	3	0	0	**7**	-	1076	0	895	0	**1971**	-	1306	1146	0	5	**2457**	-	6	944	917	34	**1901**	-	6336
% Lights	100%	100%	0%	0%	**100%**	-	98.6%	0%	99.0%	0%	**98.8%**	-	99.2%	99.3%	0%	100%	**99.2%**	-	100%	99.4%	99.0%	97.1%	**99.2%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	1	0	1	0	**2**	-	2	1	0	0	**3**	-	0	1	1	0	**2**	-	7
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.1%	0%	0.1%	0%	**0.1%**	-	0.2%	0.1%	0%	0%	**0.1%**	-	0%	0.1%	0.1%	0%	**0.1%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	14	0	8	0	**22**	-	9	7	0	0	**16**	-	0	5	8	1	**14**	-	52
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	1.3%	0%	0.9%	0%	**1.1%**	-	0.7%	0.6%	0%	0%	**0.6%**	-	0%	0.5%	0.9%	2.9%	**0.7%**	-	0.8%
Pedestrians	-	-	-	-	-	36	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	90.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	10.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg / Direction	South Northbound						Route 28 Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	1	2	0	0	**3**	5	89	0	87	0	**176**	0	116	95	0	0	**211**	0	0	85	71	4	**160**	0	**550**
11:15AM	1	0	0	0	**1**	2	96	0	95	0	**191**	0	135	99	0	0	**234**	0	0	89	86	1	**176**	0	**602**
11:30AM	0	0	0	0	**0**	4	74	0	78	0	**152**	0	109	91	0	0	**200**	0	0	75	76	5	**156**	0	**508**
11:45AM	1	0	0	0	**1**	3	79	0	91	0	**170**	0	116	88	0	0	**204**	0	0	80	84	4	**168**	0	**543**
Total	3	2	0	0	**5**	14	338	0	351	0	**689**	0	476	373	0	0	**849**	0	0	329	317	14	**660**	0	**2203**
% Approach	60.0%	40.0%	0%	0%	**-**	-	49.1%	0%	50.9%	0%	**-**	-	56.1%	43.9%	0%	0%	**-**	-	0%	49.8%	48.0%	2.1%	**-**	-	-
% Total	0.1%	0.1%	0%	0%	**0.2%**	-	15.3%	0%	15.9%	0%	**31.3%**	-	21.6%	16.9%	0%	0%	**38.5%**	-	0%	14.9%	14.4%	0.6%	**30.0%**	-	-
PHF	0.750	0.250	-	-	**0.417**	-	0.880	-	0.924	-	**0.902**	-	0.881	0.942	-	-	**0.907**	-	-	0.924	0.922	0.700	**0.938**	-	0.915
Lights	3	2	0	0	**5**	-	335	0	348	0	**683**	-	472	369	0	0	**841**	-	0	325	315	13	**653**	-	2182
% Lights	100%	100%	0%	0%	**100%**	-	99.1%	0%	99.1%	0%	**99.1%**	-	99.2%	98.9%	0%	0%	**99.1%**	-	0%	98.8%	99.4%	92.9%	**98.9%**	-	99.0%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	1	0	0	0	**1**	-	0	1	1	0	**2**	-	3
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.2%	0%	0%	0%	**0.1%**	-	0%	0.3%	0.3%	0%	**0.3%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	3	0	3	0	**6**	-	3	4	0	0	**7**	-	0	3	1	1	**5**	-	18
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0.9%	0%	0.9%	0%	**0.9%**	-	0.6%	1.1%	0%	0%	**0.8%**	-	0%	0.9%	0.3%	7.1%	**0.8%**	-	0.8%
Pedestrians	-	-	-	-	-	14	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Provided by: Imperial Traffic & Data Collection
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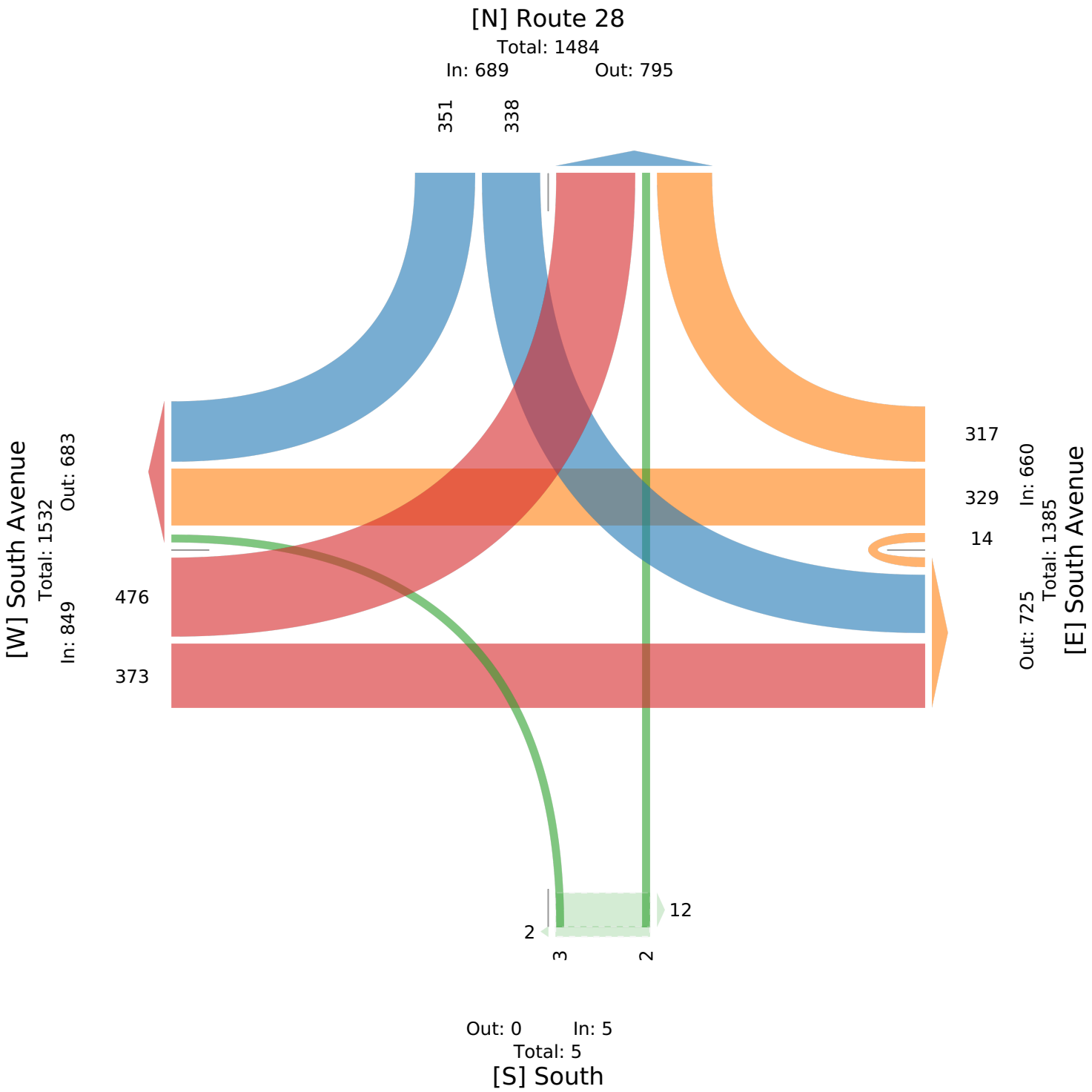

6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	South Northbound						Route 28 Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	0	0	0	0	**0**	4	91	0	97	0	**188**	0	106	97	0	0	**203**	0	1	75	86	3	**165**	0	**556**
1:15PM	1	0	0	0	**1**	5	112	0	62	0	**174**	0	87	91	0	2	**180**	0	0	98	75	1	**174**	0	**529**
1:30PM	0	0	0	0	**0**	1	77	0	71	0	**148**	0	96	80	0	0	**176**	0	0	79	72	0	**151**	0	**475**
1:45PM	0	0	0	0	**0**	4	79	0	75	0	**154**	0	98	92	0	0	**190**	0	1	77	63	1	**142**	0	**486**
Total	1	0	0	0	**1**	14	359	0	305	0	**664**	0	387	360	0	2	**749**	0	2	329	296	5	**632**	0	**2046**
% Approach	100%	0%	0%	0%	**-**	-	54.1%	0%	45.9%	0%	**-**	-	51.7%	48.1%	0%	0.3%	**-**	-	0.3%	52.1%	46.8%	0.8%	**-**	-	-
% Total	0%	0%	0%	0%	**0%**	-	17.5%	0%	14.9%	0%	**32.5%**	-	18.9%	17.6%	0%	0.1%	**36.6%**	-	0.1%	16.1%	14.5%	0.2%	**30.9%**	-	-
PHF	0.250	-	-	-	**0.250**	-	0.801	-	0.786	-	**0.883**	-	0.913	0.928	-	0.250	**0.922**	-	0.500	0.839	0.860	0.417	**0.908**	-	0.920
Lights	1	0	0	0	**1**	-	354	0	303	0	**657**	-	384	356	0	2	**742**	-	2	327	293	5	**627**	-	2027
% Lights	100%	0%	0%	0%	**100%**	-	98.6%	0%	99.3%	0%	**98.9%**	-	99.2%	98.9%	0%	100%	**99.1%**	-	100%	99.4%	99.0%	100%	**99.2%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	1	1	0	0	**2**	-	0	0	0	0	**0**	-	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.3%	0.3%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	5	0	2	0	**7**	-	2	3	0	0	**5**	-	0	2	3	0	**5**	-	17
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	1.4%	0%	0.7%	0%	**1.1%**	-	0.5%	0.8%	0%	0%	**0.7%**	-	0%	0.6%	1.0%	0%	**0.8%**	-	0.8%
Pedestrians	-	-	-	-	-	11	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	78.6%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	21.4%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

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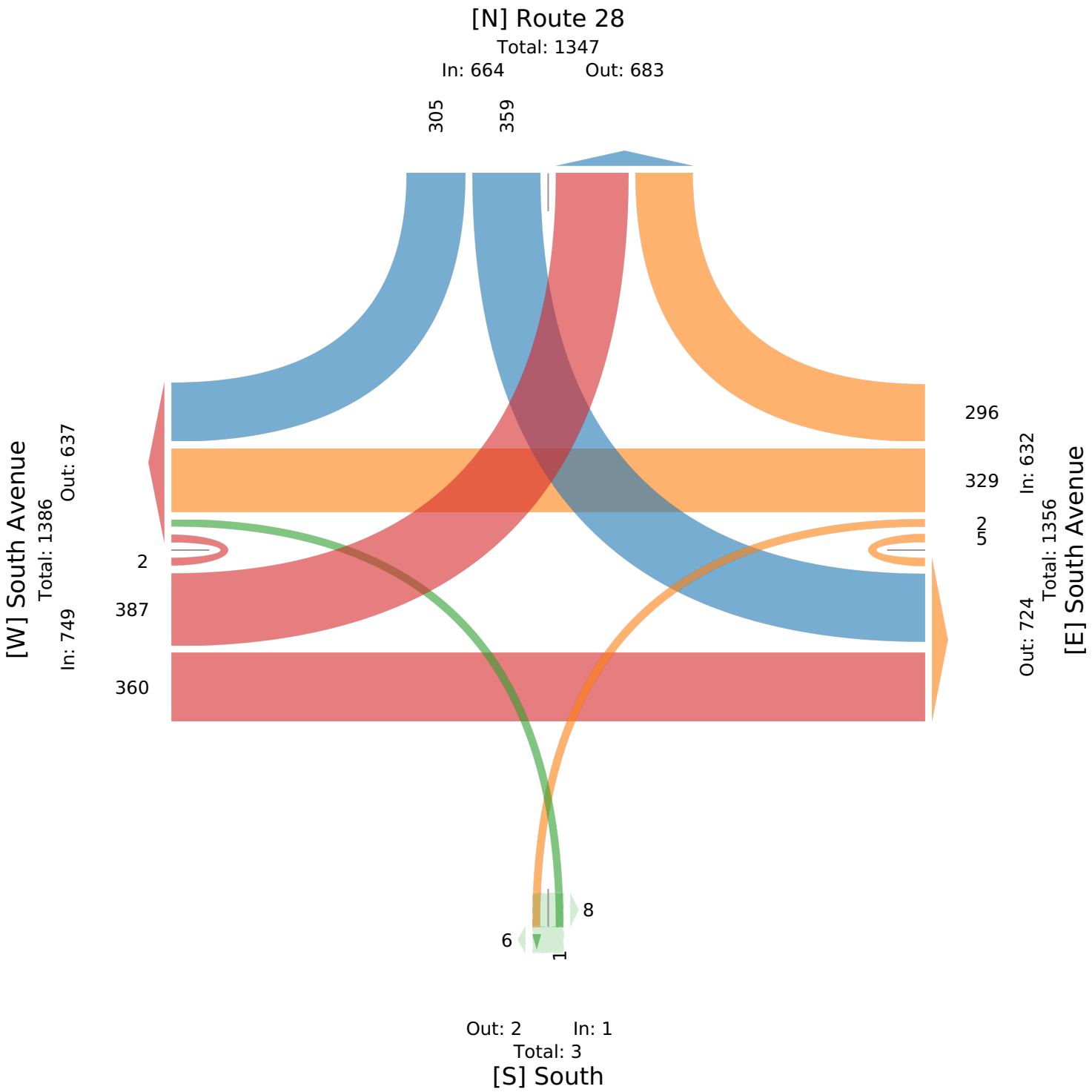


6. Route 28 and South Avenue - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

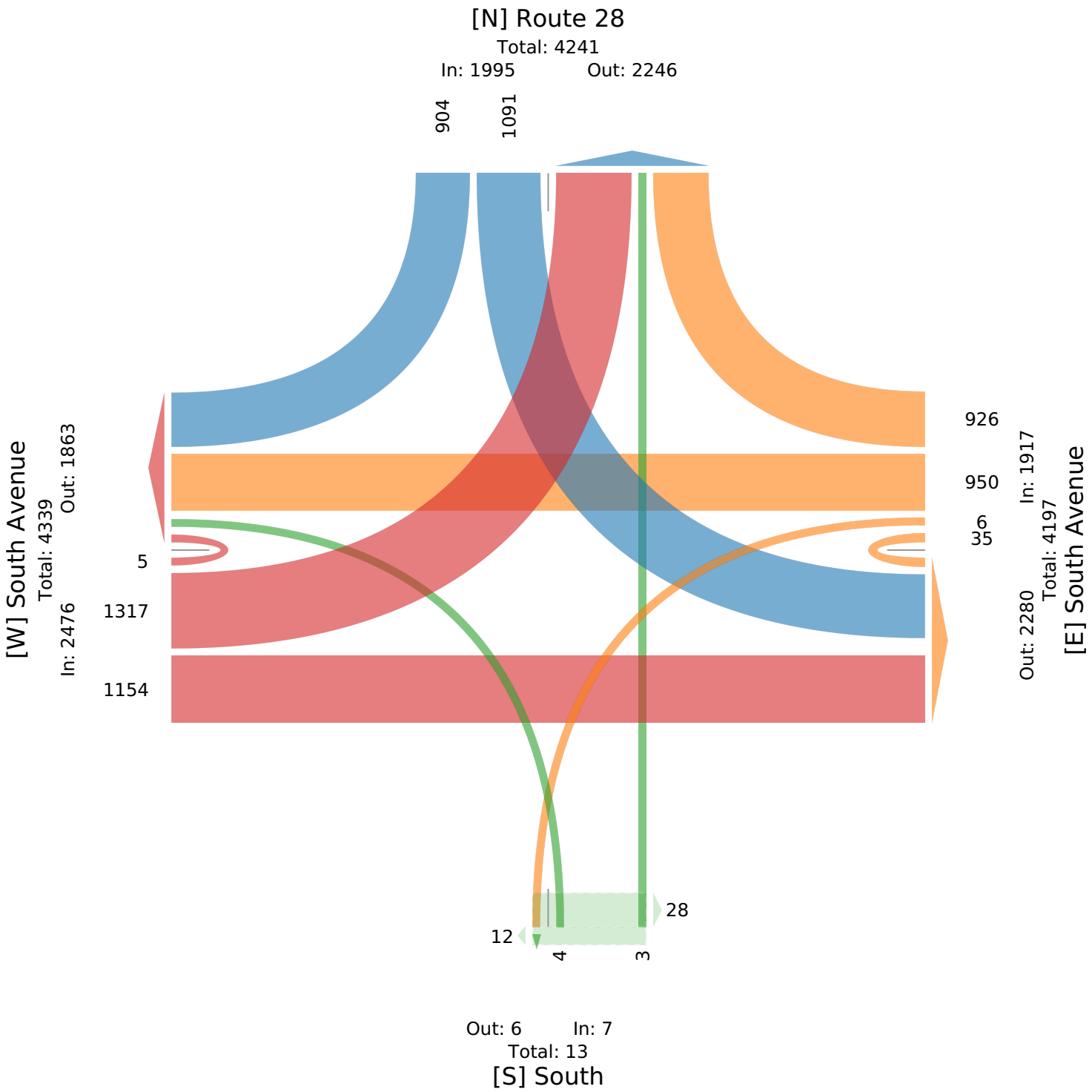
Leg / Direction	South Northbound						Route 28 Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	3	2	0	0	**5**	14	338	0	351	0	**689**	0	476	373	0	0	**849**	0	0	329	317	14	**660**	0	**2203**
12:00PM	0	1	0	0	**1**	12	394	0	248	0	**642**	0	454	421	0	3	**878**	0	4	292	313	16	**625**	0	**2146**
1:00PM	1	0	0	0	**1**	14	359	0	305	0	**664**	0	387	360	0	2	**749**	0	2	329	296	5	**632**	0	**2046**
Total	4	3	0	0	**7**	40	1091	0	904	0	**1995**	0	1317	1154	0	5	**2476**	0	6	950	926	35	**1917**	0	**6395**
% Approach	57.1%	42.9%	0%	0%	**-**	-	54.7%	0%	45.3%	0%	**-**	-	53.2%	46.6%	0%	0.2%	**-**	-	0.3%	49.6%	48.3%	1.8%	**-**	-	-
% Total	0.1%	0%	0%	0%	**0.1%**	-	17.1%	0%	14.1%	0%	**31.2%**	-	20.6%	18.0%	0%	0.1%	**38.7%**	-	0.1%	14.9%	14.5%	0.5%	**30.0%**	-	-
Lights	4	3	0	0	**7**	-	1076	0	895	0	**1971**	-	1306	1146	0	5	**2457**	-	6	944	917	34	**1901**	-	6336
% Lights	100%	100%	0%	0%	**100%**	-	98.6%	0%	99.0%	0%	**98.8%**	-	99.2%	99.3%	0%	100%	**99.2%**	-	100%	99.4%	99.0%	97.1%	**99.2%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	1	0	1	0	**2**	-	2	1	0	0	**3**	-	0	1	1	0	**2**	-	7
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.1%	0%	0.1%	0%	**0.1%**	-	0.2%	0.1%	0%	0%	**0.1%**	-	0%	0.1%	0.1%	0%	**0.1%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	14	0	8	0	**22**	-	9	7	0	0	**16**	-	0	5	8	1	**14**	-	52
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	1.3%	0%	0.9%	0%	**1.1%**	-	0.7%	0.6%	0%	0%	**0.6%**	-	0%	0.5%	0.9%	2.9%	**0.7%**	-	0.8%
Pedestrians	-	-	-	-	-	36	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	90.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	10.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022

Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	South Northbound						Route 28 Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	1	2	0	0	**3**	5	89	0	87	0	**176**	0	116	95	0	0	**211**	0	0	85	71	4	**160**	0	**550**
11:15AM	1	0	0	0	**1**	2	96	0	95	0	**191**	0	135	99	0	0	**234**	0	0	89	86	1	**176**	0	**602**
11:30AM	0	0	0	0	**0**	4	74	0	78	0	**152**	0	109	91	0	0	**200**	0	0	75	76	5	**156**	0	**508**
11:45AM	1	0	0	0	**1**	3	79	0	91	0	**170**	0	116	88	0	0	**204**	0	0	80	84	4	**168**	0	**543**
Total	3	2	0	0	**5**	14	338	0	351	0	**689**	0	476	373	0	0	**849**	0	0	329	317	14	**660**	0	**2203**
% Approach	60.0%	40.0%	0%	0%	**-**	-	49.1%	0%	50.9%	0%	**-**	-	56.1%	43.9%	0%	0%	**-**	-	0%	49.8%	48.0%	2.1%	**-**	-	-
% Total	0.1%	0.1%	0%	0%	**0.2%**	-	15.3%	0%	15.9%	0%	**31.3%**	-	21.6%	16.9%	0%	0%	**38.5%**	-	0%	14.9%	14.4%	0.6%	**30.0%**	-	-
PHF	0.750	0.250	-	-	**0.417**	-	0.880	-	0.924	-	**0.902**	-	0.881	0.942	-	-	**0.907**	-	-	0.924	0.922	0.700	**0.938**	-	0.915
Lights	3	2	0	0	**5**	-	335	0	348	0	**683**	-	472	369	0	0	**841**	-	0	325	315	13	**653**	-	2182
% Lights	100%	100%	0%	0%	**100%**	-	99.1%	0%	99.1%	0%	**99.1%**	-	99.2%	98.9%	0%	0%	**99.1%**	-	0%	98.8%	99.4%	92.9%	**98.9%**	-	99.0%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	1	0	0	0	**1**	-	0	1	1	0	**2**	-	3
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.2%	0%	0%	0%	**0.1%**	-	0%	0.3%	0.3%	0%	**0.3%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	3	0	3	0	**6**	-	3	4	0	0	**7**	-	0	3	1	1	**5**	-	18
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0.9%	0%	0.9%	0%	**0.9%**	-	0.6%	1.1%	0%	0%	**0.8%**	-	0%	0.9%	0.3%	7.1%	**0.8%**	-	0.8%
Pedestrians	-	-	-	-	-	14	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
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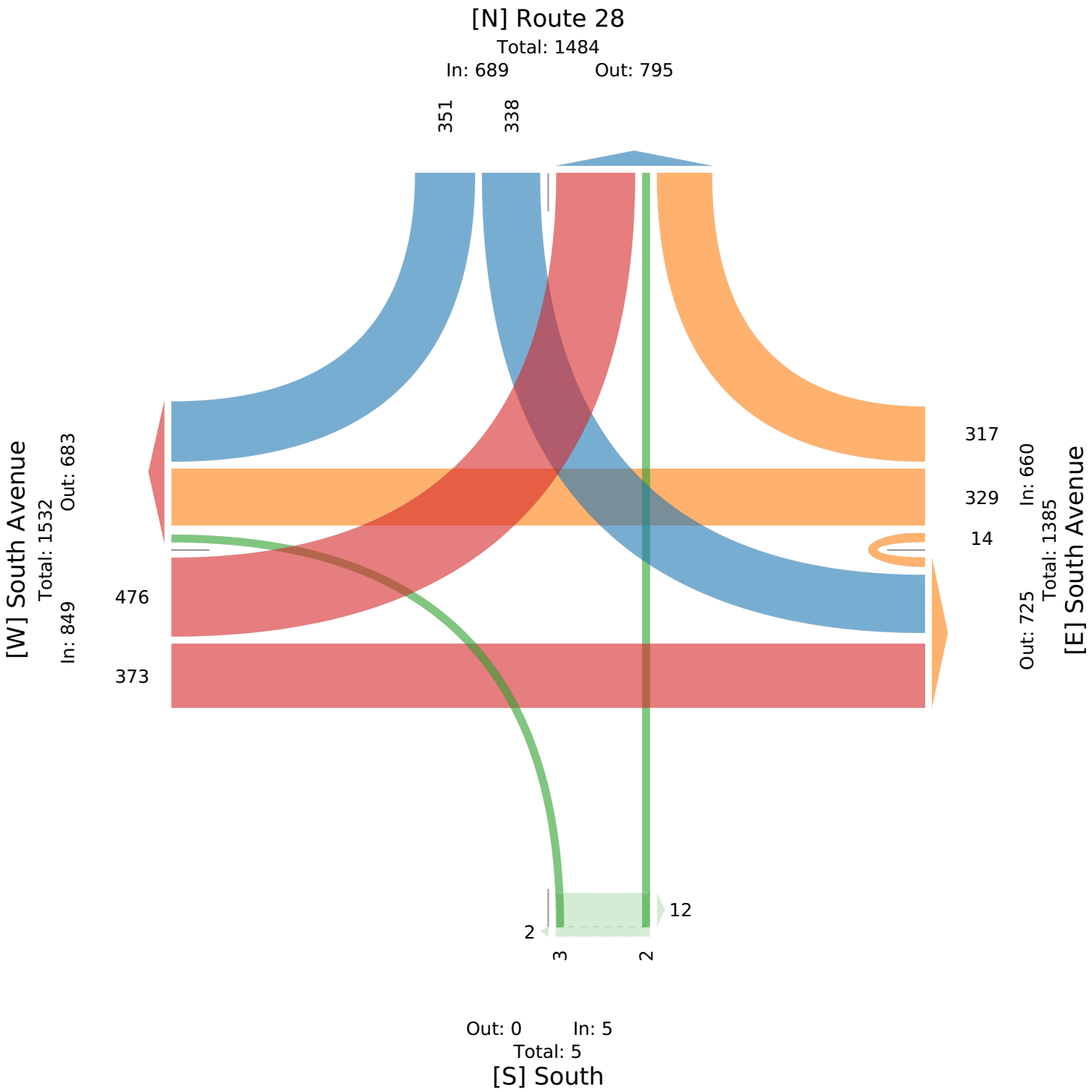

6. Route 28 and South Avenue - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

Leg / Direction	South Northbound						Route 28 Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	0	0	0	0	**0**	4	91	0	97	0	**188**	0	106	97	0	0	**203**	0	1	75	86	3	**165**	0	**556**
1:15PM	1	0	0	0	**1**	5	112	0	62	0	**174**	0	87	91	0	2	**180**	0	0	98	75	1	**174**	0	**529**
1:30PM	0	0	0	0	**0**	1	77	0	71	0	**148**	0	96	80	0	0	**176**	0	0	79	72	0	**151**	0	**475**
1:45PM	0	0	0	0	**0**	4	79	0	75	0	**154**	0	98	92	0	0	**190**	0	1	77	63	1	**142**	0	**486**
Total	1	0	0	0	**1**	14	359	0	305	0	**664**	0	387	360	0	2	**749**	0	2	329	296	5	**632**	0	**2046**
% Approach	100%	0%	0%	0%	**-**	-	54.1%	0%	45.9%	0%	**-**	-	51.7%	48.1%	0%	0.3%	**-**	-	0.3%	52.1%	46.8%	0.8%	**-**	-	-
% Total	0%	0%	0%	0%	**0%**	-	17.5%	0%	14.9%	0%	**32.5%**	-	18.9%	17.6%	0%	0.1%	**36.6%**	-	0.1%	16.1%	14.5%	0.2%	**30.9%**	-	-
PHF	0.250	-	-	-	**0.250**	-	0.801	-	0.786	-	**0.883**	-	0.913	0.928	-	0.250	**0.922**	-	0.500	0.839	0.860	0.417	**0.908**	-	0.920
Lights	1	0	0	0	**1**	-	354	0	303	0	**657**	-	384	356	0	2	**742**	-	2	327	293	5	**627**	-	2027
% Lights	100%	0%	0%	0%	**100%**	-	98.6%	0%	99.3%	0%	**98.9%**	-	99.2%	98.9%	0%	100%	**99.1%**	-	100%	99.4%	99.0%	100%	**99.2%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	1	1	0	0	**2**	-	0	0	0	0	**0**	-	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.3%	0.3%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	5	0	2	0	**7**	-	2	3	0	0	**5**	-	0	2	3	0	**5**	-	17
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	1.4%	0%	0.7%	0%	**1.1%**	-	0.5%	0.8%	0%	0%	**0.7%**	-	0%	0.6%	1.0%	0%	**0.8%**	-	0.8%
Pedestrians	-	-	-	-	-	11	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	78.6%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	21.4%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6. Route 28 and South Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965706, Location: 40.648494, -74.350288, Site Code: 6

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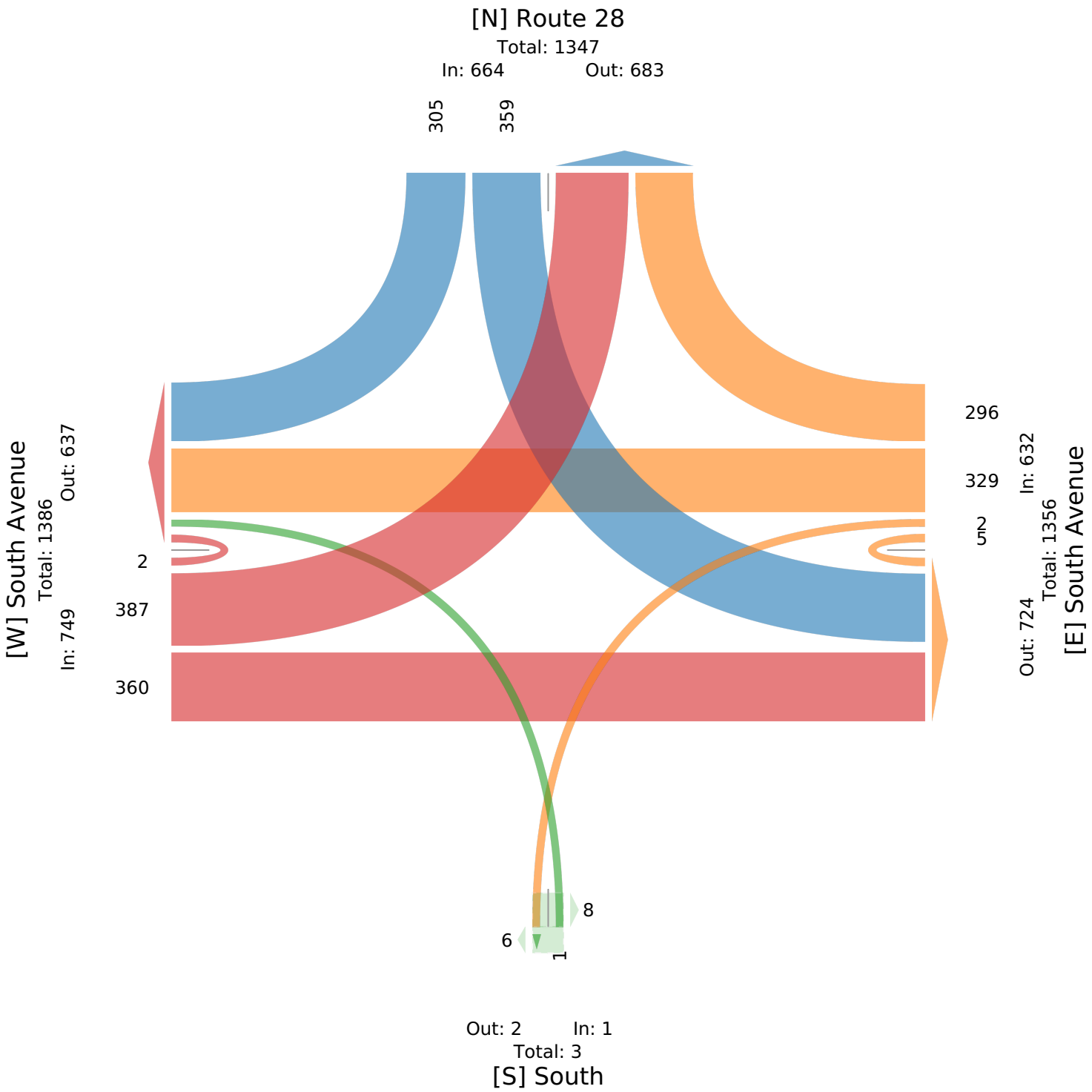


7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Summit Avenue Northbound							Parking Driveway Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 11:00AM	24	0	9	0	2	**35**	8	3	0	0	0	0	**3**	0
11:15AM	25	1	5	0	3	**34**	5	0	1	2	0	0	**3**	1
11:30AM	18	2	2	0	5	**27**	6	6	1	2	0	2	**11**	1
11:45AM	20	5	0	0	5	**30**	2	6	2	3	0	0	**11**	0
Hourly Total	87	8	16	0	15	**126**	21	15	4	7	0	2	**28**	2
12:00PM	20	1	6	0	1	**28**	4	2	0	3	0	3	**8**	5
12:15PM	32	2	6	0	6	**46**	11	0	4	1	0	0	**5**	0
12:30PM	15	4	2	0	4	**25**	11	0	1	0	0	2	**3**	0
12:45PM	23	6	7	0	0	**36**	6	2	0	2	0	1	**5**	3
Hourly Total	90	13	21	0	11	**135**	32	4	5	6	0	6	**21**	8
1:00PM	32	4	10	0	3	**49**	11	2	0	3	0	3	**8**	7
1:15PM	15	0	4	0	2	**21**	12	5	0	1	0	1	**7**	3
1:30PM	21	3	6	0	0	**30**	7	3	2	2	0	4	**11**	2
1:45PM	23	1	9	0	4	**37**	7	4	3	1	0	1	**9**	1
Hourly Total	91	8	29	0	9	**137**	37	14	5	7	0	9	**35**	13
Total	268	29	66	0	35	**398**	90	33	14	20	0	17	**84**	23
% Approach	67.3%	7.3%	16.6%	0%	8.8%	**-**	-	39.3%	16.7%	23.8%	0%	20.2%	**-**	-
% Total	6.7%	0.7%	1.7%	0%	0.9%	**10.0%**	-	0.8%	0.4%	0.5%	0%	0.4%	**2.1%**	-
Lights	266	29	64	0	35	**394**	-	33	14	20	0	17	**84**	-
% Lights	99.3%	100%	97.0%	0%	100%	**99.0%**	-	100%	100%	100%	0%	100%	**100%**	-
Articulated Trucks	1	0	0	0	0	**1**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0.4%	0%	0%	0%	0%	**0.3%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	1	0	2	0	0	**3**	-	0	0	0	0	0	**0**	-
% Buses and Single-Unit Trucks	0.4%	0%	3.0%	0%	0%	**0.8%**	-	0%	0%	0%	0%	0%	**0%**	-
Pedestrians	-	-	-	-	-	-	86	-	-	-	-	-	-	21
% Pedestrians	-	-	-	-	-	-	95.6%	-	-	-	-	-	-	91.3%
Bicycles on Crosswalk	-	-	-	-	-	-	4	-	-	-	-	-	-	2
% Bicycles on Crosswalk	-	-	-	-	-	-	4.4%	-	-	-	-	-	-	8.7%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

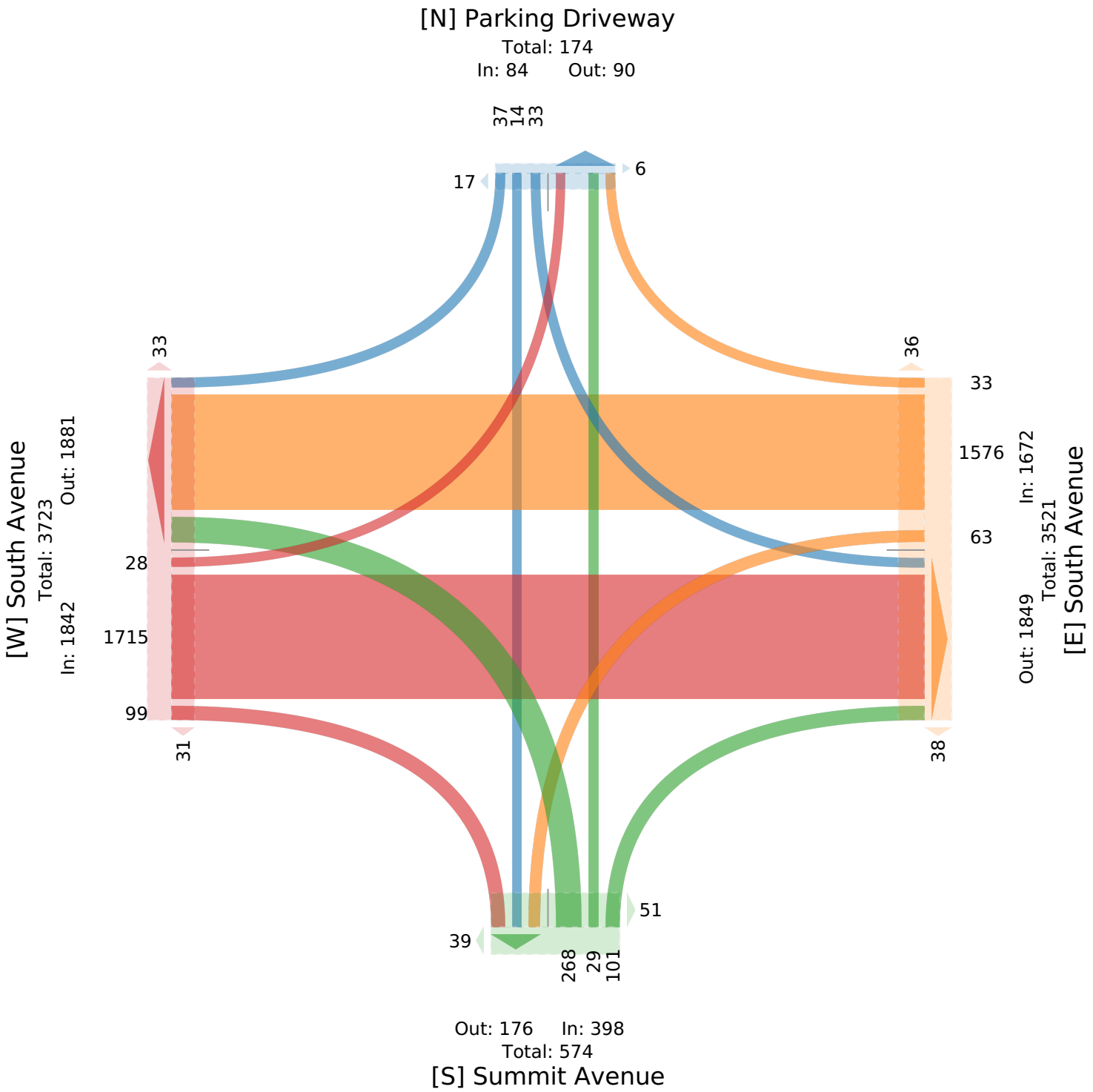
Leg Direction	South Avenue Eastbound							South Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:00AM	3	159	7	0	0	**169**	4	6	135	4	0	1	**146**	9	**353**
11:15AM	1	142	8	0	0	**151**	3	6	149	4	0	0	**159**	8	**347**
11:30AM	2	137	5	0	3	**147**	2	4	124	5	0	0	**133**	8	**318**
11:45AM	2	121	13	0	0	**136**	11	5	147	3	0	0	**155**	5	**332**
Hourly Total	8	559	33	0	3	**603**	20	21	555	16	0	1	**593**	30	**1350**
12:00PM	3	150	6	0	1	**160**	8	4	128	2	0	0	**134**	11	**330**
12:15PM	3	153	6	0	2	**164**	5	4	125	0	0	0	**129**	5	**344**
12:30PM	3	138	4	0	0	**145**	3	7	126	1	0	0	**134**	2	**307**
12:45PM	3	160	12	0	2	**177**	9	3	129	2	0	0	**134**	5	**352**
Hourly Total	12	601	28	0	5	**646**	25	18	508	5	0	0	**531**	23	**1333**
1:00PM	1	140	5	0	0	**146**	8	10	135	3	0	0	**148**	5	**351**
1:15PM	1	150	13	0	0	**164**	2	2	146	2	0	0	**150**	13	**342**
1:30PM	4	132	4	0	2	**142**	4	5	118	4	0	0	**127**	0	**310**
1:45PM	2	133	6	0	0	**141**	5	7	114	2	0	0	**123**	3	**310**
Hourly Total	8	555	28	0	2	**593**	19	24	513	11	0	0	**548**	21	**1313**
Total	28	1715	89	0	10	**1842**	64	63	1576	32	0	1	**1672**	74	**3996**
% Approach	1.5%	93.1%	4.8%	0%	0.5%	**-**	-	3.8%	94.3%	1.9%	0%	0.1%	**-**	-	**-**
% Total	0.7%	42.9%	2.2%	0%	0.3%	**46.1%**	-	1.6%	39.4%	0.8%	0%	0%	**41.8%**	-	**-**
Lights	28	1697	89	0	10	**1824**	-	63	1563	32	0	1	**1659**	-	3961
% Lights	100%	99.0%	100%	0%	100%	**99.0%**	-	100%	99.2%	100%	0%	100%	**99.2%**	-	99.1%
Articulated Trucks	0	1	0	0	0	**1**	-	0	0	0	0	0	**0**	-	2
% Articulated Trucks	0%	0.1%	0%	0%	0%	**0.1%**	-	0%	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	17	0	0	0	**17**	-	0	13	0	0	0	**13**	-	33
% Buses and Single-Unit Trucks	0%	1.0%	0%	0%	0%	**0.9%**	-	0%	0.8%	0%	0%	0%	**0.8%**	-	0.8%
Pedestrians	-	-	-	-	-	-	60	-	-	-	-	-	-	74	
% Pedestrians	-	-	-	-	-	-	93.8%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	4	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	6.3%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12:45 PM - 1:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
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Cherry Hill, NJ, 08003, US

Leg Direction	Summit Avenue Northbound							Parking Driveway Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 12:45PM	23	6	7	0	0	**36**	6	2	0	2	0	1	**5**	3
1:00PM	32	4	10	0	3	**49**	11	2	0	3	0	3	**8**	7
1:15PM	15	0	4	0	2	**21**	12	5	0	1	0	1	**7**	3
1:30PM	21	3	6	0	0	**30**	7	3	2	2	0	4	**11**	2
Total	91	13	27	0	5	**136**	36	12	2	8	0	9	**31**	15
% Approach	66.9%	9.6%	19.9%	0%	3.7%	**-**	-	38.7%	6.5%	25.8%	0%	29.0%	**-**	-
% Total	6.7%	1.0%	2.0%	0%	0.4%	**10.0%**	-	0.9%	0.1%	0.6%	0%	0.7%	**2.3%**	-
PHF	0.711	0.542	0.675	-	0.417	**0.694**	-	0.600	0.250	0.667	-	0.563	**0.705**	-
Lights	91	13	26	0	5	**135**	-	12	2	8	0	9	**31**	-
% Lights	100%	100%	96.3%	0%	100%	**99.3%**	-	100%	100%	100%	0%	100%	**100%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	0	1	0	0	**1**	-	0	0	0	0	0	**0**	-
% Buses and Single-Unit Trucks	0%	0%	3.7%	0%	0%	**0.7%**	-	0%	0%	0%	0%	0%	**0%**	-
Pedestrians	-	-	-	-	-	-	35	-	-	-	-	-	-	15
% Pedestrians	-	-	-	-	-	-	97.2%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	1	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	2.8%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12:45 PM - 1:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
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Cherry Hill, NJ, 08003, US

Leg Direction	South Avenue Eastbound							South Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 12:45PM	3	160	12	0	2	**177**	9	3	129	2	0	0	**134**	5	**352**
1:00PM	1	140	5	0	0	**146**	8	10	135	3	0	0	**148**	5	**351**
1:15PM	1	150	13	0	0	**164**	2	2	146	2	0	0	**150**	13	**342**
1:30PM	4	132	4	0	2	**142**	4	5	118	4	0	0	**127**	0	**310**
Total	9	582	34	0	4	**629**	23	20	528	11	0	0	**559**	23	**1355**
% Approach	1.4%	92.5%	5.4%	0%	0.6%	**-**	-	3.6%	94.5%	2.0%	0%	0%	**-**	-	**-**
% Total	0.7%	43.0%	2.5%	0%	0.3%	**46.4%**	-	1.5%	39.0%	0.8%	0%	0%	**41.3%**	-	**-**
PHF	0.563	0.909	0.654	-	0.500	**0.888**	-	0.500	0.904	0.688	-	-	**0.932**	-	0.962
Lights	9	575	34	0	4	**622**	-	20	524	11	0	0	**555**	-	1343
% Lights	100%	98.8%	100%	0%	100%	**98.9%**	-	100%	99.2%	100%	0%	0%	**99.3%**	-	99.1%
Articulated Trucks	0	1	0	0	0	**1**	-	0	0	0	0	0	**0**	-	1
% Articulated Trucks	0%	0.2%	0%	0%	0%	**0.2%**	-	0%	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	6	0	0	0	**6**	-	0	4	0	0	0	**4**	-	11
% Buses and Single-Unit Trucks	0%	1.0%	0%	0%	0%	**1.0%**	-	0%	0.8%	0%	0%	0%	**0.7%**	-	0.8%
Pedestrians	-	-	-	-	-	-	23	-	-	-	-	-	-	23	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12:45 PM - 1:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
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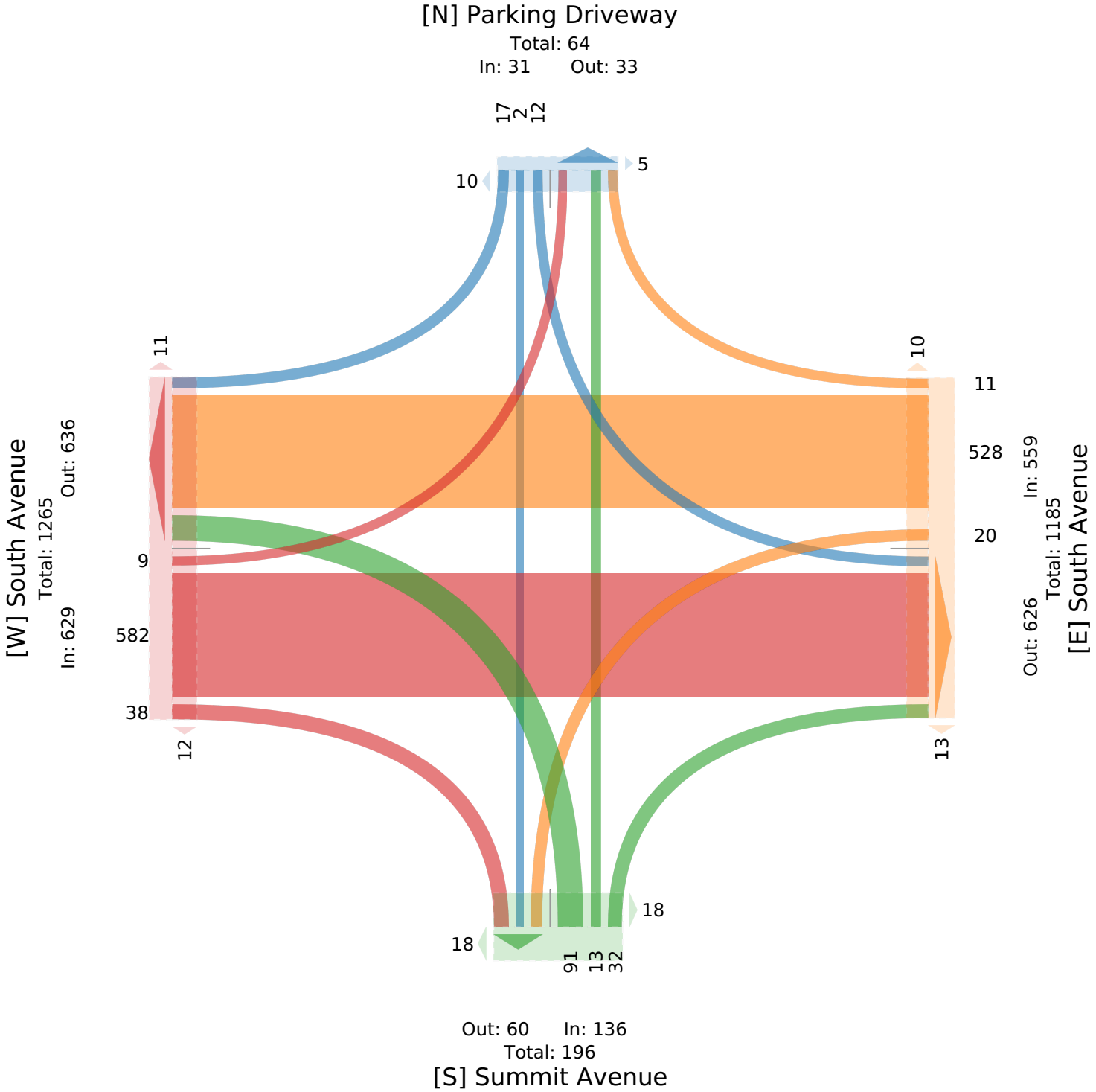

7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
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Leg Direction	Summit Avenue Northbound							Parking Driveway Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 1:00PM	32	4	10	0	3	**49**	11	2	0	3	0	3	**8**	7
1:15PM	15	0	4	0	2	**21**	12	5	0	1	0	1	**7**	3
1:30PM	21	3	6	0	0	**30**	7	3	2	2	0	4	**11**	2
1:45PM	23	1	9	0	4	**37**	7	4	3	1	0	1	**9**	1
Total	91	8	29	0	9	**137**	37	14	5	7	0	9	**35**	13
% Approach	66.4%	5.8%	21.2%	0%	6.6%	**-**	-	40.0%	14.3%	20.0%	0%	25.7%	**-**	-
% Total	6.9%	0.6%	2.2%	0%	0.7%	**10.4%**	-	1.1%	0.4%	0.5%	0%	0.7%	**2.7%**	-
PHF	0.711	0.500	0.725	-	0.563	**0.699**	-	0.700	0.417	0.583	-	0.563	**0.795**	-
Lights	91	8	29	0	9	**137**	-	14	5	7	0	9	**35**	-
% Lights	100%	100%	100%	0%	100%	**100%**	-	100%	100%	100%	0%	100%	**100%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Pedestrians	-	-	-	-	-	-	37	-	-	-	-	-	-	13
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

Provided by: Imperial Traffic & Data Collection
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Leg Direction	South Avenue Eastbound							South Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 1:00PM	1	140	5	0	0	**146**	8	10	135	3	0	0	**148**	5	**351**
1:15PM	1	150	13	0	0	**164**	2	2	146	2	0	0	**150**	13	**342**
1:30PM	4	132	4	0	2	**142**	4	5	118	4	0	0	**127**	0	**310**
1:45PM	2	133	6	0	0	**141**	5	7	114	2	0	0	**123**	3	**310**
Total	8	555	28	0	2	**593**	19	24	513	11	0	0	**548**	21	**1313**
% Approach	1.3%	93.6%	4.7%	0%	0.3%	**-**	-	4.4%	93.6%	2.0%	0%	0%	**-**	-	**-**
% Total	0.6%	42.3%	2.1%	0%	0.2%	**45.2%**	-	1.8%	39.1%	0.8%	0%	0%	**41.7%**	-	**-**
PHF	0.500	0.925	0.538	-	0.250	**0.904**	-	0.600	0.878	0.688	-	-	**0.913**	-	0.935
Lights	8	548	28	0	2	**586**	-	24	507	11	0	0	**542**	-	1300
% Lights	100%	98.7%	100%	0%	100%	**98.8%**	-	100%	98.8%	100%	0%	0%	**98.9%**	-	99.0%
Articulated Trucks	0	1	0	0	0	**1**	-	0	0	0	0	0	**0**	-	1
% Articulated Trucks	0%	0.2%	0%	0%	0%	**0.2%**	-	0%	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	6	0	0	0	**6**	-	0	6	0	0	0	**6**	-	12
% Buses and Single-Unit Trucks	0%	1.1%	0%	0%	0%	**1.0%**	-	0%	1.2%	0%	0%	0%	**1.1%**	-	0.9%
Pedestrians	-	-	-	-	-	-	19	-	-	-	-	-	-	21	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

7. Summit Avenue and South Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965700, Location: 40.648688, -74.347509, Site Code: 7

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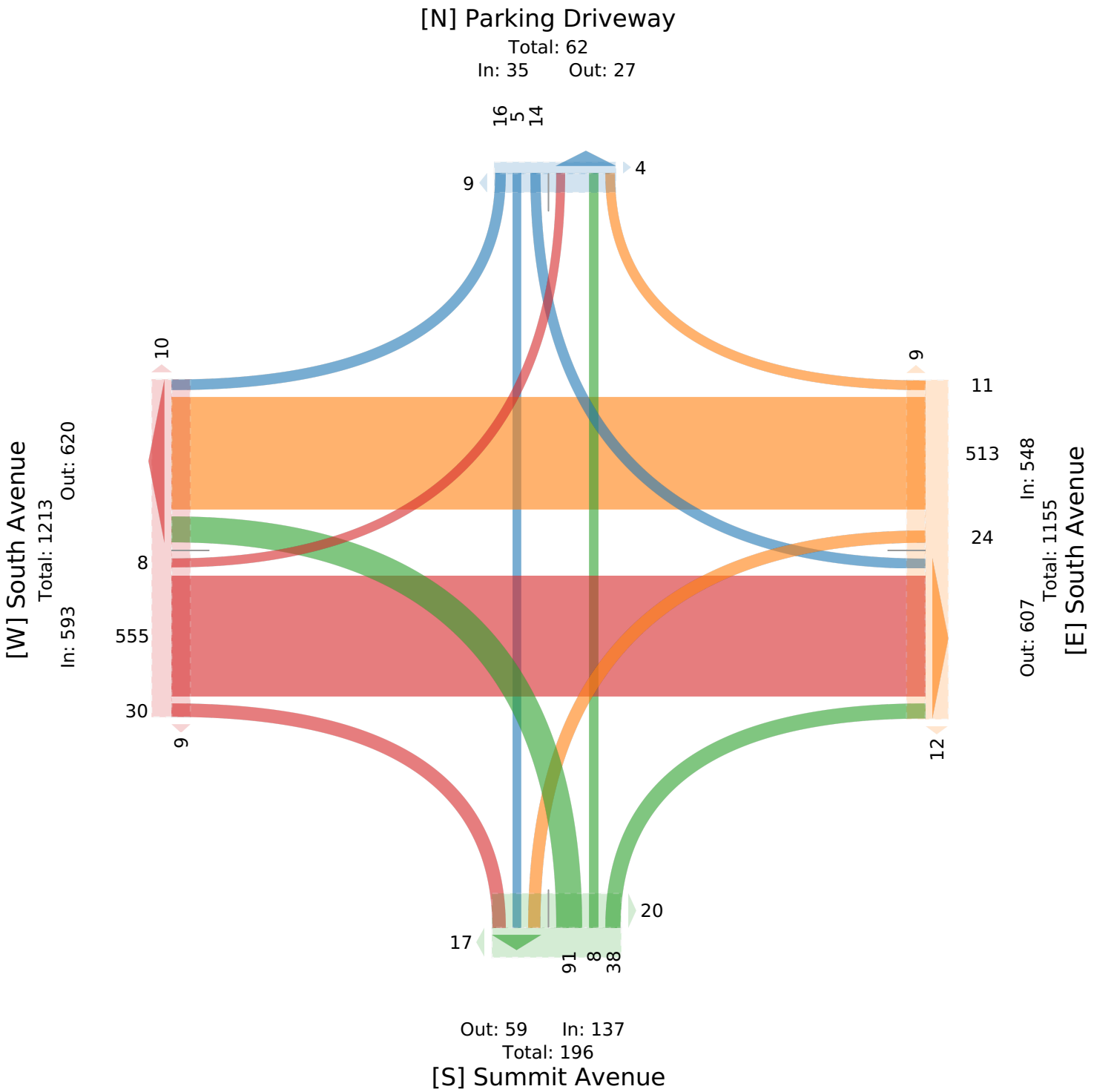

Imperial Traffic & Data Collection
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Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648688, -74.347509

Count Name: 7. Summit Avenue and South Avenue
Site Code: 7
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	South Avenue Eastbound							South Avenue Westbound							Summit Avenue Northbound							Parking Driveway Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:00 AM	0	3	159	7	0	4	169	0	6	135	4	1	9	146	0	24	0	9	2	8	35	0	3	0	0	0	0	3	353
11:15 AM	0	1	142	8	0	3	151	0	6	149	4	0	8	159	0	25	1	5	3	5	34	0	0	1	2	0	1	3	347
11:30 AM	0	2	137	5	3	2	147	0	4	124	5	0	8	133	0	18	2	2	5	6	27	0	6	1	2	2	1	11	318
11:45 AM	0	2	121	13	0	11	136	0	5	147	3	0	5	155	0	20	5	0	5	2	30	0	6	2	3	0	0	11	332
Hourly Total	0	8	559	33	3	20	603	0	21	555	16	1	30	593	0	87	8	16	15	21	126	0	15	4	7	2	2	28	1350
12:00 PM	0	3	150	6	1	8	160	0	4	128	2	0	11	134	0	20	1	6	1	4	28	0	2	0	3	3	5	8	330
12:15 PM	0	3	153	6	2	5	164	0	4	125	0	0	5	129	0	32	2	6	6	11	46	0	0	4	1	0	0	5	344
12:30 PM	0	3	138	4	0	3	145	0	7	126	1	0	2	134	0	15	4	2	4	11	25	0	0	1	0	2	0	3	307
12:45 PM	0	3	160	12	2	9	177	0	3	129	2	0	5	134	0	23	6	7	0	6	36	0	2	0	2	1	3	5	352
Hourly Total	0	12	601	28	5	25	646	0	18	508	5	0	23	531	0	90	13	21	11	32	135	0	4	5	6	6	8	21	1333
1:00 PM	0	1	140	5	0	8	146	0	10	135	3	0	5	148	0	32	4	10	3	11	49	0	2	0	3	3	7	8	351
1:15 PM	0	1	150	13	0	2	164	0	2	146	2	0	13	150	0	15	0	4	2	12	21	0	5	0	1	1	3	7	342
1:30 PM	0	4	132	4	2	4	142	0	5	118	4	0	0	127	0	21	3	6	0	7	30	0	3	2	2	4	2	11	310
1:45 PM	0	2	133	6	0	5	141	0	7	114	2	0	3	123	0	23	1	9	4	7	37	0	4	3	1	1	1	9	310
Hourly Total	0	8	555	28	2	19	593	0	24	513	11	0	21	548	0	91	8	29	9	37	137	0	14	5	7	9	13	35	1313
Grand Total	0	28	1715	89	10	64	1842	0	63	1576	32	1	74	1672	0	268	29	66	35	90	398	0	33	14	20	17	23	84	3996
Approach %	0.0	1.5	93.1	4.8	0.5	-	-	0.0	3.8	94.3	1.9	0.1	-	-	0.0	67.3	7.3	16.6	8.8	-	-	0.0	39.3	16.7	23.8	20.2	-	-	-
Total %	0.0	0.7	42.9	2.2	0.3	-	46.1	0.0	1.6	39.4	0.8	0.0	-	41.8	0.0	6.7	0.7	1.7	0.9	-	10.0	0.0	0.8	0.4	0.5	0.4	-	2.1	-
Lights	0	28	1697	89	10	-	1824	0	63	1563	32	1	-	1659	0	266	29	64	35	-	394	0	33	14	20	17	-	84	3961
% Lights	-	100.0	99.0	100.0	100.0	-	99.0	-	100.0	99.2	100.0	100.0	-	99.2	-	99.3	100.0	97.0	100.0	-	99.0	-	100.0	100.0	100.0	100.0	-	100.0	99.1
Mediums	0	0	17	0	0	-	17	0	0	13	0	0	-	13	0	1	0	2	0	-	3	0	0	0	0	0	-	0	33
% Mediums	-	0.0	1.0	0.0	0.0	-	0.9	-	0.0	0.8	0.0	0.0	-	0.8	-	0.4	0.0	3.0	0.0	-	0.8	-	0.0	0.0	0.0	0.0	-	0.0	0.8
Articulated Trucks	0	0	1	0	0	-	1	0	0	0	0	0	-	0	0	1	0	0	0	-	1	0	0	0	0	0	-	0	2
% Articulated Trucks	-	0.0	0.1	0.0	0.0	-	0.1	-	0.0	0.0	0.0	0.0	-	0.0	-	0.4	0.0	0.0	0.0	-	0.3	-	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	-	4	-	-	-	-	-	-	0	-	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	6.3	-	-	-	-	-	-	0.0	-	-	-	-	-	-	4.4	-	-	-	-	-	-	8.7	-	-
Pedestrians	-	-	-	-	-	60	-	-	-	-	-	-	74	-	-	-	-	-	-	86	-	-	-	-	-	-	21	-	-
% Pedestrians	-	-	-	-	-	93.8	-	-	-	-	-	-	100.0	-	-	-	-	-	-	95.6	-	-	-	-	-	-	91.3	-	-

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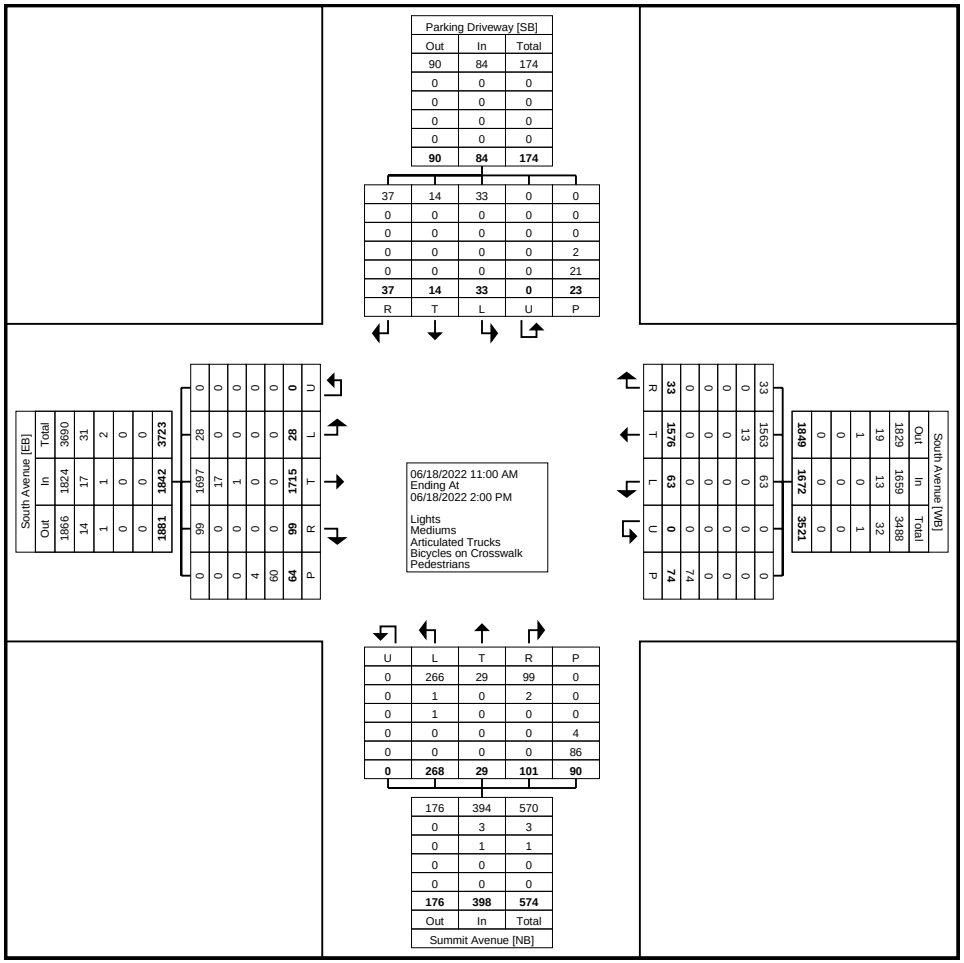
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648688, -74.347509

Count Name: 7. Summit Avenue and South Avenue
Site Code: 7
Start Date: 06/18/2022



Turning Movement Data Plot

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Project: North Ave, South Ave, Westfield NJ
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Count Name: 7. Summit Avenue and South Avenue
Site Code: 7
Start Date: 06/18/2022
Page No: 3

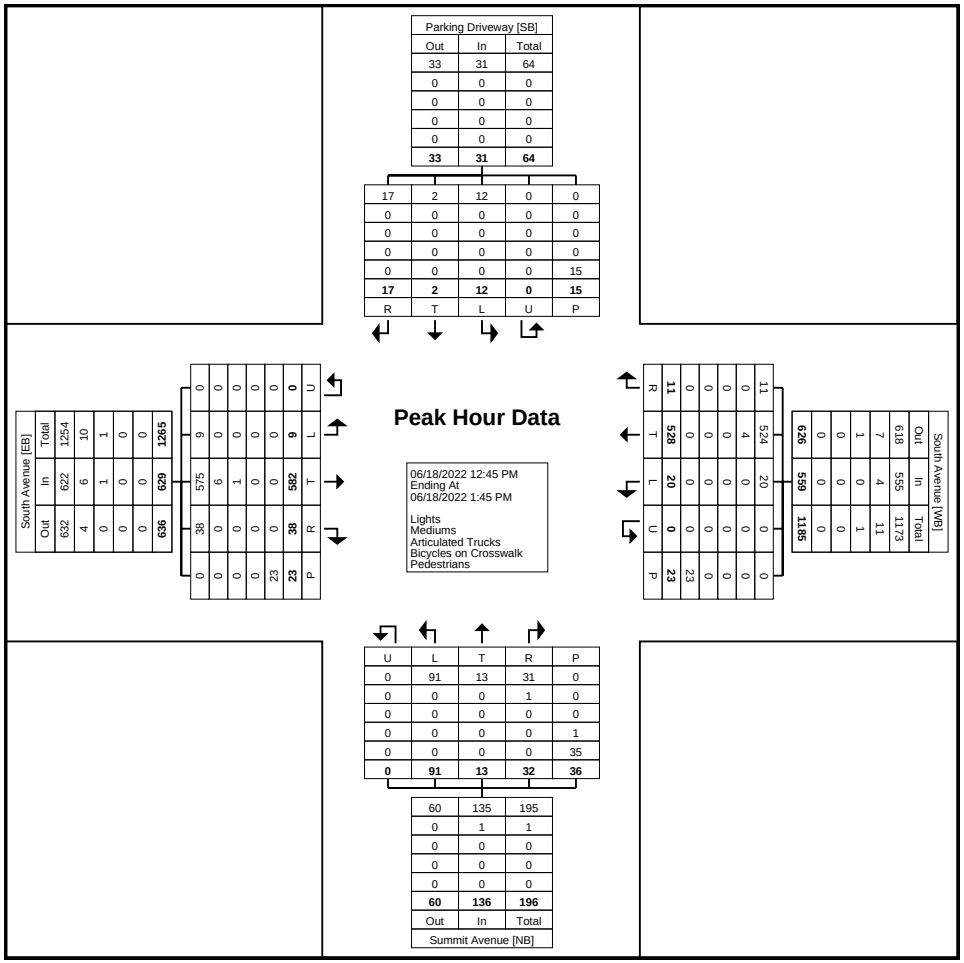
Turning Movement Peak Hour Data (12:45 PM)

Start Time	South Avenue Eastbound							South Avenue Westbound							Summit Avenue Northbound							Parking Driveway Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
12:45 PM	0	3	160	12	2	9	177	0	3	129	2	0	5	134	0	23	6	7	0	6	36	0	2	0	2	1	3	5	352
1:00 PM	0	1	140	5	0	8	146	0	10	135	3	0	5	148	0	32	4	10	3	11	49	0	2	0	3	3	7	8	351
1:15 PM	0	1	150	13	0	2	164	0	2	146	2	0	13	150	0	15	0	4	2	12	21	0	5	0	1	1	3	7	342
1:30 PM	0	4	132	4	2	4	142	0	5	118	4	0	0	127	0	21	3	6	0	7	30	0	3	2	2	4	2	11	310
Total	0	9	582	34	4	23	629	0	20	528	11	0	23	559	0	91	13	27	5	36	136	0	12	2	8	9	15	31	1355
Approach %	0.0	1.4	92.5	5.4	0.6	-	-	0.0	3.6	94.5	2.0	0.0	-	-	0.0	66.9	9.6	19.9	3.7	-	-	0.0	38.7	6.5	25.8	29.0	-	-	-
Total %	0.0	0.7	43.0	2.5	0.3	-	46.4	0.0	1.5	39.0	0.8	0.0	-	41.3	0.0	6.7	1.0	2.0	0.4	-	10.0	0.0	0.9	0.1	0.6	0.7	-	2.3	-
PHF	0.000	0.563	0.909	0.654	0.500	-	0.888	0.000	0.500	0.904	0.688	0.000	-	0.932	0.000	0.711	0.542	0.675	0.417	-	0.694	0.000	0.600	0.250	0.667	0.563	-	0.705	0.962
Lights	0	9	575	34	4	-	622	0	20	524	11	0	-	555	0	91	13	26	5	-	135	0	12	2	8	9	-	31	1343
% Lights	-	100.0	98.8	100.0	100.0	-	98.9	-	100.0	99.2	100.0	-	-	99.3	-	100.0	100.0	96.3	100.0	-	99.3	-	100.0	100.0	100.0	100.0	-	100.0	99.1
Mediums	0	0	6	0	0	-	6	0	0	4	0	0	-	4	0	0	0	1	0	-	1	0	0	0	0	0	-	0	11
% Mediums	-	0.0	1.0	0.0	0.0	-	1.0	-	0.0	0.8	0.0	-	-	0.7	-	0.0	0.0	3.7	0.0	-	0.7	-	0.0	0.0	0.0	0.0	-	0.0	0.8
Articulated Trucks	0	0	1	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1
% Articulated Trucks	-	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	0.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	2.8	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	23	-	-	-	-	-	-	23	-	-	-	-	-	-	35	-	-	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	97.2	-	-	-	-	-	-	100.0	-	-

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648688, -74.347509

Count Name: 7. Summit Avenue and South Avenue
Site Code: 7
Start Date: 06/18/2022



Turning Movement Peak Hour Data Plot (12:45 PM)

8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

Leg	Central Avenue								Central Avenue								South Avenue							
Direction	Northbound								Southbound								Eastbound							
Time	HL	L	T	R	U	RR	**App**	Ped*	L	T	BR	R	U	RR	**App**	Ped*	L	T	R	HR	U	HRR	**App**	Ped*
2022-06-18 11:00AM	3	35	104	8	0	0	**150**	1	35	104	28	15	0	8	**190**	4	32	112	38	2	1	0	**185**	2
11:15AM	0	31	100	4	0	4	**139**	0	45	100	16	15	0	3	**179**	4	26	76	43	4	0	0	**149**	1
11:30AM	1	25	130	5	0	1	**162**	0	36	95	20	20	0	4	**175**	3	27	89	47	2	0	1	**166**	2
11:45AM	0	39	109	6	0	0	**154**	0	52	86	25	25	0	4	**192**	3	34	93	41	2	0	0	**170**	4
Hourly Total	4	130	443	23	0	5	**605**	1	168	385	89	75	0	19	**736**	14	119	370	169	10	1	1	**670**	9
12:00PM	0	21	92	10	0	0	**123**	2	44	124	25	16	0	3	**212**	2	34	79	43	3	0	0	**159**	0
12:15PM	3	22	110	8	0	0	**143**	0	47	89	33	25	0	3	**197**	2	34	102	28	1	0	1	**166**	0
12:30PM	1	32	123	9	0	0	**165**	2	49	105	23	15	0	1	**193**	1	36	88	36	4	0	0	**164**	6
12:45PM	1	39	73	10	0	0	**123**	2	37	95	25	19	0	9	**185**	8	26	107	39	1	0	0	**173**	1
Hourly Total	5	114	398	37	0	0	**554**	6	177	413	106	75	0	16	**787**	13	130	376	146	9	0	1	**662**	7
1:00PM	1	27	76	6	0	1	**111**	0	41	112	19	16	0	5	**193**	0	37	99	39	0	0	0	**175**	1
1:15PM	0	33	127	8	0	0	**168**	1	29	115	28	23	0	1	**196**	1	21	94	50	2	0	0	**167**	0
1:30PM	0	25	105	9	0	1	**140**	0	42	112	29	11	0	0	**194**	1	32	82	37	0	0	0	**151**	4
1:45PM	1	20	117	7	0	0	**145**	0	41	98	22	7	0	1	**169**	1	26	88	41	2	0	0	**157**	0
Hourly Total	2	105	425	30	0	2	**564**	1	153	437	98	57	0	7	**752**	3	116	363	167	4	0	0	**650**	5
Total	11	349	1266	90	0	7	**1723**	8	498	1235	293	207	0	42	**2275**	30	365	1109	482	23	1	2	**1982**	21
% Approach	0.6%	20.3%	73.5%	5.2%	0%	0.4%	**-**	-	21.9%	54.3%	12.9%	9.1%	0%	1.8%	**-**	-	18.4%	56.0%	24.3%	1.2%	0.1%	0.1%	**-**	-
% Total	0.1%	4.5%	16.3%	1.2%	0%	0.1%	**22.2%**	-	6.4%	15.9%	3.8%	2.7%	0%	0.5%	**29.4%**	-	4.7%	14.3%	6.2%	0.3%	0%	0%	**25.6%**	-
Lights	11	347	1246	88	0	7	**1699**	-	493	1215	291	207	0	42	**2248**	-	365	1090	480	23	1	2	**1961**	-
% Lights	100%	99.4%	98.4%	97.8%	0%	100%	**98.6%**	-	99.0%	98.4%	99.3%	100%	0%	100%	**98.8%**	-	100%	98.3%	99.6%	100%	100%	100%	**98.9%**	-
Articulated Trucks	0	0	1	0	0	0	**1**	-	1	1	0	0	0	0	**2**	-	0	1	0	0	0	0	**1**	-
% Articulated Trucks	0%	0%	0.1%	0%	0%	0%	**0.1%**	-	0.2%	0.1%	0%	0%	0%	0%	**0.1%**	-	0%	0.1%	0%	0%	0%	0%	**0.1%**	-
Buses and Single-Unit Trucks	0	2	19	2	0	0	**23**	-	4	19	2	0	0	0	**25**	-	0	18	2	0	0	0	**20**	-
% Buses and Single-Unit Trucks	0%	0.6%	1.5%	2.2%	0%	0%	**1.3%**	-	0.8%	1.5%	0.7%	0%	0%	0%	**1.1%**	-	0%	1.6%	0.4%	0%	0%	0%	**1.0%**	-
Pedestrians	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	26	-	-	-	-	-	-	-	16
% Pedestrians	-	-	-	-	-	-	-	87.5%	-	-	-	-	-	-	-	86.7%	-	-	-	-	-	-	-	76.2%
Bicycles on Crosswalk	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	5
% Bicycles on Crosswalk	-	-	-	-	-	-	-	12.5%	-	-	-	-	-	-	-	13.3%	-	-	-	-	-	-	-	23.8%

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, HRR: Hard right on red, L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

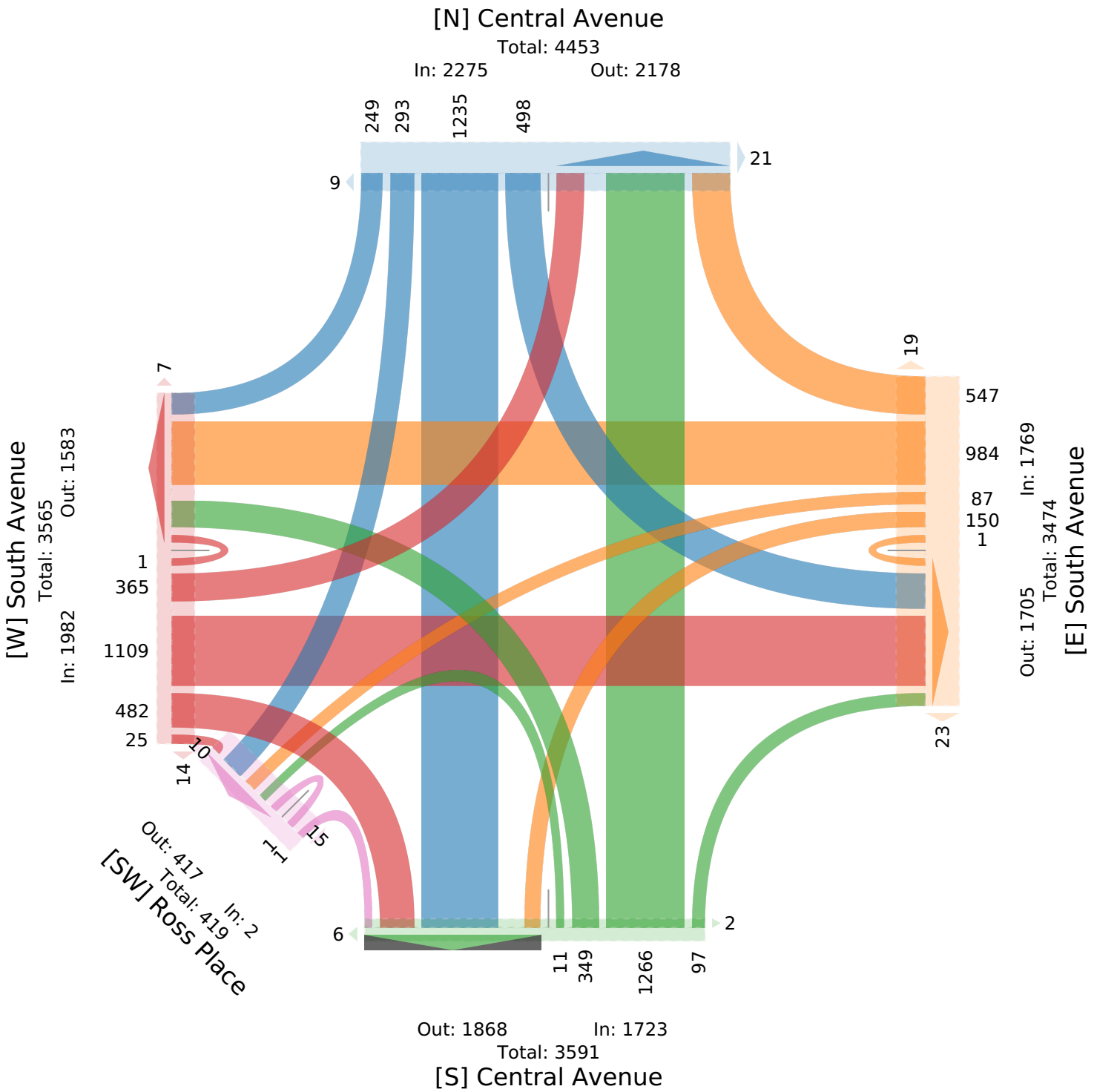
Leg Direction	South Avenue Westbound								Ross Place Northeastbound								
Time	L	BL	T	R	U	RR	**App**	Ped*	HL	BL	BR	HR	U	HRR	**App**	Ped*	**Int**
2022-06-18 11:00AM	15	3	93	48	0	11	**170**	2	0	0	0	0	0	0	**0**	2	**695**
11:15AM	11	11	97	42	0	10	**171**	6	0	0	0	0	0	0	**0**	2	**638**
11:30AM	17	7	86	46	1	6	**163**	3	0	0	0	0	0	0	**0**	1	**666**
11:45AM	16	5	77	53	0	3	**154**	6	0	0	0	0	0	0	**0**	3	**670**
Hourly Total	59	26	353	189	1	30	**658**	17	0	0	0	0	0	0	**0**	8	**2669**
12:00PM	22	6	84	47	0	3	**162**	6	0	0	0	0	0	0	**0**	1	**656**
12:15PM	8	7	66	36	0	6	**123**	2	0	0	0	0	0	0	**0**	2	**629**
12:30PM	5	5	73	43	0	2	**128**	3	0	0	0	0	0	0	**0**	9	**650**
12:45PM	15	9	76	43	0	7	**150**	6	0	0	0	0	0	1	**1**	1	**632**
Hourly Total	50	27	299	169	0	18	**563**	17	0	0	0	0	0	1	**1**	13	**2567**
1:00PM	8	11	79	32	0	0	**130**	2	0	0	0	0	1	0	**1**	0	**610**
1:15PM	10	11	94	31	0	0	**146**	1	0	0	0	0	0	0	**0**	1	**677**
1:30PM	11	4	76	35	0	1	**127**	3	0	0	0	0	0	0	**0**	1	**612**
1:45PM	12	8	83	41	0	1	**145**	2	0	0	0	0	0	0	**0**	2	**616**
Hourly Total	41	34	332	139	0	2	**548**	8	0	0	0	0	1	0	**1**	4	**2515**
Total	150	87	984	497	1	50	**1769**	42	0	0	0	0	1	1	**2**	25	**7751**
% Approach	8.5%	4.9%	55.6%	28.1%	0.1%	2.8%	**-**	-	0%	0%	0%	0%	50.0%	50.0%	**-**	-	**-**
% Total	1.9%	1.1%	12.7%	6.4%	0%	0.6%	**22.8%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	**-**
Lights	150	85	973	493	1	50	**1752**	-	0	0	0	0	1	1	**2**	-	7662
% Lights	100%	97.7%	98.9%	99.2%	100%	100%	**99.0%**	-	0%	0%	0%	0%	100%	100%	**100%**	-	98.9%
Articulated Trucks	0	0	0	0	0	0	**0**	-	0	0	0	0	0	0	**0**	-	4
% Articulated Trucks	0%	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	2	11	4	0	0	**17**	-	0	0	0	0	0	0	**0**	-	85
% Buses and Single-Unit Trucks	0%	2.3%	1.1%	0.8%	0%	0%	**1.0%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	1.1%
Pedestrians	-	-	-	-	-	-	-	39	-	-	-	-	-	-	-	16	
% Pedestrians	-	-	-	-	-	-	-	92.9%	-	-	-	-	-	-	-	64.0%	-
Bicycles on Crosswalk	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	9	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	7.1%	-	-	-	-	-	-	-	36.0%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, HRR: Hard right on red, L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

Leg	Central Avenue								Central Avenue								South Avenue							
Direction	Northbound								Southbound								Eastbound							
Time	HL	L	T	R	U	RR	**App**	Ped*	L	T	BR	R	U	RR	**App**	Ped*	L	T	R	HR	U	HRR	**App**	Ped*
2022-06-18 11:00AM	3	35	104	8	0	0	**150**	1	35	104	28	15	0	8	**190**	4	32	112	38	2	1	0	**185**	2
11:15AM	0	31	100	4	0	4	**139**	0	45	100	16	15	0	3	**179**	4	26	76	43	4	0	0	**149**	1
11:30AM	1	25	130	5	0	1	**162**	0	36	95	20	20	0	4	**175**	3	27	89	47	2	0	1	**166**	2
11:45AM	0	39	109	6	0	0	**154**	0	52	86	25	25	0	4	**192**	3	34	93	41	2	0	0	**170**	4
Total	4	130	443	23	0	5	**605**	1	168	385	89	75	0	19	**736**	14	119	370	169	10	1	1	**670**	9
% Approach	0.7%	21.5%	73.2%	3.8%	0%	0.8%	**-**	-	22.8%	52.3%	12.1%	10.2%	0%	2.6%	**-**	-	17.8%	55.2%	25.2%	1.5%	0.1%	0.1%	**-**	-
% Total	0.1%	4.9%	16.6%	0.9%	0%	0.2%	**22.7%**	-	6.3%	14.4%	3.3%	2.8%	0%	0.7%	**27.6%**	-	4.5%	13.9%	6.3%	0.4%	0%	0%	**25.1%**	-
PHF	0.333	0.833	0.852	0.719		- 0.313	**0.934**	-	0.808	0.925	0.795	0.750		- 0.594	**0.958**	-	0.875	0.826	0.899	0.625	0.250	0.250	**0.905**	-
Lights	4	128	434	22	0	5	**593**	-	167	377	88	75	0	19	**726**	-	119	362	169	10	1	1	**662**	-
% Lights	100%	98.5%	98.0%	95.7%	0%	100%	**98.0%**	-	99.4%	97.9%	98.9%	100%	0%	100%	**98.6%**	-	100%	97.8%	100%	100%	100%	100%	**98.8%**	-
Articulated Trucks	0	0	0	0	0	0	**0**	-	0	0	0	0	0	0	**0**	-	0	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	2	9	1	0	0	**12**	-	1	8	1	0	0	0	**10**	-	0	8	0	0	0	0	**8**	-
% Buses and Single-Unit Trucks	0%	1.5%	2.0%	4.3%	0%	0%	**2.0%**	-	0.6%	2.1%	1.1%	0%	0%	0%	**1.4%**	-	0%	2.2%	0%	0%	0%	0%	**1.2%**	-
Pedestrians	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	8
% Pedestrians	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	85.7%	-	-	-	-	-	-	-	88.9%
Bicycles on Crosswalk	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1
% Bicycles on Crosswalk	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	14.3%	-	-	-	-	-	-	-	11.1%

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, HRR: Hard right on red, L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

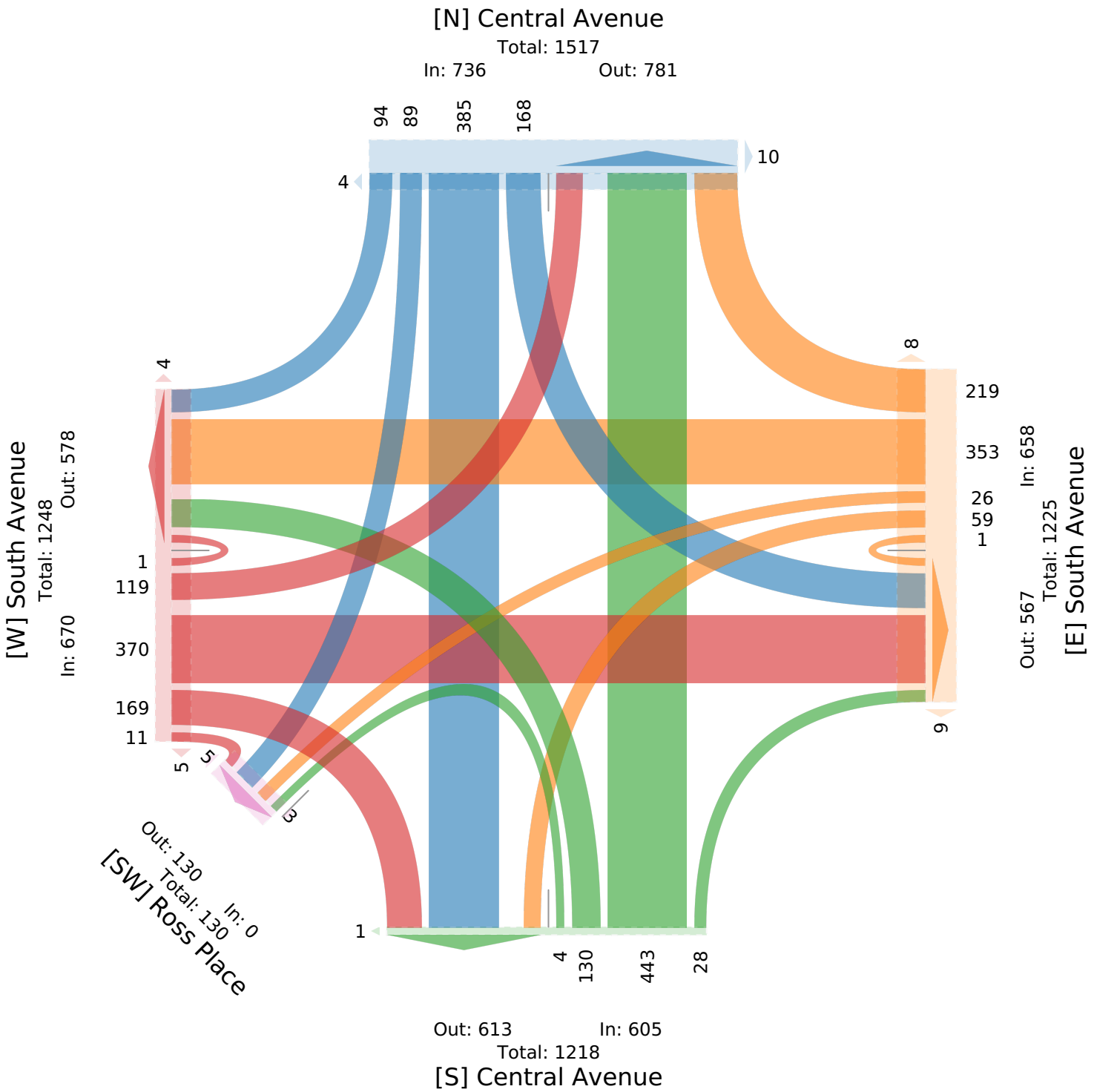
Leg Direction	South Avenue Westbound								Ross Place Northeastbound								
Time	L	BL	T	R	U	RR	**App**	Ped*	HL	BL	BR	HR	U	HRR	**App**	Ped*	**Int**
2022-06-18 11:00AM	15	3	93	48	0	11	**170**	2	0	0	0	0	0	0	**0**	2	**695**
11:15AM	11	11	97	42	0	10	**171**	6	0	0	0	0	0	0	**0**	2	**638**
11:30AM	17	7	86	46	1	6	**163**	3	0	0	0	0	0	0	**0**	1	**666**
11:45AM	16	5	77	53	0	3	**154**	6	0	0	0	0	0	0	**0**	3	**670**
Total	59	26	353	189	1	30	**658**	17	0	0	0	0	0	0	**0**	8	**2669**
% Approach	9.0%	4.0%	53.6%	28.7%	0.2%	4.6%	**-**	-	0%	0%	0%	0%	0%	0%	**-**	-	**-**
% Total	2.2%	1.0%	13.2%	7.1%	0%	1.1%	**24.7%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	**-**
PHF	0.868	0.591	0.910	0.892	0.250	0.682	**0.962**	-	-	-	-	-	-	-	**-**	-	0.960
Lights	59	26	350	187	1	30	**653**	-	0	0	0	0	0	0	**0**	-	2634
% Lights	100%	100%	99.2%	98.9%	100%	100%	**99.2%**	-	0%	0%	0%	0%	0%	0%	**-**	-	98.7%
Articulated Trucks	0	0	0	0	0	0	**0**	-	0	0	0	0	0	0	**0**	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	0%	**-**	-	0%
Buses and Single-Unit Trucks	0	0	3	2	0	0	**5**	-	0	0	0	0	0	0	**0**	-	35
% Buses and Single-Unit Trucks	0%	0%	0.8%	1.1%	0%	0%	**0.8%**	-	0%	0%	0%	0%	0%	0%	**-**	-	1.3%
Pedestrians	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	3	
% Pedestrians	-	-	-	-	-	-	-	82.4%	-	-	-	-	-	-	-	37.5%	-
Bicycles on Crosswalk	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	5	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	17.6%	-	-	-	-	-	-	-	62.5%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, HRR: Hard right on red, L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



8. Ross Place and Central Avenue and South A... - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Leg	Central Avenue								Central Avenue								South Avenue							
Direction	Northbound								Southbound								Eastbound							
Time	HL	L	T	R	U	RR	**App**	Ped*	L	T	BR	R	U	RR	**App**	Ped*	L	T	R	HR	U	HRR	**App**	Ped*
2022-06-18 1:00PM	1	27	76	6	0	1	**111**	0	41	112	19	16	0	5	**193**	0	37	99	39	0	0	0	**175**	1
1:15PM	0	33	127	8	0	0	**168**	1	29	115	28	23	0	1	**196**	1	21	94	50	2	0	0	**167**	0
1:30PM	0	25	105	9	0	1	**140**	0	42	112	29	11	0	0	**194**	1	32	82	37	0	0	0	**151**	4
1:45PM	1	20	117	7	0	0	**145**	0	41	98	22	7	0	1	**169**	1	26	88	41	2	0	0	**157**	0
Total	2	105	425	30	0	2	**564**	1	153	437	98	57	0	7	**752**	3	116	363	167	4	0	0	**650**	5
% Approach	0.4%	18.6%	75.4%	5.3%	0%	0.4%	**-**	-	20.3%	58.1%	13.0%	7.6%	0%	0.9%	**-**	-	17.8%	55.8%	25.7%	0.6%	0%	0%	**-**	-
% Total	0.1%	4.2%	16.9%	1.2%	0%	0.1%	**22.4%**	-	6.1%	17.4%	3.9%	2.3%	0%	0.3%	**29.9%**	-	4.6%	14.4%	6.6%	0.2%	0%	0%	**25.8%**	-
PHF	0.500	0.795	0.837	0.833	-	0.500	**0.839**	-	0.911	0.950	0.845	0.620	-	0.350	**0.959**	-	0.784	0.917	0.835	0.500	-	-	**0.929**	-
Lights	2	105	421	29	0	2	**559**	-	152	435	98	57	0	7	**749**	-	116	356	166	4	0	0	**642**	-
% Lights	100%	100%	99.1%	96.7%	0%	100%	**99.1%**	-	99.3%	99.5%	100%	100%	0%	100%	**99.6%**	-	100%	98.1%	99.4%	100%	0%	0%	**98.8%**	-
Articulated Trucks	0	0	0	0	0	0	**0**	-	1	1	0	0	0	0	**2**	-	0	1	0	0	0	0	**1**	-
% Articulated Trucks	0%	0%	0%	0%	0%	0%	**0%**	-	0.7%	0.2%	0%	0%	0%	0%	**0.3%**	-	0%	0.3%	0%	0%	0%	0%	**0.2%**	-
Buses and Single-Unit Trucks	0	0	4	1	0	0	**5**	-	0	1	0	0	0	0	**1**	-	0	6	1	0	0	0	**7**	-
% Buses and Single-Unit Trucks	0%	0%	0.9%	3.3%	0%	0%	**0.9%**	-	0%	0.2%	0%	0%	0%	0%	**0.1%**	-	0%	1.7%	0.6%	0%	0%	0%	**1.1%**	-
Pedestrians	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	4
% Pedestrians	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	66.7%	-	-	-	-	-	-	-	80.0%
Bicycles on Crosswalk	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
% Bicycles on Crosswalk	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	33.3%	-	-	-	-	-	-	-	20.0%

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, HRR: Hard right on red, L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

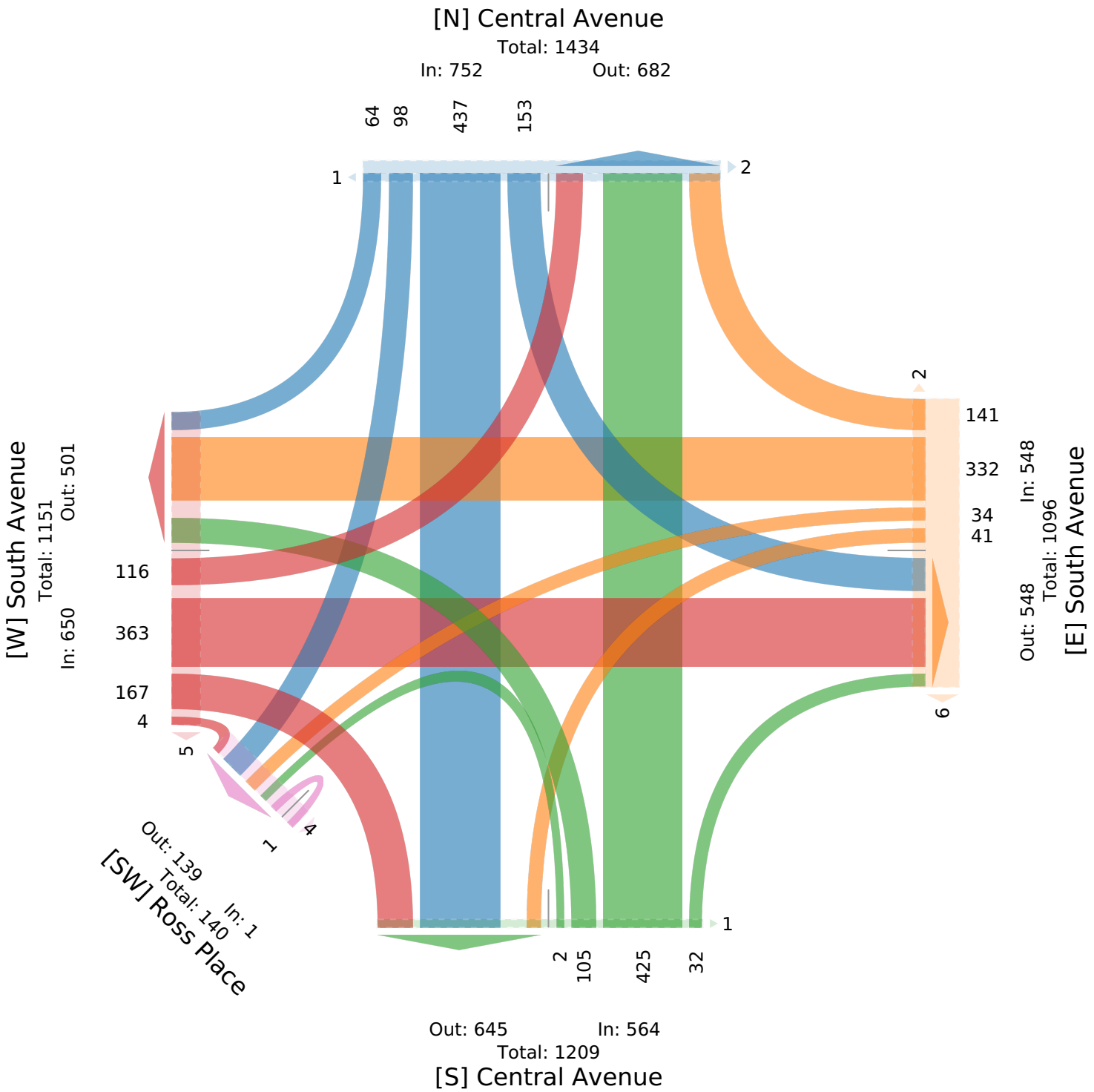
Leg Direction	South Avenue Westbound								Ross Place Northeastbound								
Time	L	BL	T	R	U	RR	**App**	Ped*	HL	BL	BR	HR	U	HRR	**App**	Ped*	**Int**
2022-06-18 1:00PM	8	11	79	32	0	0	**130**	2	0	0	0	0	1	0	**1**	0	**610**
1:15PM	10	11	94	31	0	0	**146**	1	0	0	0	0	0	0	**0**	1	**677**
1:30PM	11	4	76	35	0	1	**127**	3	0	0	0	0	0	0	**0**	1	**612**
1:45PM	12	8	83	41	0	1	**145**	2	0	0	0	0	0	0	**0**	2	**616**
Total	41	34	332	139	0	2	**548**	8	0	0	0	0	1	0	**1**	4	**2515**
% Approach	7.5%	6.2%	60.6%	25.4%	0%	0.4%	**-**	-	0%	0%	0%	0%	100%	0%	**-**	-	**-**
% Total	1.6%	1.4%	13.2%	5.5%	0%	0.1%	**21.8%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	**-**
PHF	0.854	0.773	0.883	0.848	-	0.500	**0.938**	-	-	-	-	-	0.250	-	**0.250**	-	0.929
Lights	41	34	328	138	0	2	**543**	-	0	0	0	0	1	0	**1**	-	2494
% Lights	100%	100%	98.8%	99.3%	0%	100%	**99.1%**	-	0%	0%	0%	0%	100%	0%	**100%**	-	99.2%
Articulated Trucks	0	0	0	0	0	0	**0**	-	0	0	0	0	0	0	**0**	-	3
% Articulated Trucks	0%	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	0	4	1	0	0	**5**	-	0	0	0	0	0	0	**0**	-	18
% Buses and Single-Unit Trucks	0%	0%	1.2%	0.7%	0%	0%	**0.9%**	-	0%	0%	0%	0%	0%	0%	**0%**	-	0.7%
Pedestrians	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	4	
% Pedestrians	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, HRR: Hard right on red, L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

8. Ross Place and Central Avenue and South A... - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965711, Location: 40.649185, -74.343057, Site Code: 8

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



10. North Avenue and Elm Street - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Leg Direction	Parking Driveway Northbound							Elm Street Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 11:00AM	0	0	0	0	0	**0**	38	35	7	13	0	2	**57**	5
11:15AM	0	0	0	0	0	**0**	37	28	5	11	0	1	**45**	25
11:30AM	0	0	0	0	0	**0**	19	38	5	9	0	3	**55**	27
11:45AM	0	0	0	0	0	**0**	17	29	10	17	0	0	**56**	7
Hourly Total	0	0	0	0	0	**0**	111	130	27	50	0	6	**213**	64
12:00PM	0	0	0	0	0	**0**	31	38	7	17	0	4	**66**	11
12:15PM	0	0	0	0	0	**0**	16	24	7	23	0	4	**58**	13
12:30PM	0	0	0	0	0	**0**	12	35	2	23	0	3	**63**	17
12:45PM	1	0	0	0	1	**2**	21	44	4	24	0	1	**73**	13
Hourly Total	1	0	0	0	1	**2**	80	141	20	87	0	12	**260**	54
1:00PM	0	1	0	0	0	**1**	4	31	6	31	0	1	**69**	18
1:15PM	1	0	3	0	1	**5**	1	25	6	19	0	1	**51**	18
1:30PM	1	1	3	0	0	**5**	1	25	8	20	0	3	**56**	23
1:45PM	3	0	0	0	1	**4**	1	22	3	14	0	2	**41**	26
Hourly Total	5	2	6	0	2	**15**	7	103	23	84	0	7	**217**	85
Total	6	2	6	0	3	**17**	198	374	70	221	0	25	**690**	203
% Approach	35.3%	11.8%	35.3%	0%	17.6%	**-**	-	54.2%	10.1%	32.0%	0%	3.6%	**-**	-
% Total	0.1%	0%	0.1%	0%	0.1%	**0.4%**	-	9.1%	1.7%	5.4%	0%	0.6%	**16.8%**	-
Lights	6	2	6	0	3	**17**	-	372	69	218	0	24	**683**	-
% Lights	100%	100%	100%	0%	100%	**100%**	-	99.5%	98.6%	98.6%	0%	96.0%	**99.0%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	0	0	0	0	**0**	-	2	1	3	0	1	**7**	-
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	0.5%	1.4%	1.4%	0%	4.0%	**1.0%**	-
Pedestrians	-	-	-	-	-	-	194	-	-	-	-	-	-	199
% Pedestrians	-	-	-	-	-	-	98.0%	-	-	-	-	-	-	98.0%
Bicycles on Crosswalk	-	-	-	-	-	-	4	-	-	-	-	-	-	4
% Bicycles on Crosswalk	-	-	-	-	-	-	2.0%	-	-	-	-	-	-	2.0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

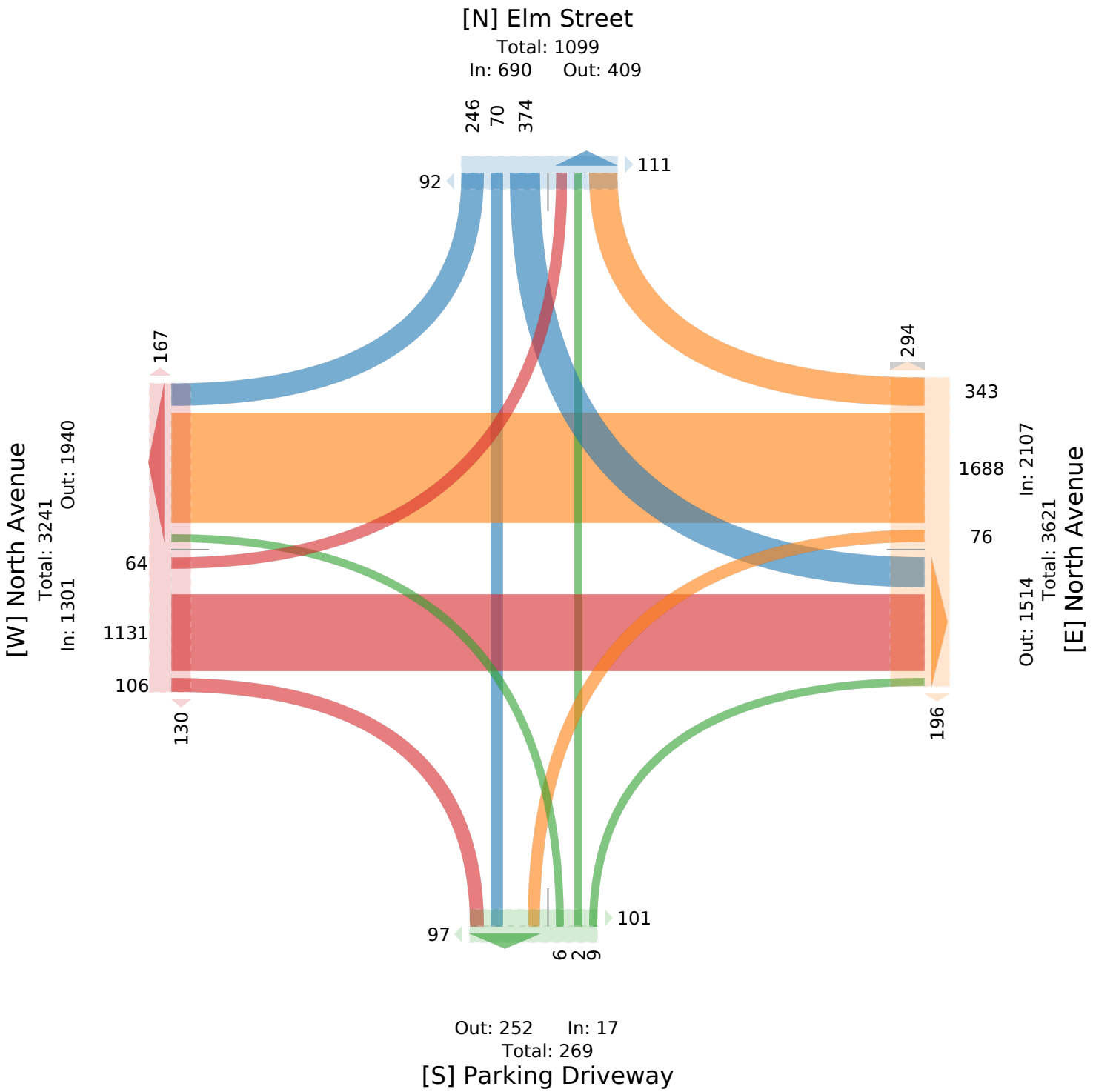
Leg Direction	North Avenue Eastbound							North Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:00AM	7	87	7	0	4	**105**	30	4	151	25	0	0	**180**	37	**342**
11:15AM	2	107	8	0	1	**118**	35	6	134	26	0	1	**167**	50	**330**
11:30AM	4	78	2	0	2	**86**	13	7	133	23	0	1	**164**	69	**305**
11:45AM	5	116	8	0	2	**131**	18	20	129	32	0	1	**182**	52	**369**
Hourly Total	18	388	25	0	9	**440**	96	37	547	106	0	3	**693**	208	**1346**
12:00PM	4	110	16	0	1	**131**	32	5	133	29	0	1	**168**	47	**365**
12:15PM	8	104	9	0	4	**125**	26	9	144	28	0	2	**183**	26	**366**
12:30PM	7	87	5	0	0	**99**	18	2	158	36	0	1	**197**	53	**359**
12:45PM	9	101	4	0	2	**116**	28	3	146	26	0	2	**177**	59	**368**
Hourly Total	28	402	34	0	7	**471**	104	19	581	119	0	6	**725**	185	**1458**
1:00PM	9	84	8	0	0	**101**	28	2	150	24	0	1	**177**	23	**348**
1:15PM	0	98	6	0	0	**104**	25	6	119	24	0	0	**149**	30	**309**
1:30PM	7	72	11	0	1	**91**	29	6	160	37	0	0	**203**	24	**355**
1:45PM	2	87	3	0	2	**94**	15	6	131	23	0	0	**160**	20	**299**
Hourly Total	18	341	28	0	3	**390**	97	20	560	108	0	1	**689**	97	**1311**
Total	64	1131	87	0	19	**1301**	297	76	1688	333	0	10	**2107**	490	**4115**
% Approach	4.9%	86.9%	6.7%	0%	1.5%	**-**	-	3.6%	80.1%	15.8%	0%	0.5%	**-**	-	**-**
% Total	1.6%	27.5%	2.1%	0%	0.5%	**31.6%**	-	1.8%	41.0%	8.1%	0%	0.2%	**51.2%**	-	**-**
Lights	64	1117	87	0	19	**1287**	-	76	1653	331	0	10	**2070**	-	4057
% Lights	100%	98.8%	100%	0%	100%	**98.9%**	-	100%	97.9%	99.4%	0%	100%	**98.2%**	-	98.6%
Articulated Trucks	0	4	0	0	0	**4**	-	0	4	0	0	0	**4**	-	8
% Articulated Trucks	0%	0.4%	0%	0%	0%	**0.3%**	-	0%	0.2%	0%	0%	0%	**0.2%**	-	0.2%
Buses and Single-Unit Trucks	0	10	0	0	0	**10**	-	0	31	2	0	0	**33**	-	50
% Buses and Single-Unit Trucks	0%	0.9%	0%	0%	0%	**0.8%**	-	0%	1.8%	0.6%	0%	0%	**1.6%**	-	1.2%
Pedestrians	-	-	-	-	-	-	294	-	-	-	-	-	-	490	
% Pedestrians	-	-	-	-	-	-	99.0%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	3	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	1.0%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Parking Driveway Northbound							Elm Street Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 11:45AM	0	0	0	0	0	**0**	17	29	10	17	0	0	**56**	7
12:00PM	0	0	0	0	0	**0**	31	38	7	17	0	4	**66**	11
12:15PM	0	0	0	0	0	**0**	16	24	7	23	0	4	**58**	13
12:30PM	0	0	0	0	0	**0**	12	35	2	23	0	3	**63**	17
Total	0	0	0	0	0	**0**	76	126	26	80	0	11	**243**	48
% Approach	0%	0%	0%	0%	0%	**-**	-	51.9%	10.7%	32.9%	0%	4.5%	**-**	-
% Total	0%	0%	0%	0%	0%	**0%**	-	8.6%	1.8%	5.5%	0%	0.8%	**16.7%**	-
PHF	-	-	-	-	-	**-**	-	0.829	0.650	0.870	-	0.688	**0.920**	-
Lights	0	0	0	0	0	**0**	-	124	26	79	0	11	**240**	-
% Lights	0%	0%	0%	0%	0%	**-**	-	98.4%	100%	98.8%	0%	100%	**98.8%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**-**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	0	0	0	0	**0**	-	2	0	1	0	0	**3**	-
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	**-**	-	1.6%	0%	1.3%	0%	0%	**1.2%**	-
Pedestrians	-	-	-	-	-	-	75	-	-	-	-	-	-	48
% Pedestrians	-	-	-	-	-	-	98.7%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	1	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	1.3%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

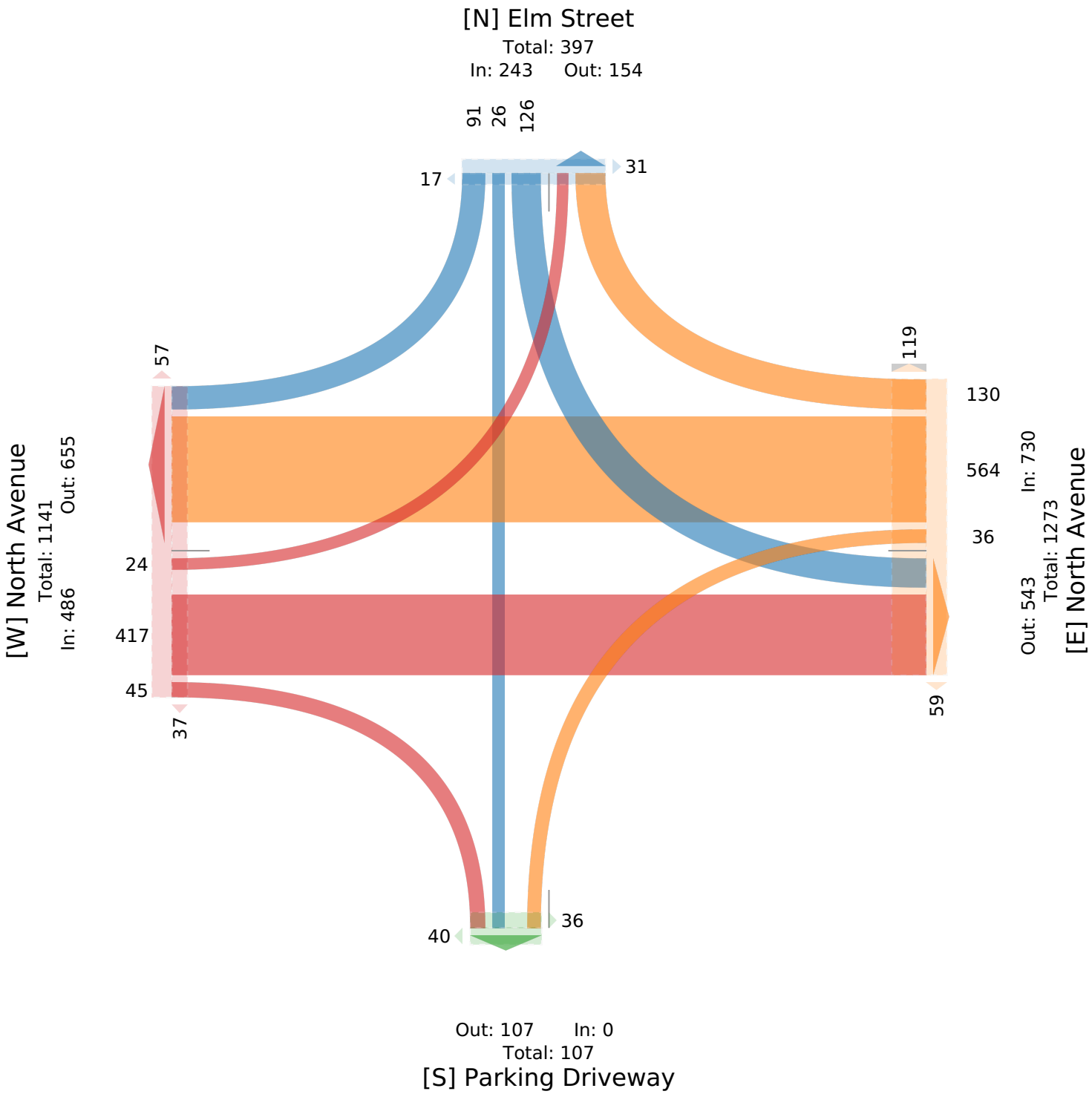
Leg Direction	North Avenue Eastbound							North Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:45AM	5	116	8	0	2	**131**	18	20	129	32	0	1	**182**	52	**369**
12:00PM	4	110	16	0	1	**131**	32	5	133	29	0	1	**168**	47	**365**
12:15PM	8	104	9	0	4	**125**	26	9	144	28	0	2	**183**	26	**366**
12:30PM	7	87	5	0	0	**99**	18	2	158	36	0	1	**197**	53	**359**
Total	24	417	38	0	7	**486**	94	36	564	125	0	5	**730**	178	**1459**
% Approach	4.9%	85.8%	7.8%	0%	1.4%	**-**	-	4.9%	77.3%	17.1%	0%	0.7%	**-**	-	**-**
% Total	1.6%	28.6%	2.6%	0%	0.5%	**33.3%**	-	2.5%	38.7%	8.6%	0%	0.3%	**50.0%**	-	**-**
PHF	0.750	0.899	0.594	-	0.438	**0.927**	-	0.450	0.892	0.868	-	0.625	**0.926**	-	0.988
Lights	24	411	38	0	7	**480**	-	36	553	124	0	5	**718**	-	1438
% Lights	100%	98.6%	100%	0%	100%	**98.8%**	-	100%	98.0%	99.2%	0%	100%	**98.4%**	-	98.6%
Articulated Trucks	0	3	0	0	0	**3**	-	0	1	0	0	0	**1**	-	4
% Articulated Trucks	0%	0.7%	0%	0%	0%	**0.6%**	-	0%	0.2%	0%	0%	0%	**0.1%**	-	0.3%
Buses and Single-Unit Trucks	0	3	0	0	0	**3**	-	0	10	1	0	0	**11**	-	17
% Buses and Single-Unit Trucks	0%	0.7%	0%	0%	0%	**0.6%**	-	0%	1.8%	0.8%	0%	0%	**1.5%**	-	1.2%
Pedestrians	-	-	-	-	-	-	93	-	-	-	-	-	-	178	
% Pedestrians	-	-	-	-	-	-	98.9%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	1	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	1.1%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Parking Driveway Northbound							Elm Street Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 1:00PM	0	1	0	0	0	**1**	4	31	6	31	0	1	**69**	18
1:15PM	1	0	3	0	1	**5**	1	25	6	19	0	1	**51**	18
1:30PM	1	1	3	0	0	**5**	1	25	8	20	0	3	**56**	23
1:45PM	3	0	0	0	1	**4**	1	22	3	14	0	2	**41**	26
Total	5	2	6	0	2	**15**	7	103	23	84	0	7	**217**	85
% Approach	33.3%	13.3%	40.0%	0%	13.3%	**-**	-	47.5%	10.6%	38.7%	0%	3.2%	**-**	-
% Total	0.4%	0.2%	0.5%	0%	0.2%	**1.1%**	-	7.9%	1.8%	6.4%	0%	0.5%	**16.6%**	-
PHF	0.417	0.500	0.500	-	0.500	**0.750**	-	0.831	0.719	0.677	-	0.583	**0.786**	-
Lights	5	2	6	0	2	**15**	-	103	23	82	0	7	**215**	-
% Lights	100%	100%	100%	0%	100%	**100%**	-	100%	100%	97.6%	0%	100%	**99.1%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	0	0	0	0	0	**0**	-	0	0	2	0	0	**2**	-
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	2.4%	0%	0%	**0.9%**	-
Pedestrians	-	-	-	-	-	-	7	-	-	-	-	-	-	84
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	98.8%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	1
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	1.2%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

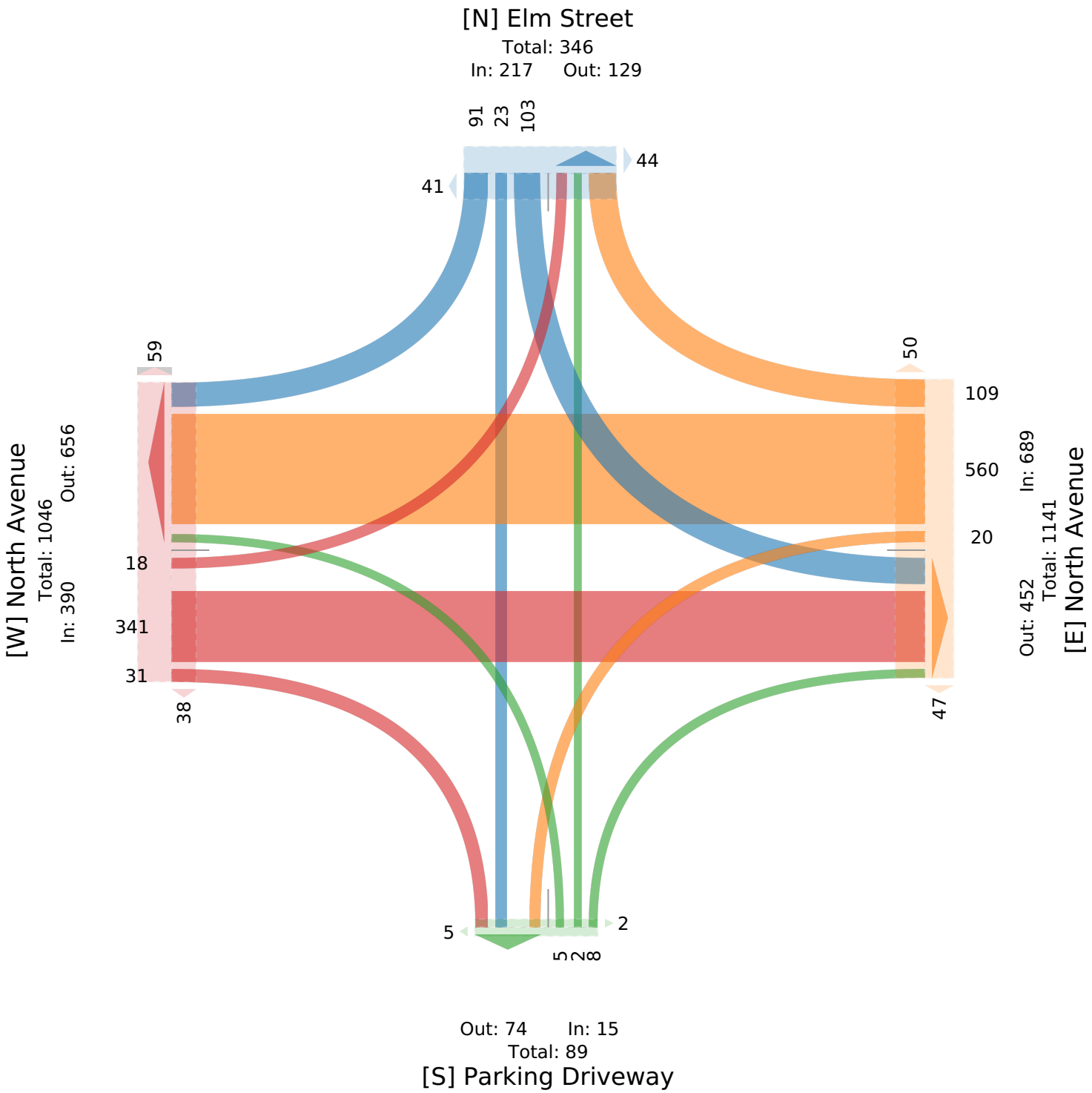
Leg Direction	North Avenue Eastbound							North Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 1:00PM	9	84	8	0	0	**101**	28	2	150	24	0	1	**177**	23	**348**
1:15PM	0	98	6	0	0	**104**	25	6	119	24	0	0	**149**	30	**309**
1:30PM	7	72	11	0	1	**91**	29	6	160	37	0	0	**203**	24	**355**
1:45PM	2	87	3	0	2	**94**	15	6	131	23	0	0	**160**	20	**299**
Total	18	341	28	0	3	**390**	97	20	560	108	0	1	**689**	97	**1311**
% Approach	4.6%	87.4%	7.2%	0%	0.8%	**-**	-	2.9%	81.3%	15.7%	0%	0.1%	**-**	-	**-**
% Total	1.4%	26.0%	2.1%	0%	0.2%	**29.7%**	-	1.5%	42.7%	8.2%	0%	0.1%	**52.6%**	-	**-**
PHF	0.500	0.870	0.636	-	0.375	**0.938**	-	0.833	0.875	0.730	-	0.250	**0.849**	-	0.923
Lights	18	337	28	0	3	**386**	-	20	554	108	0	1	**683**	-	1299
% Lights	100%	98.8%	100%	0%	100%	**99.0%**	-	100%	98.9%	100%	0%	100%	**99.1%**	-	99.1%
Articulated Trucks	0	1	0	0	0	**1**	-	0	1	0	0	0	**1**	-	2
% Articulated Trucks	0%	0.3%	0%	0%	0%	**0.3%**	-	0%	0.2%	0%	0%	0%	**0.1%**	-	0.2%
Buses and Single-Unit Trucks	0	3	0	0	0	**3**	-	0	5	0	0	0	**5**	-	10
% Buses and Single-Unit Trucks	0%	0.9%	0%	0%	0%	**0.8%**	-	0%	0.9%	0%	0%	0%	**0.7%**	-	0.8%
Pedestrians	-	-	-	-	-	-	97	-	-	-	-	-	-	97	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

10. North Avenue and Elm Street - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965716, Location: 40.650228, -74.347892, Site Code: 10

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



Imperial Traffic & Data Collection
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PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650228, -74.347892

Count Name: 10. North Avenue and Elm Street
Site Code: 10
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Avenue Eastbound							North Avenue Westbound							Parking Driveway Northbound							Elm Street Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:00 AM	0	7	87	7	4	30	105	0	4	151	25	0	37	180	0	0	0	0	0	38	0	0	35	7	13	2	5	57	342
11:15 AM	0	2	107	8	1	35	118	0	6	134	26	1	50	167	0	0	0	0	0	37	0	0	28	5	11	1	25	45	330
11:30 AM	0	4	78	2	2	13	86	0	7	133	23	1	69	164	0	0	0	0	0	19	0	0	38	5	9	3	27	55	305
11:45 AM	0	5	116	8	2	18	131	0	20	129	32	1	52	182	0	0	0	0	0	17	0	0	29	10	17	0	7	56	369
Hourly Total	0	18	388	25	9	96	440	0	37	547	106	3	208	693	0	0	0	0	0	111	0	0	130	27	50	6	64	213	1346
12:00 PM	0	4	110	16	1	32	131	0	5	133	29	1	47	168	0	0	0	0	0	31	0	0	38	7	17	4	11	66	365
12:15 PM	0	8	104	9	4	26	125	0	9	144	28	2	26	183	0	0	0	0	0	16	0	0	24	7	23	4	13	58	366
12:30 PM	0	7	87	5	0	18	99	0	2	158	36	1	53	197	0	0	0	0	0	12	0	0	35	2	23	3	17	63	359
12:45 PM	0	9	101	4	2	28	116	0	3	146	26	2	59	177	0	1	0	0	1	21	2	0	44	4	24	1	13	73	368
Hourly Total	0	28	402	34	7	104	471	0	19	581	119	6	185	725	0	1	0	0	1	80	2	0	141	20	87	12	54	260	1458
1:00 PM	0	9	84	8	0	28	101	0	2	150	24	1	23	177	0	0	1	0	0	4	1	0	31	6	31	1	18	69	348
1:15 PM	0	0	98	6	0	25	104	0	6	119	24	0	30	149	0	1	0	3	1	1	5	0	25	6	19	1	18	51	309
1:30 PM	0	7	72	11	1	29	91	0	6	160	37	0	24	203	0	1	1	3	0	1	5	0	25	8	20	3	23	56	355
1:45 PM	0	2	87	3	2	15	94	0	6	131	23	0	20	160	0	3	0	0	1	1	4	0	22	3	14	2	26	41	299
Hourly Total	0	18	341	28	3	97	390	0	20	560	108	1	97	689	0	5	2	6	2	7	15	0	103	23	84	7	85	217	1311
Grand Total	0	64	1131	87	19	297	1301	0	76	1688	333	10	490	2107	0	6	2	6	3	198	17	0	374	70	221	25	203	690	4115
Approach %	0.0	4.9	86.9	6.7	1.5	-	-	0.0	3.6	80.1	15.8	0.5	-	-	0.0	35.3	11.8	35.3	17.6	-	-	0.0	54.2	10.1	32.0	3.6	-	-	-
Total %	0.0	1.6	27.5	2.1	0.5	-	31.6	0.0	1.8	41.0	8.1	0.2	-	51.2	0.0	0.1	0.0	0.1	0.1	-	0.4	0.0	9.1	1.7	5.4	0.6	-	16.8	-
Lights	0	64	1117	87	19	-	1287	0	76	1653	331	10	-	2070	0	6	2	6	3	-	17	0	372	69	218	24	-	683	4057
% Lights	-	100.0	98.8	100.0	100.0	-	98.9	-	100.0	97.9	99.4	100.0	-	98.2	-	100.0	100.0	100.0	100.0	-	100.0	-	99.5	98.6	98.6	96.0	-	99.0	98.6
Mediums	0	0	10	0	0	-	10	0	0	31	2	0	-	33	0	0	0	0	0	-	0	0	2	1	3	1	-	7	50
% Mediums	-	0.0	0.9	0.0	0.0	-	0.8	-	0.0	1.8	0.6	0.0	-	1.6	-	0.0	0.0	0.0	0.0	-	0.0	-	0.5	1.4	1.4	4.0	-	1.0	1.2
Articulated Trucks	0	0	4	0	0	-	4	0	0	4	0	0	-	4	0	0	0	0	0	-	0	0	0	0	0	0	-	0	8
% Articulated Trucks	-	0.0	0.4	0.0	0.0	-	0.3	-	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	0.2
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	-	0	-	-	-	-	-	-	4	-	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	-	1.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	2.0	-	-	-	-	-	-	2.0	-	-
Pedestrians	-	-	-	-	-	294	-	-	-	-	-	-	490	-	-	-	-	-	-	194	-	-	-	-	-	-	199	-	-
% Pedestrians	-	-	-	-	-	99.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	98.0	-	-	-	-	-	-	98.0	-	-

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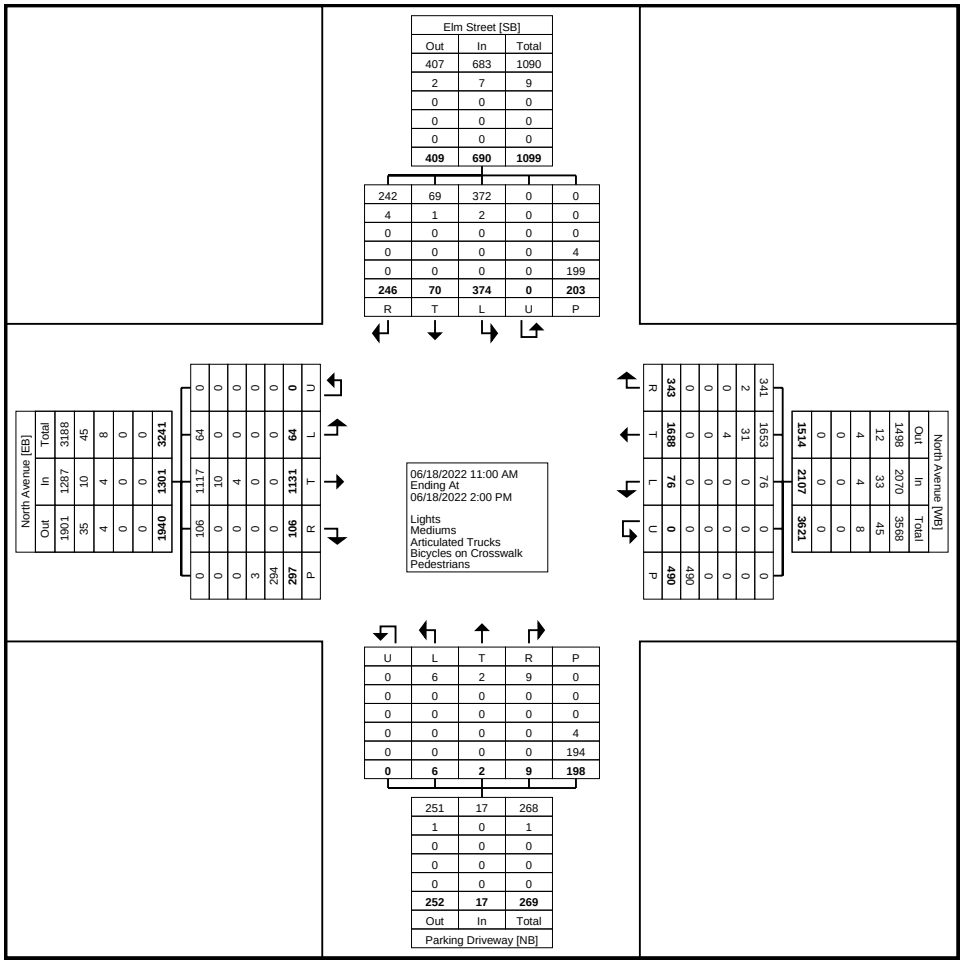
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650228, -74.347892

Count Name: 10. North Avenue and Elm Street
Site Code: 10
Start Date: 06/18/2022



Turning Movement Data Plot

Imperial Traffic & Data Collection
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Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650228, -74.347892

Count Name: 10. North Avenue and Elm Street
Site Code: 10
Start Date: 06/18/2022
Page No: 3

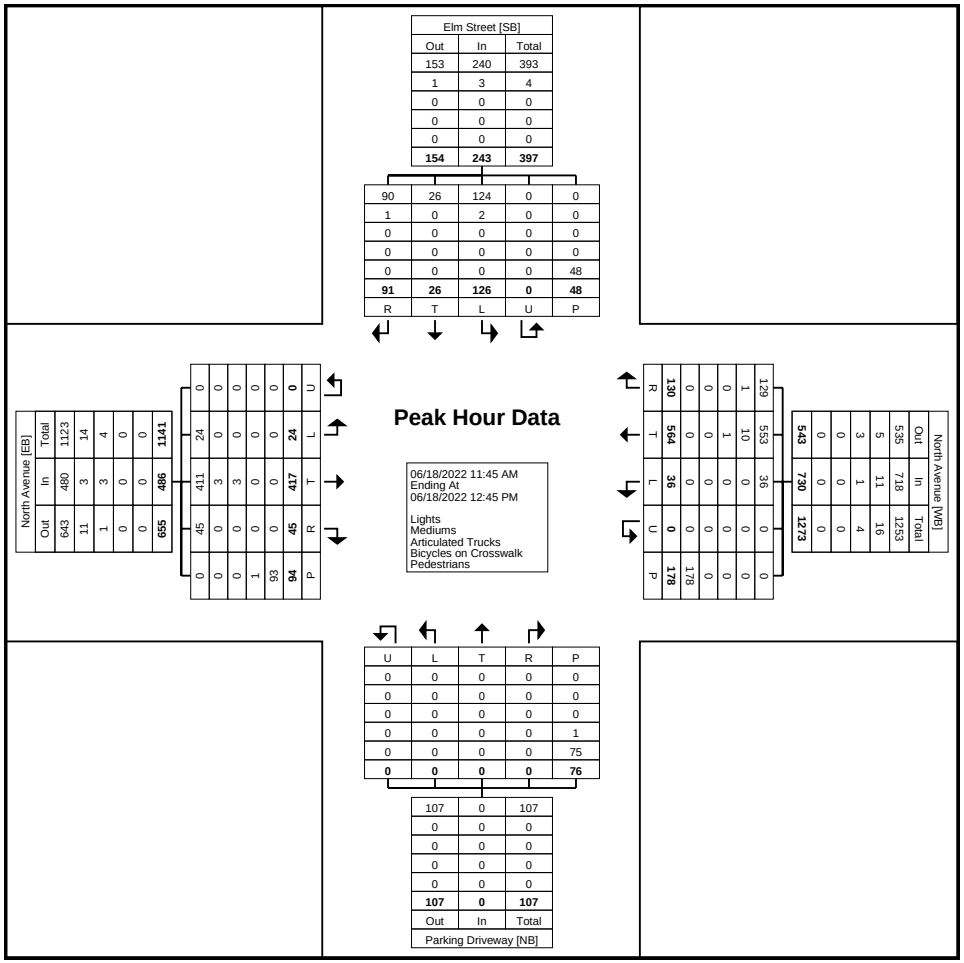
Turning Movement Peak Hour Data (11:45 AM)

Start Time	North Avenue Eastbound							North Avenue Westbound							Parking Driveway Northbound							Elm Street Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:45 AM	0	5	116	8	2	18	131	0	20	129	32	1	52	182	0	0	0	0	0	17	0	0	29	10	17	0	7	56	369
12:00 PM	0	4	110	16	1	32	131	0	5	133	29	1	47	168	0	0	0	0	0	31	0	0	38	7	17	4	11	66	365
12:15 PM	0	8	104	9	4	26	125	0	9	144	28	2	26	183	0	0	0	0	0	16	0	0	24	7	23	4	13	58	366
12:30 PM	0	7	87	5	0	18	99	0	2	158	36	1	53	197	0	0	0	0	0	12	0	0	35	2	23	3	17	63	359
Total	0	24	417	38	7	94	486	0	36	564	125	5	178	730	0	0	0	0	0	76	0	0	126	26	80	11	48	243	1459
Approach %	0.0	4.9	85.8	7.8	1.4	-	-	0.0	4.9	77.3	17.1	0.7	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	51.9	10.7	32.9	4.5	-	-	-
Total %	0.0	1.6	28.6	2.6	0.5	-	33.3	0.0	2.5	38.7	8.6	0.3	-	50.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	8.6	1.8	5.5	0.8	-	16.7	-
PHF	0.000	0.750	0.899	0.594	0.438	-	0.927	0.000	0.450	0.892	0.868	0.625	-	0.926	0.000	0.000	0.000	0.000	0.000	-	0.000	0.000	0.829	0.650	0.870	0.688	-	0.920	0.988
Lights	0	24	411	38	7	-	480	0	36	553	124	5	-	718	0	0	0	0	0	-	0	0	124	26	79	11	-	240	1438
% Lights	-	100.0	98.6	100.0	100.0	-	98.8	-	100.0	98.0	99.2	100.0	-	98.4	-	-	-	-	-	-	-	-	98.4	100.0	98.8	100.0	-	98.8	98.6
Mediums	0	0	3	0	0	-	3	0	0	10	1	0	-	11	0	0	0	0	0	-	0	0	2	0	1	0	-	3	17
% Mediums	-	0.0	0.7	0.0	0.0	-	0.6	-	0.0	1.8	0.8	0.0	-	1.5	-	-	-	-	-	-	-	-	1.6	0.0	1.3	0.0	-	1.2	1.2
Articulated Trucks	0	0	3	0	0	-	3	0	0	1	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	4
% Articulated Trucks	-	0.0	0.7	0.0	0.0	-	0.6	-	0.0	0.2	0.0	0.0	-	0.1	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	1.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	1.3	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	93	-	-	-	-	-	-	178	-	-	-	-	-	-	75	-	-	-	-	-	-	48	-	-
% Pedestrians	-	-	-	-	-	98.9	-	-	-	-	-	-	100.0	-	-	-	-	-	-	98.7	-	-	-	-	-	-	100.0	-	-

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650228, -74.347892

Count Name: 10. North Avenue and Elm Street
Site Code: 10
Start Date: 06/18/2022



Turning Movement Peak Hour Data Plot (11:45 AM)

11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Central Avenue Northbound							Central Avenue Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 11:00AM	48	104	37	0	0	**189**	1	7	120	9	0	0	**136**	1
11:15AM	44	109	32	0	2	**187**	2	17	98	7	0	0	**122**	6
11:30AM	45	121	33	0	3	**202**	3	13	114	9	0	0	**136**	4
11:45AM	37	105	44	0	2	**188**	2	14	100	8	0	0	**122**	3
Hourly Total	174	439	146	0	7	**766**	8	51	432	33	0	0	**516**	14
12:00PM	54	126	29	0	1	**210**	0	4	109	9	0	0	**122**	6
12:15PM	32	113	34	0	2	**181**	2	13	105	8	0	0	**126**	3
12:30PM	46	126	30	0	1	**203**	0	11	121	4	0	0	**136**	5
12:45PM	35	84	20	0	2	**141**	3	12	98	15	0	0	**125**	1
Hourly Total	167	449	113	0	6	**735**	5	40	433	36	0	0	**509**	15
1:00PM	28	104	28	0	1	**161**	2	20	107	9	0	1	**137**	2
1:15PM	41	109	27	0	5	**182**	3	11	103	6	0	2	**122**	2
1:30PM	46	96	27	0	4	**173**	5	8	105	14	0	4	**131**	4
1:45PM	45	91	35	0	1	**172**	0	14	92	6	0	0	**112**	2
Hourly Total	160	400	117	0	11	**688**	10	53	407	35	0	7	**502**	10
Total	501	1288	376	0	24	**2189**	23	144	1272	104	0	7	**1527**	39
% Approach	22.9%	58.8%	17.2%	0%	1.1%	**-**	-	9.4%	83.3%	6.8%	0%	0.5%	**-**	-
% Total	6.6%	17.0%	5.0%	0%	0.3%	**28.9%**	-	1.9%	16.8%	1.4%	0%	0.1%	**20.1%**	-
Lights	491	1280	371	0	23	**2165**	-	139	1255	102	0	7	**1503**	-
% Lights	98.0%	99.4%	98.7%	0%	95.8%	**98.9%**	-	96.5%	98.7%	98.1%	0%	100%	**98.4%**	-
Articulated Trucks	1	0	0	0	0	**1**	-	1	2	0	0	0	**3**	-
% Articulated Trucks	0.2%	0%	0%	0%	0%	**0%**	-	0.7%	0.2%	0%	0%	0%	**0.2%**	-
Buses and Single-Unit Trucks	9	8	5	0	1	**23**	-	4	15	2	0	0	**21**	-
% Buses and Single-Unit Trucks	1.8%	0.6%	1.3%	0%	4.2%	**1.1%**	-	2.8%	1.2%	1.9%	0%	0%	**1.4%**	-
Pedestrians	-	-	-	-	-	-	21	-	-	-	-	-	-	36
% Pedestrians	-	-	-	-	-	-	91.3%	-	-	-	-	-	-	92.3%
Bicycles on Crosswalk	-	-	-	-	-	-	2	-	-	-	-	-	-	3
% Bicycles on Crosswalk	-	-	-	-	-	-	8.7%	-	-	-	-	-	-	7.7%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

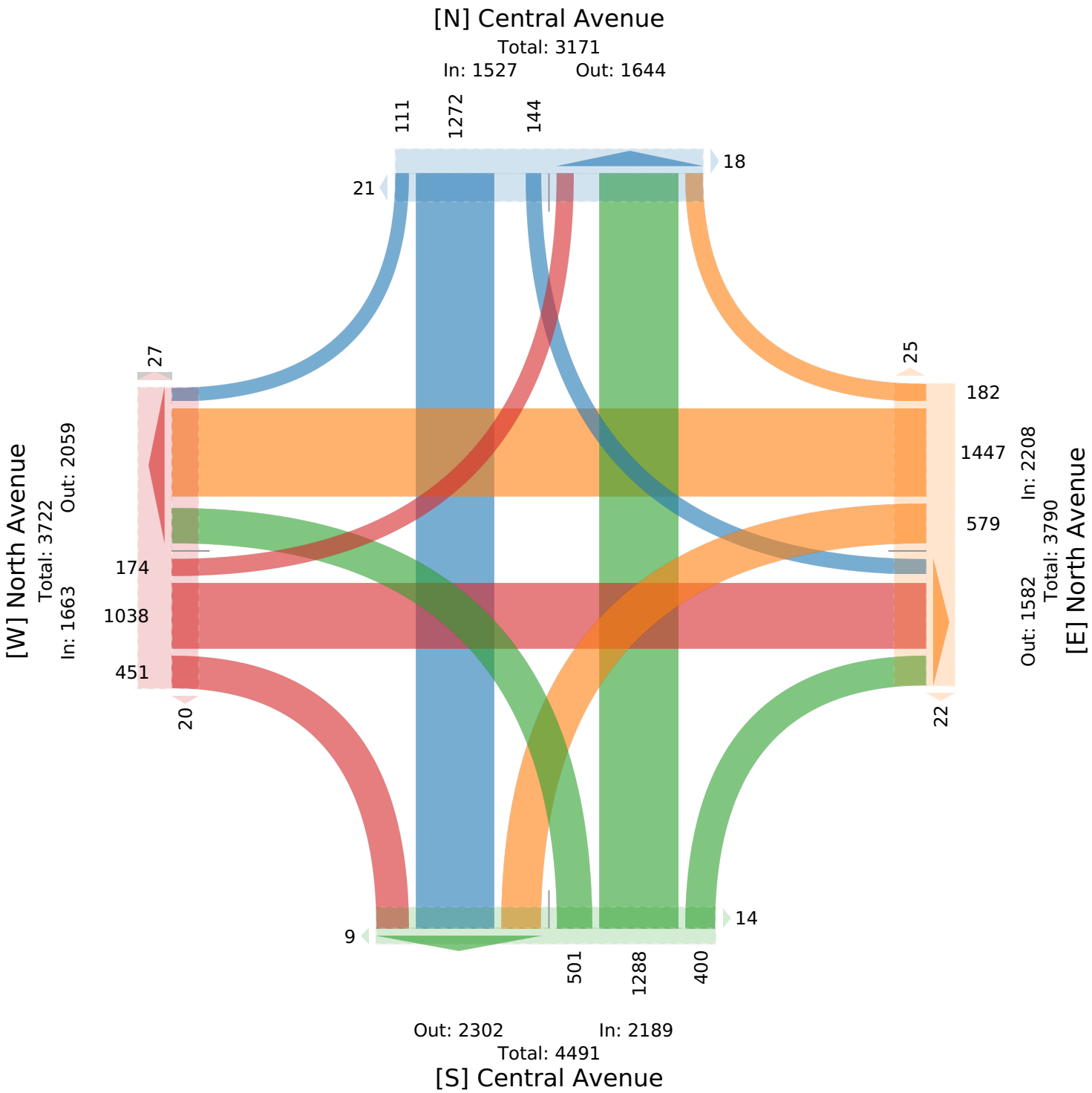
Leg Direction	North Avenue Eastbound							North Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:00AM	10	85	32	0	1	**128**	0	51	125	17	0	0	**193**	0	**646**
11:15AM	10	95	35	0	0	**140**	3	44	110	22	0	1	**177**	5	**626**
11:30AM	12	86	34	0	0	**132**	6	37	121	15	0	1	**174**	6	**644**
11:45AM	15	85	49	0	0	**149**	7	49	125	19	0	0	**193**	3	**652**
Hourly Total	47	351	150	0	1	**549**	16	181	481	73	0	2	**737**	14	**2568**
12:00PM	18	103	40	0	0	**161**	0	50	116	18	0	0	**184**	6	**677**
12:15PM	19	100	40	0	0	**159**	2	54	131	9	0	0	**194**	4	**660**
12:30PM	18	79	32	0	1	**130**	7	45	138	12	0	0	**195**	5	**664**
12:45PM	17	86	40	0	0	**143**	3	50	123	20	0	1	**194**	6	**603**
Hourly Total	72	368	152	0	1	**593**	12	199	508	59	0	1	**767**	21	**2604**
1:00PM	18	80	31	0	1	**130**	2	52	134	8	0	0	**194**	4	**622**
1:15PM	17	85	39	0	0	**141**	2	49	102	14	0	0	**165**	0	**610**
1:30PM	13	70	42	0	1	**126**	9	51	119	13	0	0	**183**	5	**613**
1:45PM	7	84	32	0	1	**124**	6	47	103	12	0	0	**162**	3	**570**
Hourly Total	55	319	144	0	3	**521**	19	199	458	47	0	0	**704**	12	**2415**
Total	174	1038	446	0	5	**1663**	47	579	1447	179	0	3	**2208**	47	**7587**
% Approach	10.5%	62.4%	26.8%	0%	0.3%	**-**	-	26.2%	65.5%	8.1%	0%	0.1%	**-**	-	**-**
% Total	2.3%	13.7%	5.9%	0%	0.1%	**21.9%**	-	7.6%	19.1%	2.4%	0%	0%	**29.1%**	-	**-**
Lights	172	1027	443	0	5	**1647**	-	572	1424	177	0	3	**2176**	-	7491
% Lights	98.9%	98.9%	99.3%	0%	100%	**99.0%**	-	98.8%	98.4%	98.9%	0%	100%	**98.6%**	-	98.7%
Articulated Trucks	0	2	1	0	0	**3**	-	1	1	0	0	0	**2**	-	9
% Articulated Trucks	0%	0.2%	0.2%	0%	0%	**0.2%**	-	0.2%	0.1%	0%	0%	0%	**0.1%**	-	0.1%
Buses and Single-Unit Trucks	2	9	2	0	0	**13**	-	6	22	2	0	0	**30**	-	87
% Buses and Single-Unit Trucks	1.1%	0.9%	0.4%	0%	0%	**0.8%**	-	1.0%	1.5%	1.1%	0%	0%	**1.4%**	-	1.1%
Pedestrians	-	-	-	-	-	-	45	-	-	-	-	-	-	45	
% Pedestrians	-	-	-	-	-	-	95.7%	-	-	-	-	-	-	95.7%	-
Bicycles on Crosswalk	-	-	-	-	-	-	2	-	-	-	-	-	-	2	
% Bicycles on Crosswalk	-	-	-	-	-	-	4.3%	-	-	-	-	-	-	4.3%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Central Avenue Northbound							Central Avenue Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 11:45AM	37	105	44	0	2	**188**	2	14	100	8	0	0	**122**	3
12:00PM	54	126	29	0	1	**210**	0	4	109	9	0	0	**122**	6
12:15PM	32	113	34	0	2	**181**	2	13	105	8	0	0	**126**	3
12:30PM	46	126	30	0	1	**203**	0	11	121	4	0	0	**136**	5
Total	169	470	137	0	6	**782**	4	42	435	29	0	0	**506**	17
% Approach	21.6%	60.1%	17.5%	0%	0.8%	**-**	-	8.3%	86.0%	5.7%	0%	0%	**-**	-
% Total	6.4%	17.7%	5.2%	0%	0.2%	**29.5%**	-	1.6%	16.4%	1.1%	0%	0%	**19.1%**	-
PHF	0.782	0.933	0.778	-	0.750	**0.931**	-	0.750	0.899	0.806	-	-	**0.930**	-
Lights	166	468	135	0	5	**774**	-	42	427	29	0	0	**498**	-
% Lights	98.2%	99.6%	98.5%	0%	83.3%	**99.0%**	-	100%	98.2%	100%	0%	0%	**98.4%**	-
Articulated Trucks	1	0	0	0	0	**1**	-	0	0	0	0	0	**0**	-
% Articulated Trucks	0.6%	0%	0%	0%	0%	**0.1%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses and Single-Unit Trucks	2	2	2	0	1	**7**	-	0	8	0	0	0	**8**	-
% Buses and Single-Unit Trucks	1.2%	0.4%	1.5%	0%	16.7%	**0.9%**	-	0%	1.8%	0%	0%	0%	**1.6%**	-
Pedestrians	-	-	-	-	-	-	3	-	-	-	-	-	-	15
% Pedestrians	-	-	-	-	-	-	75.0%	-	-	-	-	-	-	88.2%
Bicycles on Crosswalk	-	-	-	-	-	-	1	-	-	-	-	-	-	2
% Bicycles on Crosswalk	-	-	-	-	-	-	25.0%	-	-	-	-	-	-	11.8%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

11. Central Avenue and North Avenue - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Leg Direction	North Avenue Eastbound							North Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:45AM	15	85	49	0	0	**149**	7	49	125	19	0	0	**193**	3	**652**
12:00PM	18	103	40	0	0	**161**	0	50	116	18	0	0	**184**	6	**677**
12:15PM	19	100	40	0	0	**159**	2	54	131	9	0	0	**194**	4	**660**
12:30PM	18	79	32	0	1	**130**	7	45	138	12	0	0	**195**	5	**664**
Total	70	367	161	0	1	**599**	16	198	510	58	0	0	**766**	18	**2653**
% Approach	11.7%	61.3%	26.9%	0%	0.2%	**-**	-	25.8%	66.6%	7.6%	0%	0%	**-**	-	**-**
% Total	2.6%	13.8%	6.1%	0%	0%	**22.6%**	-	7.5%	19.2%	2.2%	0%	0%	**28.9%**	-	**-**
PHF	0.921	0.891	0.821	-	0.250	**0.930**	-	0.917	0.924	0.763	-	-	**0.982**	-	0.980
Lights	70	362	158	0	1	**591**	-	194	500	57	0	0	**751**	-	2614
% Lights	100%	98.6%	98.1%	0%	100%	**98.7%**	-	98.0%	98.0%	98.3%	0%	0%	**98.0%**	-	98.5%
Articulated Trucks	0	2	1	0	0	**3**	-	1	0	0	0	0	**1**	-	5
% Articulated Trucks	0%	0.5%	0.6%	0%	0%	**0.5%**	-	0.5%	0%	0%	0%	0%	**0.1%**	-	0.2%
Buses and Single-Unit Trucks	0	3	2	0	0	**5**	-	3	10	1	0	0	**14**	-	34
% Buses and Single-Unit Trucks	0%	0.8%	1.2%	0%	0%	**0.8%**	-	1.5%	2.0%	1.7%	0%	0%	**1.8%**	-	1.3%
Pedestrians	-	-	-	-	-	-	16	-	-	-	-	-	-	17	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	94.4%	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	1	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	5.6%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
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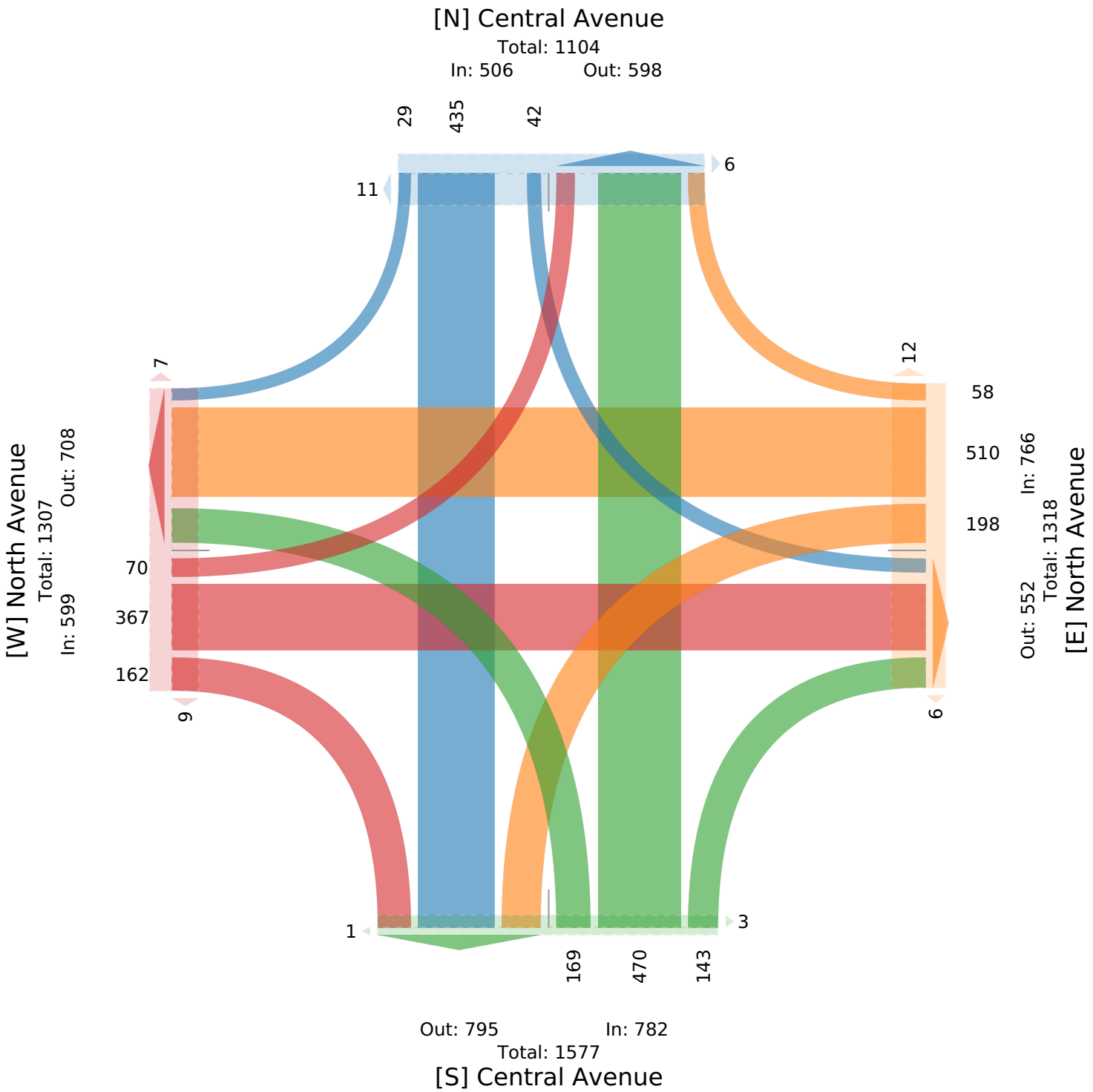


11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Central Avenue Northbound							Central Avenue Southbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-06-18 1:00PM	28	104	28	0	1	**161**	2	20	107	9	0	1	**137**	2
1:15PM	41	109	27	0	5	**182**	3	11	103	6	0	2	**122**	2
1:30PM	46	96	27	0	4	**173**	5	8	105	14	0	4	**131**	4
1:45PM	45	91	35	0	1	**172**	0	14	92	6	0	0	**112**	2
Total	160	400	117	0	11	**688**	10	53	407	35	0	7	**502**	10
% Approach	23.3%	58.1%	17.0%	0%	1.6%	**-**	-	10.6%	81.1%	7.0%	0%	1.4%	**-**	-
% Total	6.6%	16.6%	4.8%	0%	0.5%	**28.5%**	-	2.2%	16.9%	1.4%	0%	0.3%	**20.8%**	-
PHF	0.870	0.917	0.836	-	0.550	**0.945**	-	0.663	0.951	0.625	-	0.438	**0.916**	-
Lights	159	398	115	0	11	**683**	-	52	405	34	0	7	**498**	-
% Lights	99.4%	99.5%	98.3%	0%	100%	**99.3%**	-	98.1%	99.5%	97.1%	0%	100%	**99.2%**	-
Articulated Trucks	0	0	0	0	0	**0**	-	1	1	0	0	0	**2**	-
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	1.9%	0.2%	0%	0%	0%	**0.4%**	-
Buses and Single-Unit Trucks	1	2	2	0	0	**5**	-	0	1	1	0	0	**2**	-
% Buses and Single-Unit Trucks	0.6%	0.5%	1.7%	0%	0%	**0.7%**	-	0%	0.2%	2.9%	0%	0%	**0.4%**	-
Pedestrians	-	-	-	-	-	-	10	-	-	-	-	-	-	10
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

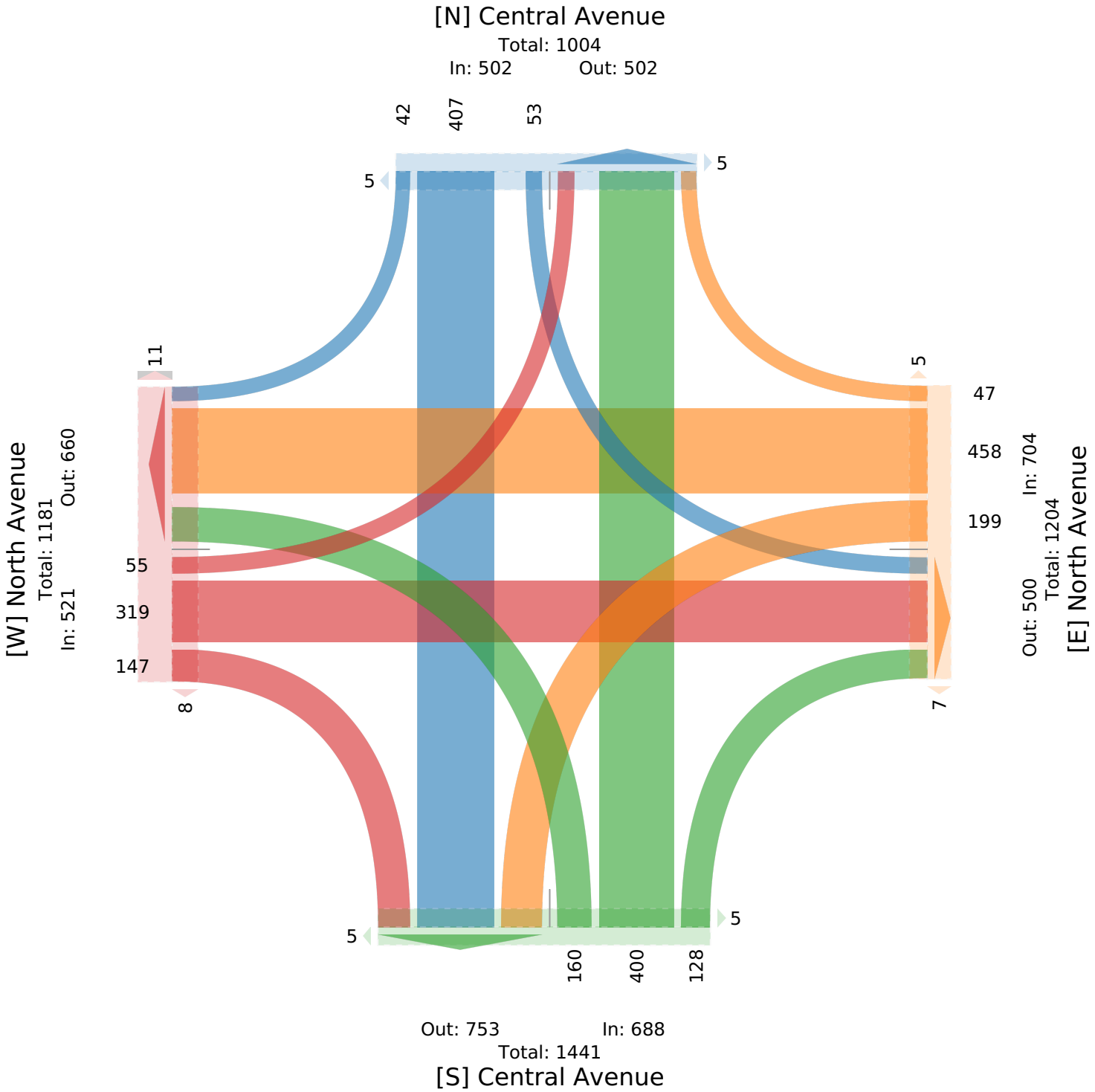
Leg Direction	North Avenue Eastbound							North Avenue Westbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 1:00PM	18	80	31	0	1	**130**	2	52	134	8	0	0	**194**	4	**622**
1:15PM	17	85	39	0	0	**141**	2	49	102	14	0	0	**165**	0	**610**
1:30PM	13	70	42	0	1	**126**	9	51	119	13	0	0	**183**	5	**613**
1:45PM	7	84	32	0	1	**124**	6	47	103	12	0	0	**162**	3	**570**
Total	55	319	144	0	3	**521**	19	199	458	47	0	0	**704**	12	**2415**
% Approach	10.6%	61.2%	27.6%	0%	0.6%	**-**	-	28.3%	65.1%	6.7%	0%	0%	**-**	-	**-**
% Total	2.3%	13.2%	6.0%	0%	0.1%	**21.6%**	-	8.2%	19.0%	1.9%	0%	0%	**29.2%**	-	**-**
PHF	0.764	0.938	0.857	-	0.750	**0.924**	-	0.957	0.854	0.839	-	-	**0.907**	-	0.971
Lights	55	316	144	0	3	**518**	-	199	454	47	0	0	**700**	-	2399
% Lights	100%	99.1%	100%	0%	100%	**99.4%**	-	100%	99.1%	100%	0%	0%	**99.4%**	-	99.3%
Articulated Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-	2
% Articulated Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	3	0	0	0	**3**	-	0	4	0	0	0	**4**	-	14
% Buses and Single-Unit Trucks	0%	0.9%	0%	0%	0%	**0.6%**	-	0%	0.9%	0%	0%	0%	**0.6%**	-	0.6%
Pedestrians	-	-	-	-	-	-	19	-	-	-	-	-	-	12	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

11. Central Avenue and North Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965718, Location: 40.650552, -74.345391, Site Code: 11

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



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Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650552, -74.345391

Count Name: 11. Central Avenue and North Avenue
Site Code: 11
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Avenue Eastbound							North Avenue Westbound							Central Avenue Northbound							Central Avenue Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:00 AM	0	10	85	32	1	0	128	0	51	125	17	0	0	193	0	48	104	37	0	1	189	0	7	120	9	0	1	136	646
11:15 AM	0	10	95	35	0	3	140	0	44	110	22	1	5	177	0	44	109	32	2	2	187	0	17	98	7	0	6	122	626
11:30 AM	0	12	86	34	0	6	132	0	37	121	15	1	6	174	0	45	121	33	3	3	202	0	13	114	9	0	4	136	644
11:45 AM	0	15	85	49	0	7	149	0	49	125	19	0	3	193	0	37	105	44	2	2	188	0	14	100	8	0	3	122	652
Hourly Total	0	47	351	150	1	16	549	0	181	481	73	2	14	737	0	174	439	146	7	8	766	0	51	432	33	0	14	516	2568
12:00 PM	0	18	103	40	0	0	161	0	50	116	18	0	6	184	0	54	126	29	1	0	210	0	4	109	9	0	6	122	677
12:15 PM	0	19	100	40	0	2	159	0	54	131	9	0	4	194	0	32	113	34	2	2	181	0	13	105	8	0	3	126	660
12:30 PM	0	18	79	32	1	7	130	0	45	138	12	0	5	195	0	46	126	30	1	0	203	0	11	121	4	0	5	136	664
12:45 PM	0	17	86	40	0	3	143	0	50	123	20	1	6	194	0	35	84	20	2	3	141	0	12	98	15	0	1	125	603
Hourly Total	0	72	368	152	1	12	593	0	199	508	59	1	21	767	0	167	449	113	6	5	735	0	40	433	36	0	15	509	2604
1:00 PM	0	18	80	31	1	2	130	0	52	134	8	0	4	194	0	28	104	28	1	2	161	0	20	107	9	1	2	137	622
1:15 PM	0	17	85	39	0	2	141	0	49	102	14	0	0	165	0	41	109	27	5	3	182	0	11	103	6	2	2	122	610
1:30 PM	0	13	70	42	1	9	126	0	51	119	13	0	5	183	0	46	96	27	4	5	173	0	8	105	14	4	4	131	613
1:45 PM	0	7	84	32	1	6	124	0	47	103	12	0	3	162	0	45	91	35	1	0	172	0	14	92	6	0	2	112	570
Hourly Total	0	55	319	144	3	19	521	0	199	458	47	0	12	704	0	160	400	117	11	10	688	0	53	407	35	7	10	502	2415
Grand Total	0	174	1038	446	5	47	1663	0	579	1447	179	3	47	2208	0	501	1288	376	24	23	2189	0	144	1272	104	7	39	1527	7587
Approach %	0.0	10.5	62.4	26.8	0.3	-	-	0.0	26.2	65.5	8.1	0.1	-	-	0.0	22.9	58.8	17.2	1.1	-	-	0.0	9.4	83.3	6.8	0.5	-	-	-
Total %	0.0	2.3	13.7	5.9	0.1	-	21.9	0.0	7.6	19.1	2.4	0.0	-	29.1	0.0	6.6	17.0	5.0	0.3	-	28.9	0.0	1.9	16.8	1.4	0.1	-	20.1	-
Lights	0	172	1027	443	5	-	1647	0	572	1424	177	3	-	2176	0	491	1280	371	23	-	2165	0	139	1255	102	7	-	1503	7491
% Lights	-	98.9	98.9	99.3	100.0	-	99.0	-	98.8	98.4	98.9	100.0	-	98.6	-	98.0	99.4	98.7	95.8	-	98.9	-	96.5	98.7	98.1	100.0	-	98.4	98.7
Mediums	0	2	9	2	0	-	13	0	6	22	2	0	-	30	0	9	8	5	1	-	23	0	4	15	2	0	-	21	87
% Mediums	-	1.1	0.9	0.4	0.0	-	0.8	-	1.0	1.5	1.1	0.0	-	1.4	-	1.8	0.6	1.3	4.2	-	1.1	-	2.8	1.2	1.9	0.0	-	1.4	1.1
Articulated Trucks	0	0	2	1	0	-	3	0	1	1	0	0	-	2	0	1	0	0	0	-	1	0	1	2	0	0	-	3	9
% Articulated Trucks	-	0.0	0.2	0.2	0.0	-	0.2	-	0.2	0.1	0.0	0.0	-	0.1	-	0.2	0.0	0.0	0.0	-	0.0	-	0.7	0.2	0.0	0.0	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	-	4.3	-	-	-	-	-	-	4.3	-	-	-	-	-	-	8.7	-	-	-	-	-	-	7.7	-	-
Pedestrians	-	-	-	-	-	45	-	-	-	-	-	-	45	-	-	-	-	-	-	21	-	-	-	-	-	-	36	-	-
% Pedestrians	-	-	-	-	-	95.7	-	-	-	-	-	-	95.7	-	-	-	-	-	-	91.3	-	-	-	-	-	-	92.3	-	-

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Project: North Ave, South Ave, Westfield NJ
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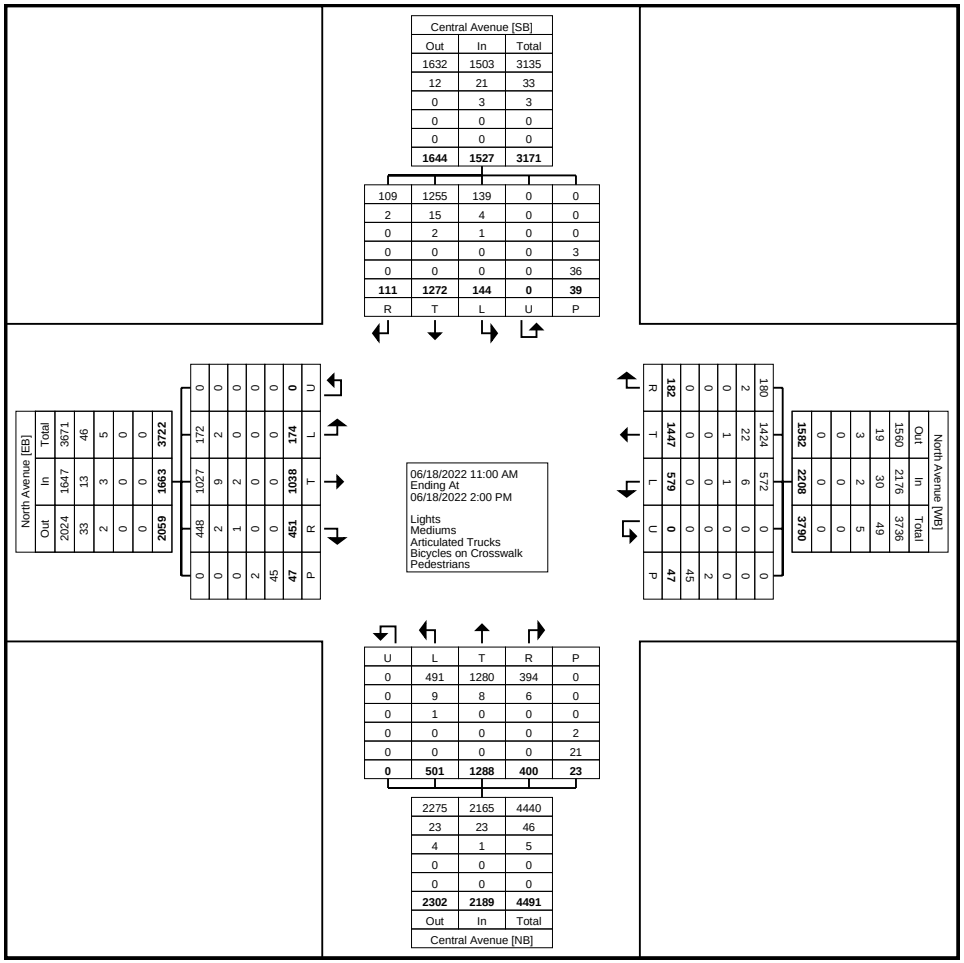
Setup: NR/DR
Location: 40.650552, -74.345391

Count Name: 11. Central Avenue and North Avenue
Site Code: 11
Start Date: 06/18/2022
Page No: 2



Turning Movement Data Plot

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Project: North Ave, South Ave, Westfield NJ
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Location: 40.650552, -74.345391

Count Name: 11. Central Avenue and North Avenue
Site Code: 11
Start Date: 06/18/2022
Page No: 3

Turning Movement Peak Hour Data (11:45 AM)

Start Time	North Avenue Eastbound							North Avenue Westbound							Central Avenue Northbound							Central Avenue Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:45 AM	0	15	85	49	0	7	149	0	49	125	19	0	3	193	0	37	105	44	2	2	188	0	14	100	8	0	3	122	652
12:00 PM	0	18	103	40	0	0	161	0	50	116	18	0	6	184	0	54	126	29	1	0	210	0	4	109	9	0	6	122	677
12:15 PM	0	19	100	40	0	2	159	0	54	131	9	0	4	194	0	32	113	34	2	2	181	0	13	105	8	0	3	126	660
12:30 PM	0	18	79	32	1	7	130	0	45	138	12	0	5	195	0	46	126	30	1	0	203	0	11	121	4	0	5	136	664
Total	0	70	367	161	1	16	599	0	198	510	58	0	18	766	0	169	470	137	6	4	782	0	42	435	29	0	17	506	2653
Approach %	0.0	11.7	61.3	26.9	0.2	-	-	0.0	25.8	66.6	7.6	0.0	-	-	0.0	21.6	60.1	17.5	0.8	-	-	0.0	8.3	86.0	5.7	0.0	-	-	-
Total %	0.0	2.6	13.8	6.1	0.0	-	22.6	0.0	7.5	19.2	2.2	0.0	-	28.9	0.0	6.4	17.7	5.2	0.2	-	29.5	0.0	1.6	16.4	1.1	0.0	-	19.1	-
PHF	0.000	0.921	0.891	0.821	0.250	-	0.930	0.000	0.917	0.924	0.763	0.000	-	0.982	0.000	0.782	0.933	0.778	0.750	-	0.931	0.000	0.750	0.899	0.806	0.000	-	0.930	0.980
Lights	0	70	362	158	1	-	591	0	194	500	57	0	-	751	0	166	468	135	5	-	774	0	42	427	29	0	-	498	2614
% Lights	-	100.0	98.6	98.1	100.0	-	98.7	-	98.0	98.0	98.3	-	-	98.0	-	98.2	99.6	98.5	83.3	-	99.0	-	100.0	98.2	100.0	-	-	98.4	98.5
Mediums	0	0	3	2	0	-	5	0	3	10	1	0	-	14	0	2	2	2	1	-	7	0	0	8	0	0	-	8	34
% Mediums	-	0.0	0.8	1.2	0.0	-	0.8	-	1.5	2.0	1.7	-	-	1.8	-	1.2	0.4	1.5	16.7	-	0.9	-	0.0	1.8	0.0	-	-	1.6	1.3
Articulated Trucks	0	0	2	1	0	-	3	0	1	0	0	0	-	1	0	1	0	0	0	-	1	0	0	0	0	0	-	0	5
% Articulated Trucks	-	0.0	0.5	0.6	0.0	-	0.5	-	0.5	0.0	0.0	-	-	0.1	-	0.6	0.0	0.0	0.0	-	0.1	-	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	5.6	-	-	-	-	-	-	25.0	-	-	-	-	-	-	11.8	-	-
Pedestrians	-	-	-	-	-	16	-	-	-	-	-	-	17	-	-	-	-	-	-	3	-	-	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	94.4	-	-	-	-	-	-	75.0	-	-	-	-	-	-	88.2	-	-

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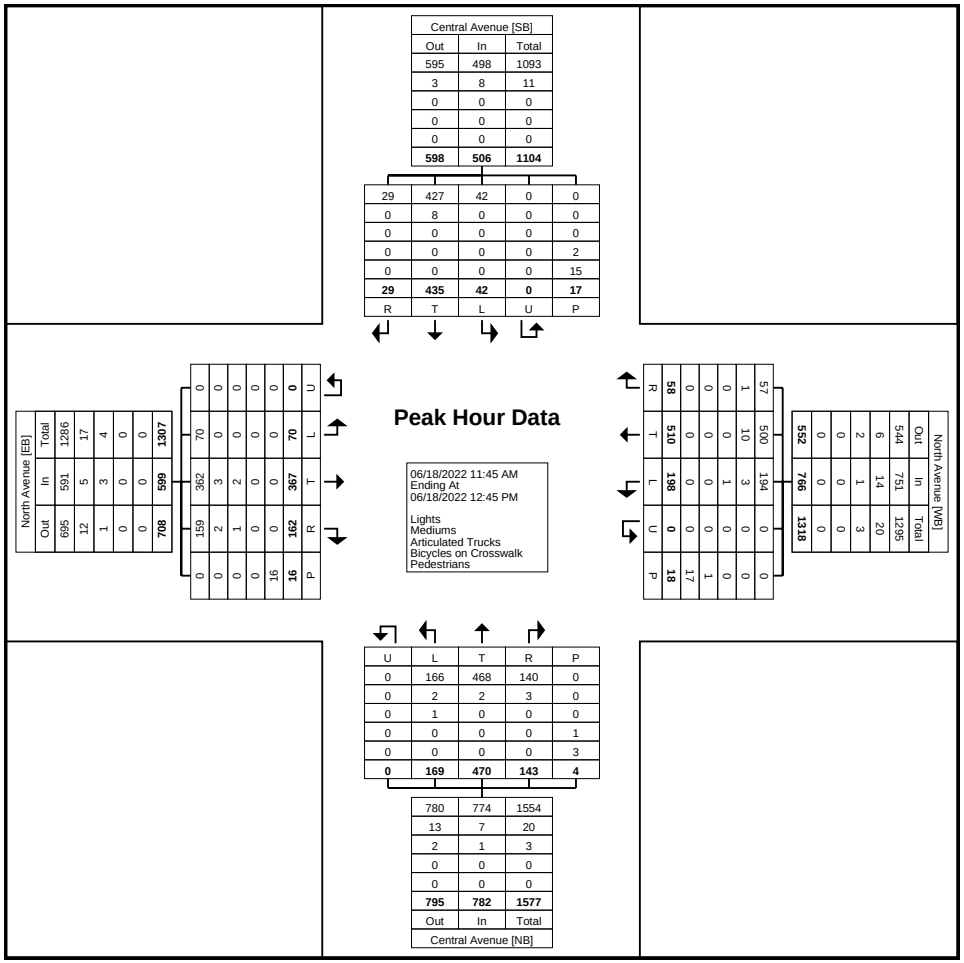
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650552, -74.345391

Count Name: 11. Central Avenue and North Avenue
Site Code: 11
Start Date: 06/18/2022



Turning Movement Peak Hour Data Plot (11:45 AM)

13. Broad Street and Mountain Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965729, Location: 40.652919, -74.347123, Site Code: 13

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg / Direction	Mountain Avenue Southbound						Broad Street Eastbound					Broad Street Westbound						
Time	L	R	U	RR	**App**	Ped*	L	T	U	**App**	Ped*	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:00AM	0	0	0	101	**101**	13	91	73	0	**164**	0	100	7	0	0	**107**	14	**372**
11:15AM	0	0	0	105	**105**	12	92	89	0	**181**	0	93	7	0	0	**100**	3	**386**
11:30AM	0	0	0	100	**100**	12	90	97	0	**187**	0	92	8	0	0	**100**	4	**387**
11:45AM	0	0	0	101	**101**	23	93	103	0	**196**	0	111	13	0	0	**124**	6	**421**
Hourly Total	0	0	0	407	**407**	60	366	362	0	**728**	0	396	35	0	0	**431**	27	**1566**
12:00PM	0	0	0	114	**114**	10	105	85	0	**190**	0	112	10	0	0	**122**	8	**426**
12:15PM	1	0	0	114	**115**	12	99	96	0	**195**	0	90	5	0	0	**95**	3	**405**
12:30PM	0	0	0	81	**81**	10	94	84	0	**178**	0	126	11	0	0	**137**	11	**396**
12:45PM	0	0	0	105	**105**	12	82	83	0	**165**	0	95	13	0	0	**108**	4	**378**
Hourly Total	1	0	0	414	**415**	44	380	348	0	**728**	0	423	39	0	0	**462**	26	**1605**
1:00PM	0	0	0	111	**111**	15	87	76	0	**163**	0	104	11	0	0	**115**	12	**389**
1:15PM	0	0	0	94	**94**	16	96	81	0	**177**	0	101	11	0	1	**113**	2	**384**
1:30PM	0	0	0	95	**95**	18	89	92	0	**181**	0	91	12	0	0	**103**	4	**379**
1:45PM	0	0	0	97	**97**	8	92	67	0	**159**	0	94	14	0	0	**108**	5	**364**
Hourly Total	0	0	0	397	**397**	57	364	316	0	**680**	0	390	48	0	1	**439**	23	**1516**
Total	1	0	0	1218	**1219**	161	1110	1026	0	**2136**	0	1209	122	0	1	**1332**	76	**4687**
% Approach	0.1%	0%	0%	99.9%	**-**	-	52.0%	48.0%	0%	**-**	-	90.8%	9.2%	0%	0.1%	**-**	-	**-**
% Total	0%	0%	0%	26.0%	**26.0%**	-	23.7%	21.9%	0%	**45.6%**	-	25.8%	2.6%	0%	0%	**28.4%**	-	**-**
Lights	1	0	0	1195	**1196**	-	1096	1017	0	**2113**	-	1195	122	0	1	**1318**	-	4627
% Lights	100%	0%	0%	98.1%	**98.1%**	-	98.7%	99.1%	0%	**98.9%**	-	98.8%	100%	0%	100%	**98.9%**	-	98.7%
Articulated Trucks	0	0	0	5	**5**	-	1	1	0	**2**	-	3	0	0	0	**3**	-	10
% Articulated Trucks	0%	0%	0%	0.4%	**0.4%**	-	0.1%	0.1%	0%	**0.1%**	-	0.2%	0%	0%	0%	**0.2%**	-	0.2%
Buses and Single-Unit Trucks	0	0	0	18	**18**	-	13	8	0	**21**	-	11	0	0	0	**11**	-	50
% Buses and Single-Unit Trucks	0%	0%	0%	1.5%	**1.5%**	-	1.2%	0.8%	0%	**1.0%**	-	0.9%	0%	0%	0%	**0.8%**	-	1.1%
Pedestrians	-	-	-	-	-	142	-	-	-	-	0	-	-	-	-	-	67	
% Pedestrians	-	-	-	-	-	88.2%	-	-	-	-	-	-	-	-	-	-	88.2%	-
Bicycles on Crosswalk	-	-	-	-	-	19	-	-	-	-	0	-	-	-	-	-	9	
% Bicycles on Crosswalk	-	-	-	-	-	11.8%	-	-	-	-	-	-	-	-	-	-	11.8%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

13. Broad Street and Mountain Avenue - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965729, Location: 40.652919, -74.347123, Site Code: 13

Provided by: Imperial Traffic & Data Collection
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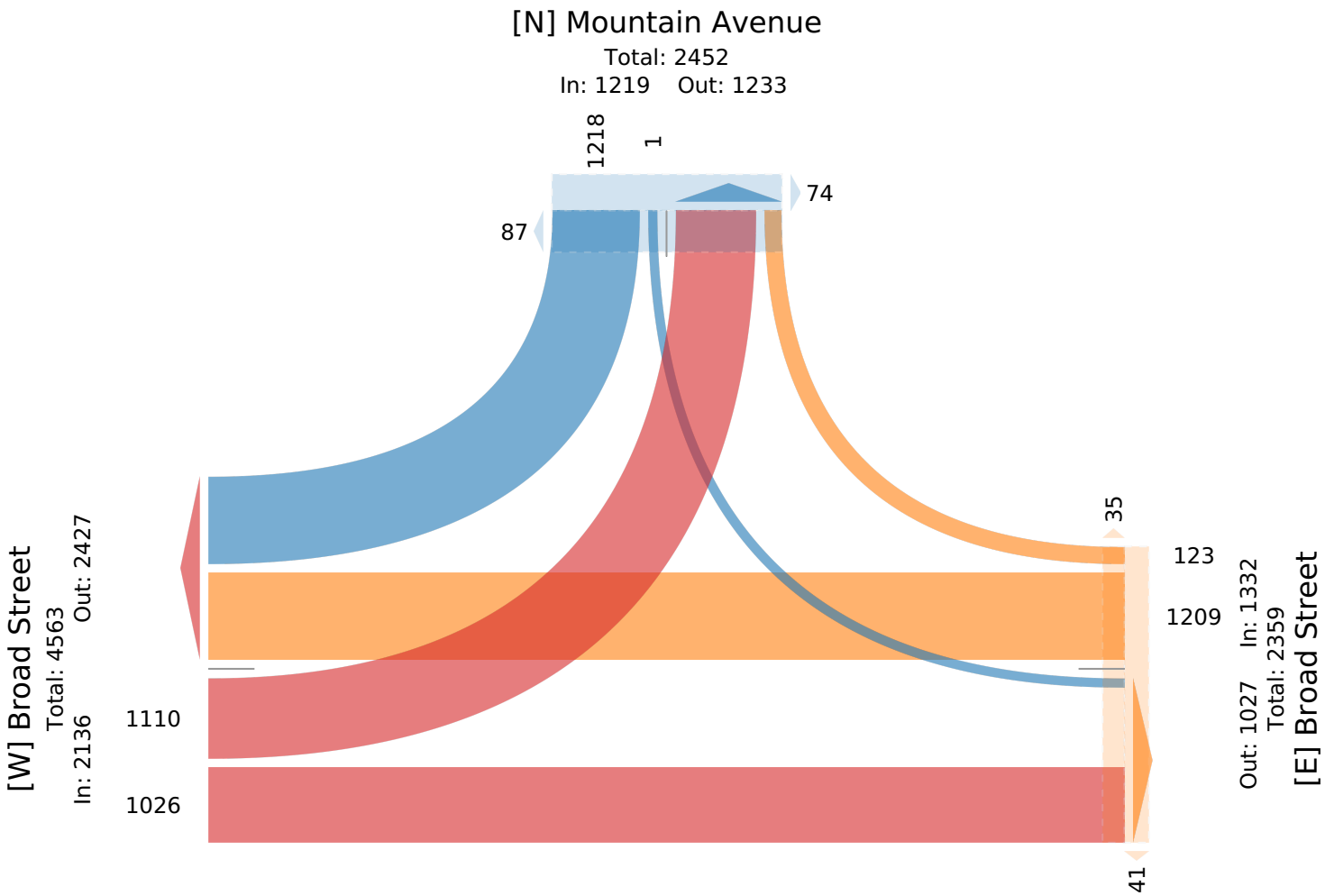

13. Broad Street and Mountain Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965729, Location: 40.652919, -74.347123, Site Code: 13

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg / Direction	Mountain Avenue Southbound						Broad Street Eastbound					Broad Street Westbound						
Time	L	R	U	RR	**App**	Ped*	L	T	U	**App**	Ped*	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 11:45AM	0	0	0	101	**101**	23	93	103	0	**196**	0	111	13	0	0	**124**	6	**421**
12:00PM	0	0	0	114	**114**	10	105	85	0	**190**	0	112	10	0	0	**122**	8	**426**
12:15PM	1	0	0	114	**115**	12	99	96	0	**195**	0	90	5	0	0	**95**	3	**405**
12:30PM	0	0	0	81	**81**	10	94	84	0	**178**	0	126	11	0	0	**137**	11	**396**
Total	1	0	0	410	**411**	55	391	368	0	**759**	0	439	39	0	0	**478**	28	**1648**
% Approach	0.2%	0%	0%	99.8%	**-**	-	51.5%	48.5%	0%	**-**	-	91.8%	8.2%	0%	0%	**-**	-	**-**
% Total	0.1%	0%	0%	24.9%	**24.9%**	-	23.7%	22.3%	0%	**46.1%**	-	26.6%	2.4%	0%	0%	**29.0%**	-	**-**
PHF	0.250	-	-	0.899	**0.893**	-	0.931	0.893	-	**0.968**	-	0.871	0.750	-	-	**0.872**	-	0.967
Lights	1	0	0	402	**403**	-	389	364	0	**753**	-	434	39	0	0	**473**	-	1629
% Lights	100%	0%	0%	98.0%	**98.1%**	-	99.5%	98.9%	0%	**99.2%**	-	98.9%	100%	0%	0%	**99.0%**	-	98.8%
Articulated Trucks	0	0	0	0	**0**	-	0	1	0	**1**	-	1	0	0	0	**1**	-	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.3%	0%	**0.1%**	-	0.2%	0%	0%	0%	**0.2%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	8	**8**	-	2	3	0	**5**	-	4	0	0	0	**4**	-	17
% Buses and Single-Unit Trucks	0%	0%	0%	2.0%	**1.9%**	-	0.5%	0.8%	0%	**0.7%**	-	0.9%	0%	0%	0%	**0.8%**	-	1.0%
Pedestrians	-	-	-	-	-	53	-	-	-	-	0	-	-	-	-	-	24	
% Pedestrians	-	-	-	-	-	96.4%	-	-	-	-	-	-	-	-	-	-	85.7%	-
Bicycles on Crosswalk	-	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	4	
% Bicycles on Crosswalk	-	-	-	-	-	3.6%	-	-	-	-	-	-	-	-	-	-	14.3%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

13. Broad Street and Mountain Avenue - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965729, Location: 40.652919, -74.347123, Site Code: 13

Provided by: Imperial Traffic & Data Collection
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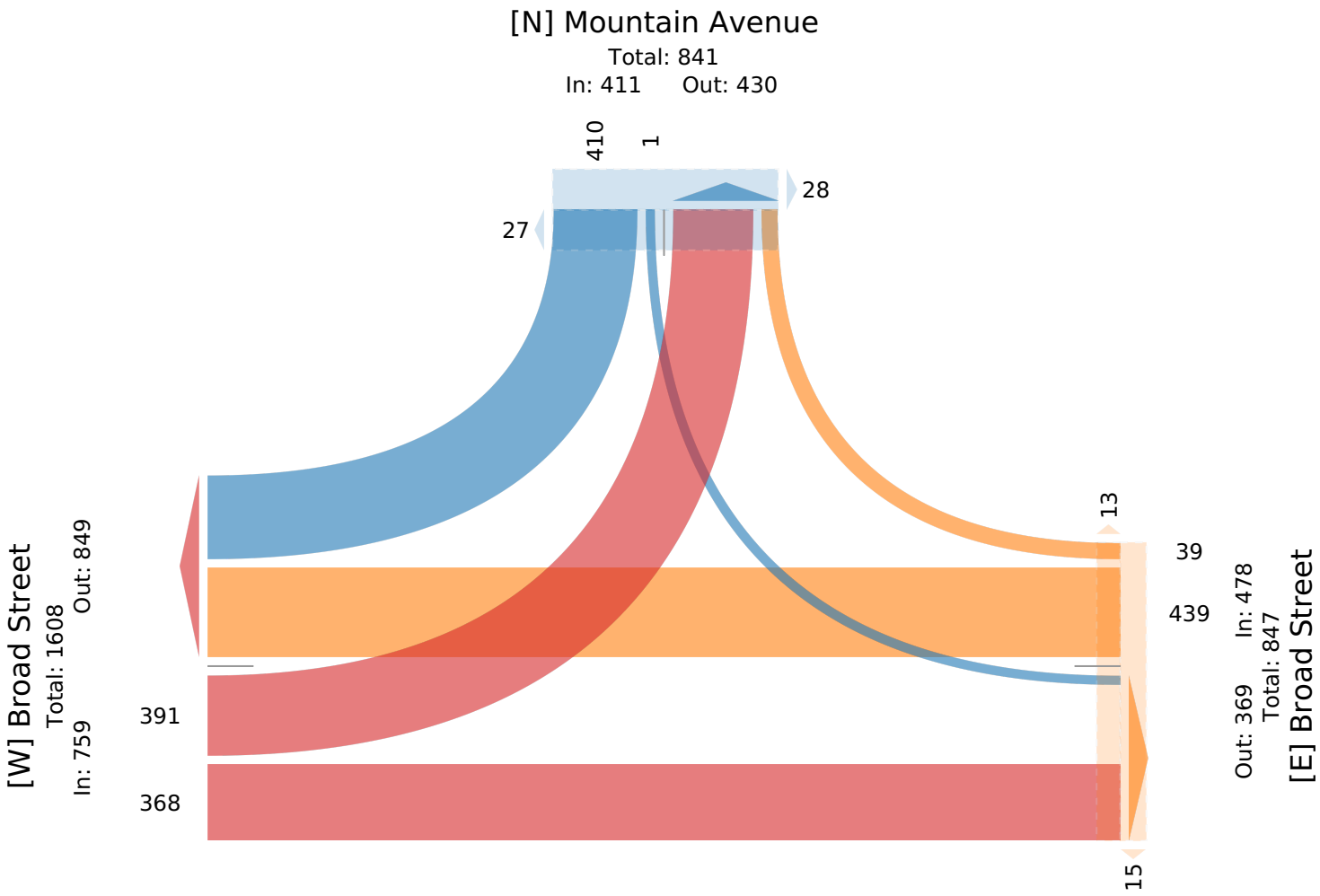
Cherry Hill, NJ, 08003, US



13. Broad Street and Mountain Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965729, Location: 40.652919, -74.347123, Site Code: 13

Provided by: Imperial Traffic & Data Collection
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Leg Direction	Mountain Avenue Southbound						Broad Street Eastbound					Broad Street Westbound						
Time	L	R	U	RR	**App**	Ped*	L	T	U	**App**	Ped*	T	R	U	RR	**App**	Ped*	**Int**
2022-06-18 1:00PM	0	0	0	111	**111**	15	87	76	0	**163**	0	104	11	0	0	**115**	12	**389**
1:15PM	0	0	0	94	**94**	16	96	81	0	**177**	0	101	11	0	1	**113**	2	**384**
1:30PM	0	0	0	95	**95**	18	89	92	0	**181**	0	91	12	0	0	**103**	4	**379**
1:45PM	0	0	0	97	**97**	8	92	67	0	**159**	0	94	14	0	0	**108**	5	**364**
Total	0	0	0	397	**397**	57	364	316	0	**680**	0	390	48	0	1	**439**	23	**1516**
% Approach	0%	0%	0%	100%	**-**	-	53.5%	46.5%	0%	**-**	-	88.8%	10.9%	0%	0.2%	**-**	-	**-**
% Total	0%	0%	0%	26.2%	**26.2%**	-	24.0%	20.8%	0%	**44.9%**	-	25.7%	3.2%	0%	0.1%	**29.0%**	-	**-**
PHF	-	-	-	0.894	**0.894**	-	0.948	0.859	-	**0.939**	-	0.938	0.857	-	0.250	**0.954**	-	0.974
Lights	0	0	0	394	**394**	-	358	314	0	**672**	-	386	48	0	1	**435**	-	1501
% Lights	0%	0%	0%	99.2%	**99.2%**	-	98.4%	99.4%	0%	**98.8%**	-	99.0%	100%	0%	100%	**99.1%**	-	99.0%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	**0**	-	1	0	0	0	**1**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0.3%	0%	0%	0%	**0.2%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	3	**3**	-	6	2	0	**8**	-	3	0	0	0	**3**	-	14
% Buses and Single-Unit Trucks	0%	0%	0%	0.8%	**0.8%**	-	1.6%	0.6%	0%	**1.2%**	-	0.8%	0%	0%	0%	**0.7%**	-	0.9%
Pedestrians	-	-	-	-	-	45	-	-	-	-	0	-	-	-	-	-	19	
% Pedestrians	-	-	-	-	-	78.9%	-	-	-	-	-	-	-	-	-	-	82.6%	-
Bicycles on Crosswalk	-	-	-	-	-	12	-	-	-	-	0	-	-	-	-	-	4	
% Bicycles on Crosswalk	-	-	-	-	-	21.1%	-	-	-	-	-	-	-	-	-	-	17.4%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

13. Broad Street and Mountain Avenue - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965729, Location: 40.652919, -74.347123, Site Code: 13

Provided by: Imperial Traffic & Data Collection
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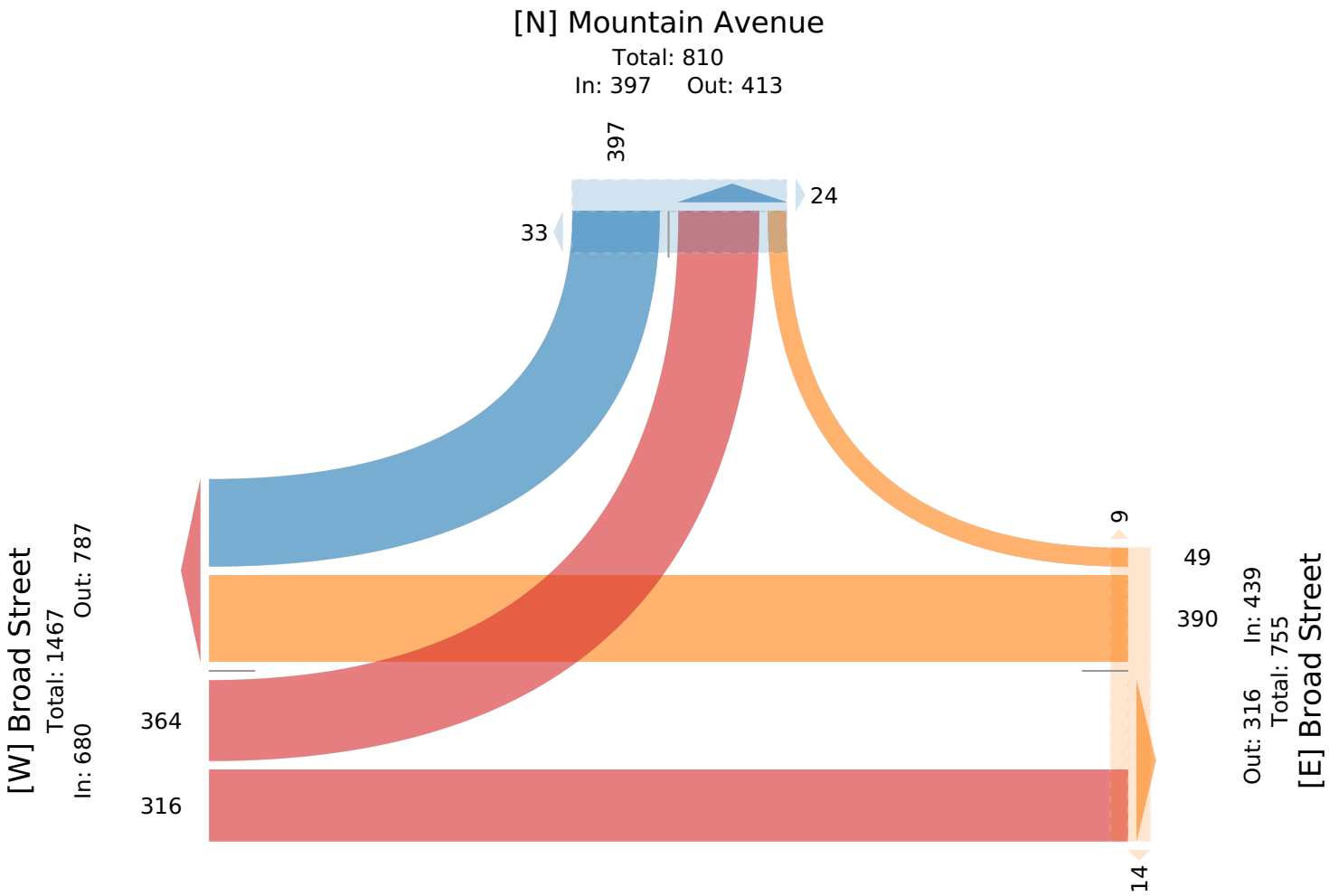

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Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.652919, -74.347123

Count Name: 13. Broad Street and Mountain Avenue
Site Code: 13
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	Broad Street Eastbound					Broad Street Westbound						Mountain Avenue Southbound						
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Right	Right on Red	Peds	App. Total	Int. Total
11:00 AM	0	91	73	0	164	0	100	7	0	14	107	0	0	0	101	13	101	372
11:15 AM	0	92	89	0	181	0	93	7	0	3	100	0	0	0	105	12	105	386
11:30 AM	0	90	97	0	187	0	92	8	0	4	100	0	0	0	100	12	100	387
11:45 AM	0	93	103	0	196	0	111	13	0	6	124	0	0	0	101	23	101	421
Hourly Total	0	366	362	0	728	0	396	35	0	27	431	0	0	0	407	60	407	1566
12:00 PM	0	105	85	0	190	0	112	10	0	8	122	0	0	0	114	10	114	426
12:15 PM	0	99	96	0	195	0	90	5	0	3	95	0	1	0	114	12	115	405
12:30 PM	0	94	84	0	178	0	126	11	0	11	137	0	0	0	81	10	81	396
12:45 PM	0	82	83	0	165	0	95	13	0	4	108	0	0	0	105	12	105	378
Hourly Total	0	380	348	0	728	0	423	39	0	26	462	0	1	0	414	44	415	1605
1:00 PM	0	87	76	0	163	0	104	11	0	12	115	0	0	0	111	15	111	389
1:15 PM	0	96	81	0	177	0	101	11	1	2	113	0	0	0	94	16	94	384
1:30 PM	0	89	92	0	181	0	91	12	0	4	103	0	0	0	95	18	95	379
1:45 PM	0	92	67	0	159	0	94	14	0	5	108	0	0	0	97	8	97	364
Hourly Total	0	364	316	0	680	0	390	48	1	23	439	0	0	0	397	57	397	1516
Grand Total	0	1110	1026	0	2136	0	1209	122	1	76	1332	0	1	0	1218	161	1219	4687
Approach %	0.0	52.0	48.0	-	-	0.0	90.8	9.2	0.1	-	-	0.0	0.1	0.0	99.9	-	-	-
Total %	0.0	23.7	21.9	-	45.6	0.0	25.8	2.6	0.0	-	28.4	0.0	0.0	0.0	26.0	-	26.0	-
Lights	0	1096	1017	-	2113	0	1195	122	1	-	1318	0	1	0	1195	-	1196	4627
% Lights	-	98.7	99.1	-	98.9	-	98.8	100.0	100.0	-	98.9	-	100.0	-	98.1	-	98.1	98.7
Mediums	0	13	8	-	21	0	11	0	0	-	11	0	0	0	18	-	18	50
% Mediums	-	1.2	0.8	-	1.0	-	0.9	0.0	0.0	-	0.8	-	0.0	-	1.5	-	1.5	1.1
Articulated Trucks	0	1	1	-	2	0	3	0	0	-	3	0	0	0	5	-	5	10
% Articulated Trucks	-	0.1	0.1	-	0.1	-	0.2	0.0	0.0	-	0.2	-	0.0	-	0.4	-	0.4	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	19	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	11.8	-	-	-	-	-	11.8	-	-
Pedestrians	-	-	-	0	-	-	-	-	-	67	-	-	-	-	-	142	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	88.2	-	-	-	-	-	88.2	-	-

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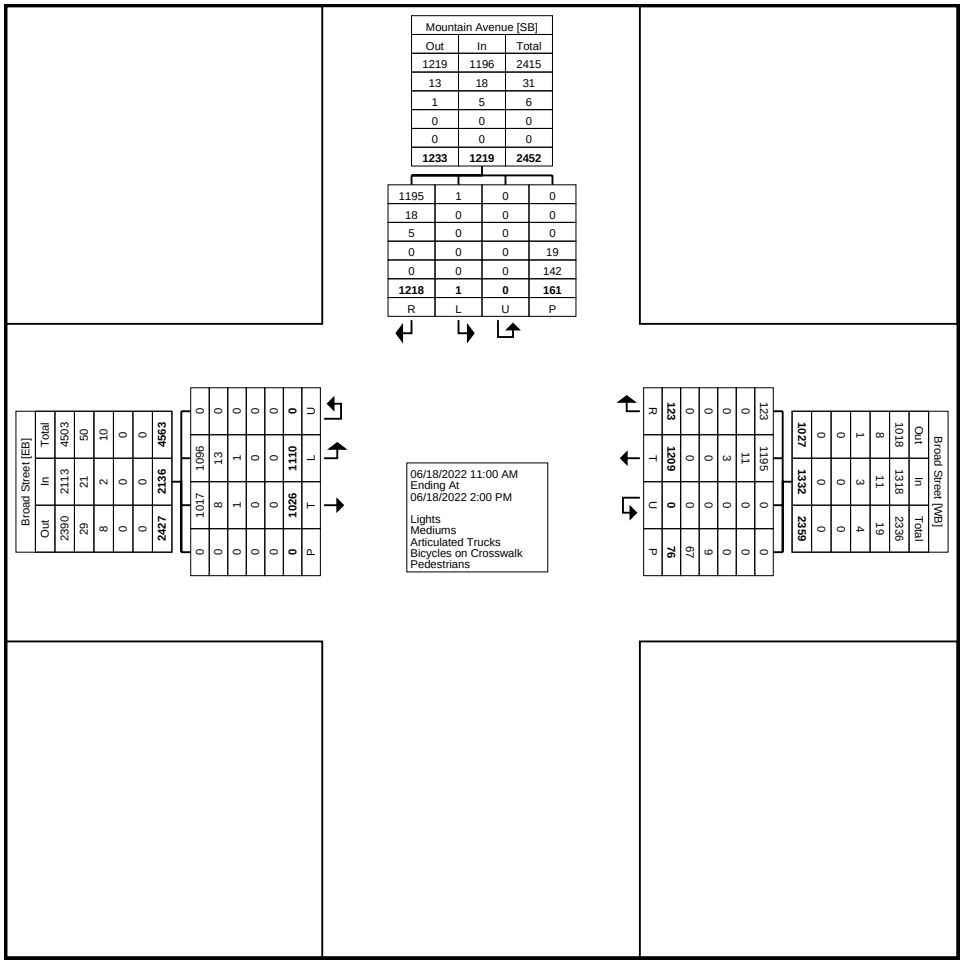
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.652919, -74.347123

Count Name: 13. Broad Street and Mountain Avenue
Site Code: 13
Start Date: 06/18/2022
Page No: 2



Turning Movement Data Plot

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Setup: NR/DR
Location: 40.652919, -74.347123

Count Name: 13. Broad Street and Mountain Avenue
Site Code: 13
Start Date: 06/18/2022
Page No: 3

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Broad Street Eastbound					Broad Street Westbound						Mountain Avenue Southbound						
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Right	Right on Red	Peds	App. Total	Int. Total
11:45 AM	0	93	103	0	196	0	111	13	0	6	124	0	0	0	101	23	101	421
12:00 PM	0	105	85	0	190	0	112	10	0	8	122	0	0	0	114	10	114	426
12:15 PM	0	99	96	0	195	0	90	5	0	3	95	0	1	0	114	12	115	405
12:30 PM	0	94	84	0	178	0	126	11	0	11	137	0	0	0	81	10	81	396
Total	0	391	368	0	759	0	439	39	0	28	478	0	1	0	410	55	411	1648
Approach %	0.0	51.5	48.5	-	-	0.0	91.8	8.2	0.0	-	-	0.0	0.2	0.0	99.8	-	-	-
Total %	0.0	23.7	22.3	-	46.1	0.0	26.6	2.4	0.0	-	29.0	0.0	0.1	0.0	24.9	-	24.9	-
PHF	0.000	0.931	0.893	-	0.968	0.000	0.871	0.750	0.000	-	0.872	0.000	0.250	0.000	0.899	-	0.893	0.967
Lights	0	389	364	-	753	0	434	39	0	-	473	0	1	0	402	-	403	1629
% Lights	-	99.5	98.9	-	99.2	-	98.9	100.0	-	-	99.0	-	100.0	-	98.0	-	98.1	98.8
Mediums	0	2	3	-	5	0	4	0	0	-	4	0	0	0	8	-	8	17
% Mediums	-	0.5	0.8	-	0.7	-	0.9	0.0	-	-	0.8	-	0.0	-	2.0	-	1.9	1.0
Articulated Trucks	0	0	1	-	1	0	1	0	0	-	1	0	0	0	0	-	0	2
% Articulated Trucks	-	0.0	0.3	-	0.1	-	0.2	0.0	-	-	0.2	-	0.0	-	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	14.3	-	-	-	-	-	3.6	-	-
Pedestrians	-	-	-	0	-	-	-	-	-	24	-	-	-	-	-	53	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	85.7	-	-	-	-	-	96.4	-	-

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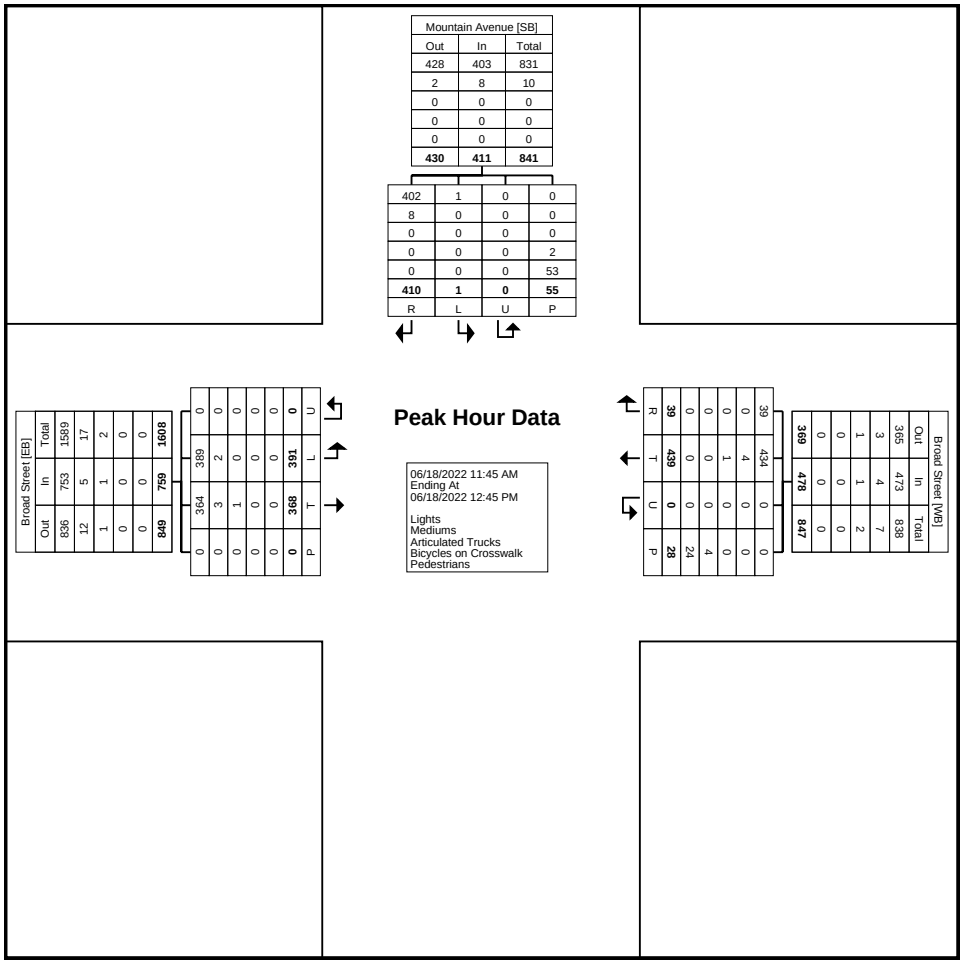

Turning Movement Peak Hour Data Plot (11:45 AM)

19. South Avenue and Boulevard - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965752, Location: 40.648909, -74.345889, Site Code: 19

Provided by: Imperial Traffic & Data Collection
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Leg	Boulevard						Driveway					South Avenue						South Avenue						
Direction	Northbound						Southbound					Eastbound						Westbound						
Time	L	T	R	U	App	Ped*	L	T	R	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-06-18 11:00AM	4	0	20	0	**24**	2	0	0	2	**2**	-	0	173	6	0	**179**	3	11	136	0	0	**147**	2	**352**
11:15AM	10	0	26	0	**36**	1	0	0	6	**6**	-	0	136	9	0	**145**	0	9	146	0	0	**155**	1	**342**
11:30AM	9	0	21	0	**30**	2	0	0	1	**1**	-	0	134	10	0	**144**	1	7	129	0	0	**136**	0	**311**
11:45AM	13	0	24	0	**37**	2	0	0	4	**4**	-	0	146	6	0	**152**	1	9	131	0	0	**140**	1	**333**
Hourly Total	36	0	91	0	**127**	7	0	0	13	**13**	-	0	589	31	0	**620**	5	36	542	0	0	**578**	4	**1338**
12:00PM	12	0	18	0	**30**	7	0	0	3	**3**	-	0	149	13	0	**162**	5	6	119	0	0	**125**	2	**320**
12:15PM	16	0	24	0	**40**	12	0	0	4	**4**	-	1	152	6	0	**159**	3	3	111	0	0	**114**	2	**317**
12:30PM	13	0	22	0	**35**	9	1	1	9	**11**	-	0	142	9	0	**151**	3	9	113	0	0	**122**	1	**319**
12:45PM	4	0	29	0	**33**	5	0	0	5	**5**	-	0	156	11	0	**167**	2	8	129	0	0	**137**	1	**342**
Hourly Total	45	0	93	0	**138**	33	1	1	21	**23**	-	1	599	39	0	**639**	13	26	472	0	0	**498**	6	**1298**
1:00PM	17	0	31	0	**48**	1	0	0	7	**7**	-	0	138	11	0	**149**	4	8	123	0	0	**131**	2	**335**
1:15PM	8	0	22	0	**30**	3	0	0	2	**2**	-	0	154	11	0	**165**	1	7	139	0	0	**146**	0	**343**
1:30PM	9	0	19	0	**28**	0	0	0	3	**3**	-	0	130	11	0	**141**	2	7	112	0	0	**119**	2	**291**
1:45PM	5	0	18	0	**23**	1	0	0	10	**10**	-	0	144	7	0	**151**	9	7	108	0	0	**115**	2	**299**
Hourly Total	39	0	90	0	**129**	5	0	0	22	**22**	-	0	566	40	0	**606**	16	29	482	0	0	**511**	6	**1268**
Total	120	0	274	0	**394**	45	1	1	56	**58**	-	1	1754	110	0	**1865**	34	91	1496	0	0	**1587**	16	**3904**
% Approach	30.5%	0%	69.5%	0%	**-**	-	1.7%	1.7%	96.6%	**-**	-	0.1%	94.0%	5.9%	0%	**-**	-	5.7%	94.3%	0%	0%	**-**	-	-
% Total	3.1%	0%	7.0%	0%	**10.1%**	-	0%	0%	1.4%	**1.5%**	-	0%	44.9%	2.8%	0%	**47.8%**	-	2.3%	38.3%	0%	0%	**40.7%**	-	-
Lights	119	0	274	0	**393**	-	1	1	56	**58**	-	1	1734	109	0	**1844**	-	90	1484	0	0	**1574**	-	3869
% Lights	99.2%	0%	100%	0%	**99.7%**	-	100%	100%	100%	**100%**	-	100%	98.9%	99.1%	0%	**98.9%**	-	98.9%	99.2%	0%	0%	**99.2%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0.1%	0%	0%	**0.1%**	-	0%	0%	0%	0%	**0%**	-	0%
Buses and Single-Unit Trucks	1	0	0	0	**1**	-	0	0	0	**0**	-	0	19	1	0	**20**	-	1	12	0	0	**13**	-	34
% Buses and Single-Unit Trucks	0.8%	0%	0%	0%	**0.3%**	-	0%	0%	0%	**0%**	-	0%	1.1%	0.9%	0%	**1.1%**	-	1.1%	0.8%	0%	0%	**0.8%**	-	0.9%
Pedestrians	-	-	-	-	-	42	-	-	-	-	0	-	-	-	-	-	32	-	-	-	-	-	16	
% Pedestrians	-	-	-	-	-	93.3%	-	-	-	-	-	-	-	-	-	-	94.1%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	6.7%	-	-	-	-	-	-	-	-	-	-	5.9%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

19. South Avenue and Boulevard - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965752, Location: 40.648909, -74.345889, Site Code: 19

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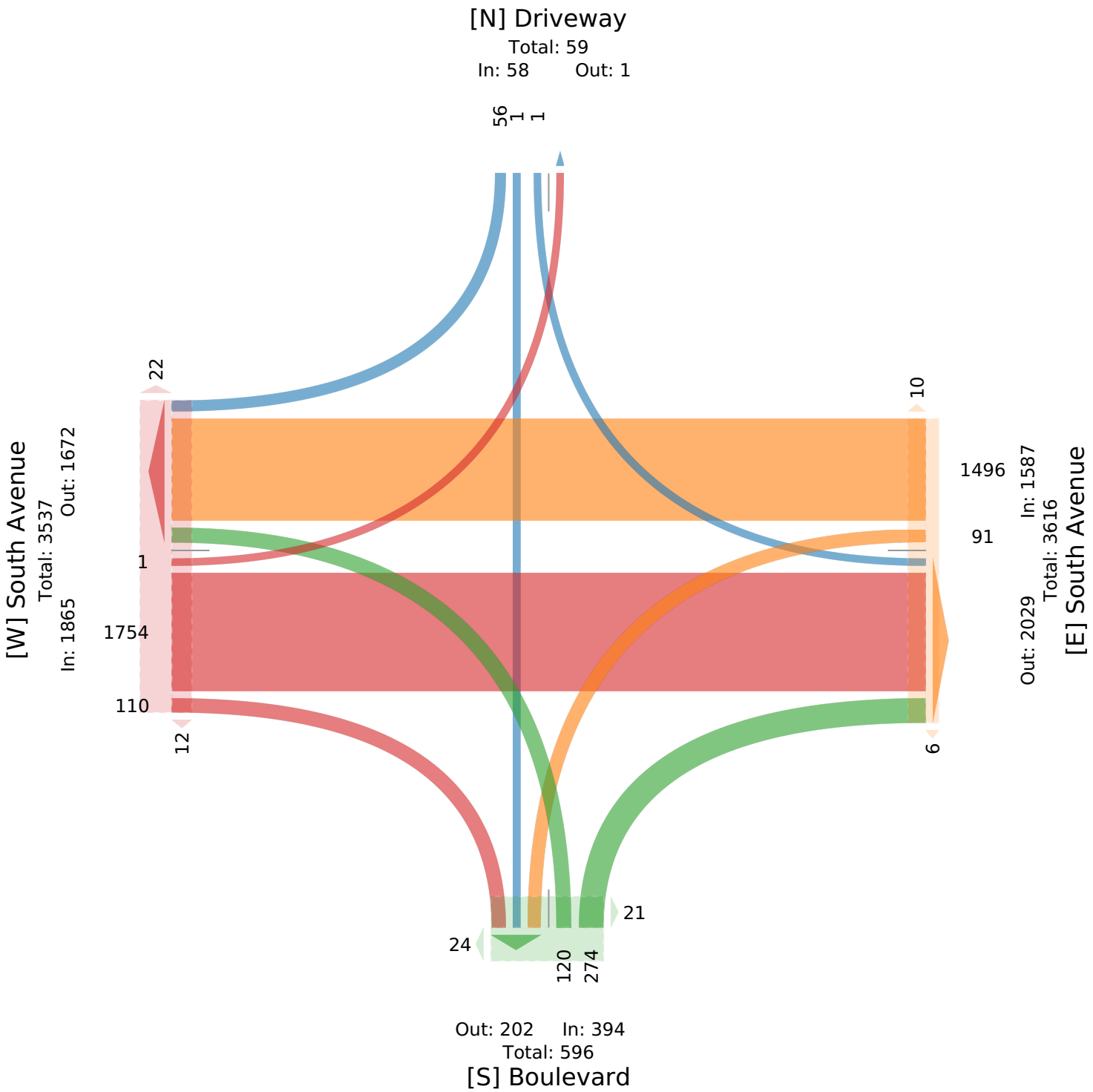
PO Box 4637,
Cherry Hill, NJ, 08003, US



19. South Avenue and Boulevard - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12:30 PM - 1:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965752, Location: 40.648909, -74.345889, Site Code: 19

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

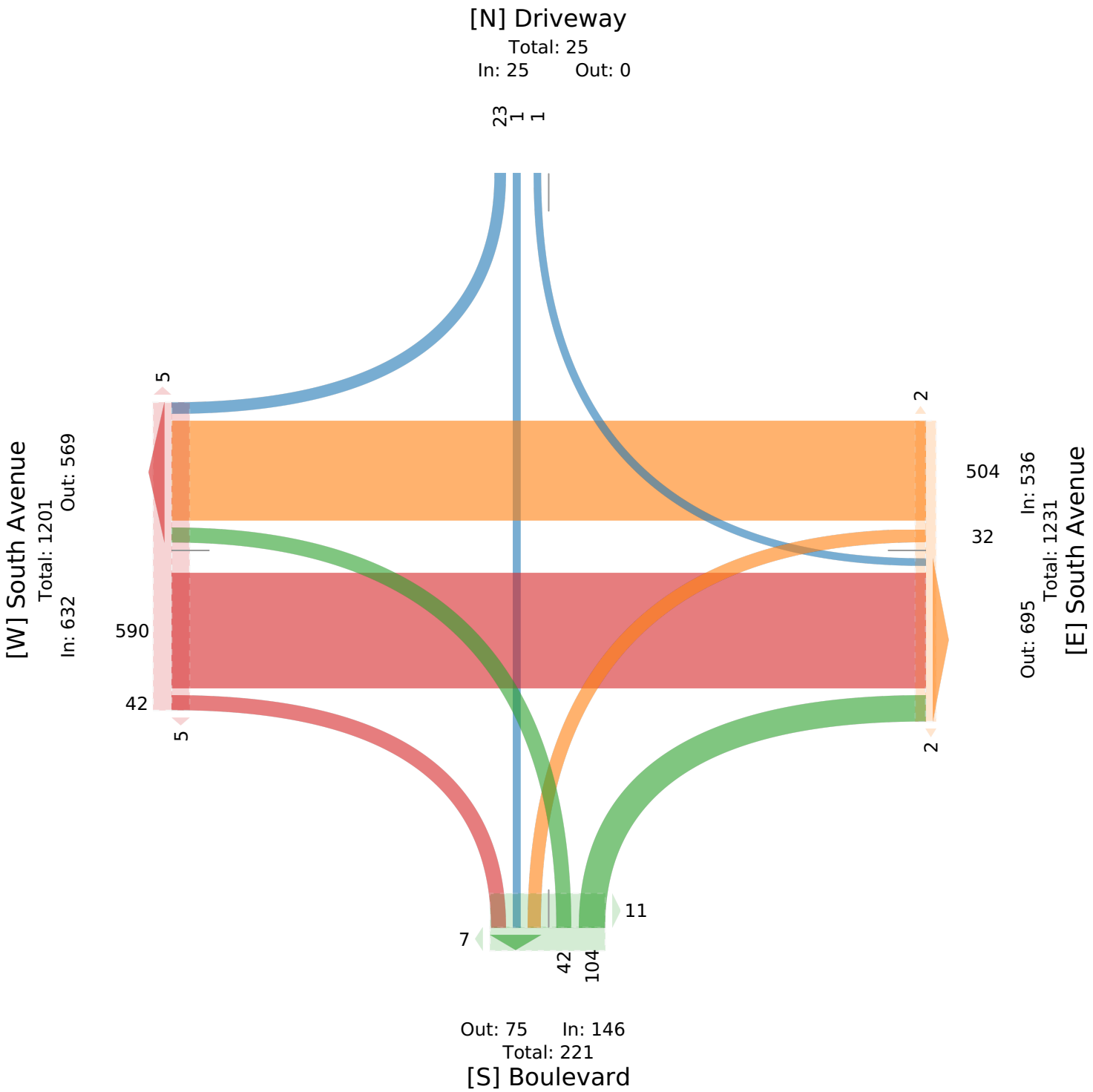
Leg / Direction	Boulevard Northbound						Driveway Southbound					South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 12:30PM	13	0	22	0	**35**	9	1	1	9	**11**	-	0	142	9	0	**151**	3	9	113	0	0	**122**	1	**319**
12:45PM	4	0	29	0	**33**	5	0	0	5	**5**	-	0	156	11	0	**167**	2	8	129	0	0	**137**	1	**342**
1:00PM	17	0	31	0	**48**	1	0	0	7	**7**	-	0	138	11	0	**149**	4	8	123	0	0	**131**	2	**335**
1:15PM	8	0	22	0	**30**	3	0	0	2	**2**	-	0	154	11	0	**165**	1	7	139	0	0	**146**	0	**343**
Total	42	0	104	0	**146**	18	1	1	23	**25**	-	0	590	42	0	**632**	10	32	504	0	0	**536**	4	**1339**
% Approach	28.8%	0%	71.2%	0%	**-**	-	4.0%	4.0%	92.0%	**-**	-	0%	93.4%	6.6%	0%	**-**	-	6.0%	94.0%	0%	0%	**-**	-	-
% Total	3.1%	0%	7.8%	0%	**10.9%**	-	0.1%	0.1%	1.7%	**1.9%**	-	0%	44.1%	3.1%	0%	**47.2%**	-	2.4%	37.6%	0%	0%	**40.0%**	-	-
PHF	0.618	-	0.839	-	**0.760**	-	0.250	0.250	0.639	**0.568**	-	-	0.946	0.955	-	**0.946**	-	0.889	0.906	-	-	**0.918**	-	0.976
Lights	41	0	104	0	**145**	-	1	1	23	**25**	-	0	583	41	0	**624**	-	32	501	0	0	**533**	-	1327
% Lights	97.6%	0%	100%	0%	**99.3%**	-	100%	100%	100%	**100%**	-	0%	98.8%	97.6%	0%	**98.7%**	-	100%	99.4%	0%	0%	**99.4%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Buses and Single-Unit Trucks	1	0	0	0	**1**	-	0	0	0	**0**	-	0	7	1	0	**8**	-	0	3	0	0	**3**	-	12
% Buses and Single-Unit Trucks	2.4%	0%	0%	0%	**0.7%**	-	0%	0%	0%	**0%**	-	0%	1.2%	2.4%	0%	**1.3%**	-	0%	0.6%	0%	0%	**0.6%**	-	0.9%
Pedestrians	-	-	-	-	-	18	-	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	4	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	90.0%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	10.0%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

19. South Avenue and Boulevard - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12:30 PM - 1:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965752, Location: 40.648909, -74.345889, Site Code: 19

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



19. South Avenue and Boulevard - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965752, Location: 40.648909, -74.345889, Site Code: 19

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

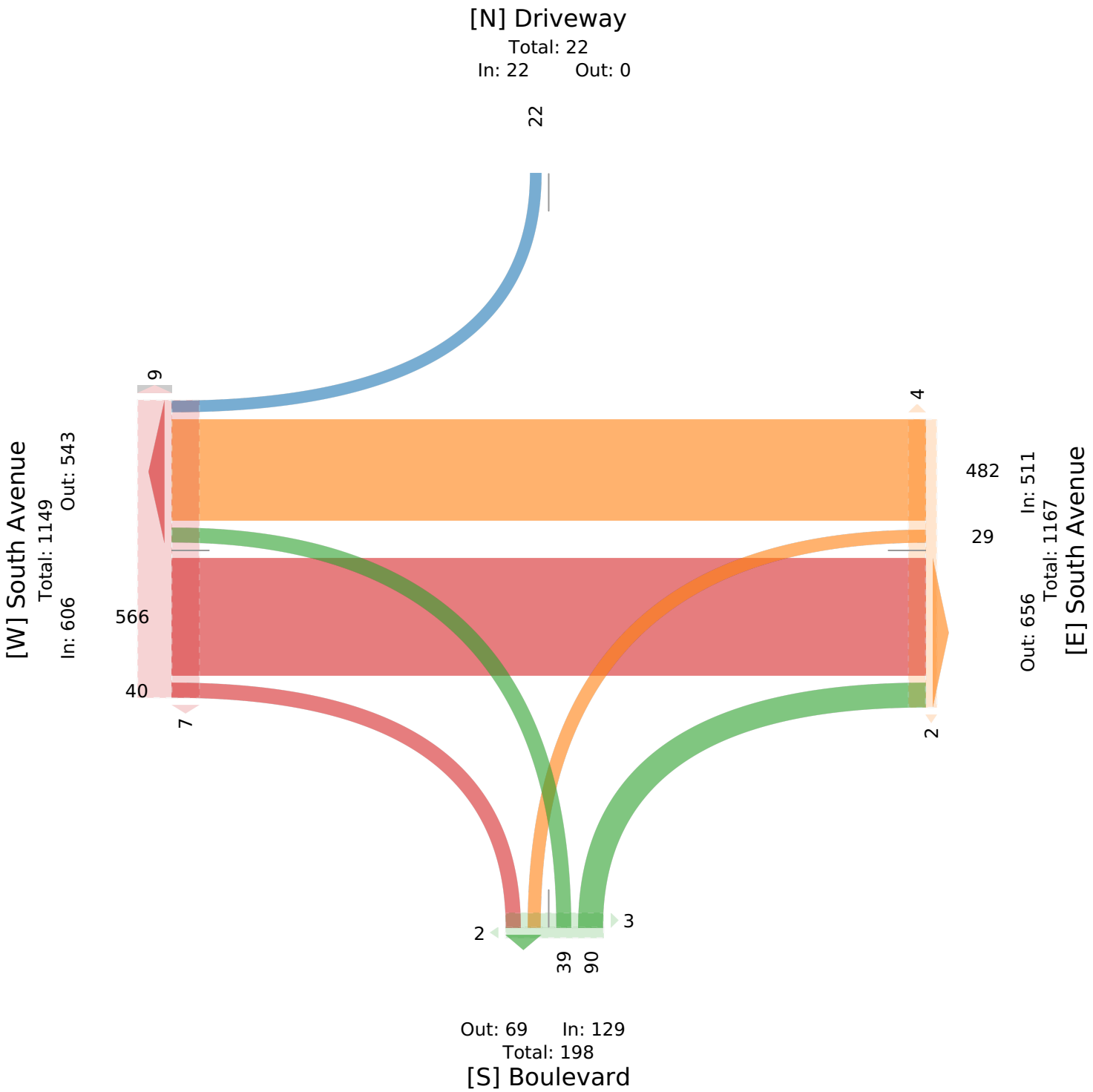
Leg Direction	Boulevard Northbound						Driveway Southbound					South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	17	0	31	0	**48**	1	0	0	7	**7**	-	0	138	11	0	**149**	4	8	123	0	0	**131**	2	**335**
1:15PM	8	0	22	0	**30**	3	0	0	2	**2**	-	0	154	11	0	**165**	1	7	139	0	0	**146**	0	**343**
1:30PM	9	0	19	0	**28**	0	0	0	3	**3**	-	0	130	11	0	**141**	2	7	112	0	0	**119**	2	**291**
1:45PM	5	0	18	0	**23**	1	0	0	10	**10**	-	0	144	7	0	**151**	9	7	108	0	0	**115**	2	**299**
Total	39	0	90	0	**129**	5	0	0	22	**22**	-	0	566	40	0	**606**	16	29	482	0	0	**511**	6	**1268**
% Approach	30.2%	0%	69.8%	0%	**-**	-	0%	0%	100%	**-**	-	0%	93.4%	6.6%	0%	**-**	-	5.7%	94.3%	0%	0%	**-**	-	**-**
% Total	3.1%	0%	7.1%	0%	**10.2%**	-	0%	0%	1.7%	**1.7%**	-	0%	44.6%	3.2%	0%	**47.8%**	-	2.3%	38.0%	0%	0%	**40.3%**	-	**-**
PHF	0.574	-	0.726	-	**0.672**	-	-	-	0.550	**0.550**	-	-	0.919	0.909	-	**0.918**	-	0.906	0.867	-	-	**0.875**	-	0.924
Lights	38	0	90	0	**128**	-	0	0	22	**22**	-	0	559	40	0	**599**	-	29	478	0	0	**507**	-	1256
% Lights	97.4%	0%	100%	0%	**99.2%**	-	0%	0%	100%	**100%**	-	0%	98.8%	100%	0%	**98.8%**	-	100%	99.2%	0%	0%	**99.2%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	1	0	0	0	**1**	-	0	0	0	**0**	-	0	6	0	0	**6**	-	0	4	0	0	**4**	-	11
% Buses and Single-Unit Trucks	2.6%	0%	0%	0%	**0.8%**	-	0%	0%	0%	**0%**	-	0%	1.1%	0%	0%	**1.0%**	-	0%	0.8%	0%	0%	**0.8%**	-	0.9%
Pedestrians	-	-	-	-	-	5	-	-	-	-	0	-	-	-	-	-	15	-	-	-	-	-	6	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	93.8%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	6.3%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

19. South Avenue and Boulevard - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965752, Location: 40.648909, -74.345889, Site Code: 19

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



Imperial Traffic & Data Collection
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PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648909, -74.345889

Count Name: 19. South Avenue and Boulevard
Site Code: 19
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	South Avenue Eastbound						South Avenue Westbound						Boulevard Northbound						Driveway Southbound				
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	App. Total	Int. Total
11:00 AM	0	0	173	6	3	179	0	11	136	0	2	147	0	4	0	20	2	24	0	0	2	2	352
11:15 AM	0	0	136	9	0	145	0	9	146	0	1	155	0	10	0	26	1	36	0	0	6	6	342
11:30 AM	0	0	134	10	1	144	0	7	129	0	0	136	0	9	0	21	2	30	0	0	1	1	311
11:45 AM	0	0	146	6	1	152	0	9	131	0	1	140	0	13	0	24	2	37	0	0	4	4	333
Hourly Total	0	0	589	31	5	620	0	36	542	0	4	578	0	36	0	91	7	127	0	0	13	13	1338
12:00 PM	0	0	149	13	5	162	0	6	119	0	2	125	0	12	0	18	7	30	0	0	3	3	320
12:15 PM	0	1	152	6	3	159	0	3	111	0	2	114	0	16	0	24	12	40	0	0	4	4	317
12:30 PM	0	0	142	9	3	151	0	9	113	0	1	122	0	13	0	22	9	35	1	1	9	11	319
12:45 PM	0	0	156	11	2	167	0	8	129	0	1	137	0	4	0	29	5	33	0	0	5	5	342
Hourly Total	0	1	599	39	13	639	0	26	472	0	6	498	0	45	0	93	33	138	1	1	21	23	1298
1:00 PM	0	0	138	11	4	149	0	8	123	0	2	131	0	17	0	31	1	48	0	0	7	7	335
1:15 PM	0	0	154	11	1	165	0	7	139	0	0	146	0	8	0	22	3	30	0	0	2	2	343
1:30 PM	0	0	130	11	2	141	0	7	112	0	2	119	0	9	0	19	0	28	0	0	3	3	291
1:45 PM	0	0	144	7	9	151	0	7	108	0	2	115	0	5	0	18	1	23	0	0	10	10	299
Hourly Total	0	0	566	40	16	606	0	29	482	0	6	511	0	39	0	90	5	129	0	0	22	22	1268
Grand Total	0	1	1754	110	34	1865	0	91	1496	0	16	1587	0	120	0	274	45	394	1	1	56	58	3904
Approach %	0.0	0.1	94.0	5.9	-	-	0.0	5.7	94.3	0.0	-	-	0.0	30.5	0.0	69.5	-	-	1.7	1.7	96.6	-	-
Total %	0.0	0.0	44.9	2.8	-	47.8	0.0	2.3	38.3	0.0	-	40.7	0.0	3.1	0.0	7.0	-	10.1	0.0	0.0	1.4	1.5	-
Lights	0	1	1734	109	-	1844	0	90	1484	0	-	1574	0	119	0	274	-	393	1	1	56	58	3869
% Lights	-	100.0	98.9	99.1	-	98.9	-	98.9	99.2	-	-	99.2	-	99.2	-	100.0	-	99.7	100.0	100.0	100.0	100.0	99.1
Mediums	0	0	19	1	-	20	0	1	12	0	-	13	0	1	0	0	-	1	0	0	0	0	34
% Mediums	-	0.0	1.1	0.9	-	1.1	-	1.1	0.8	-	-	0.8	-	0.8	-	0.0	-	0.3	0.0	0.0	0.0	0.0	0.9
Articulated Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	1
% Articulated Trucks	-	0.0	0.1	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
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	-
% Bicycles on Crosswalk	-	-	-	-	5.9	-	-	-	-	-	0.0	-	-	-	-	-	6.7	-	-	-	-	-	-
Pedestrians	-	-	-	-	32	-	-	-	-	-	16	-	-	-	-	-	42	-	-	-	-	-	-
% Pedestrians	-	-	-	-	94.1	-	-	-	-	-	100.0	-	-	-	-	-	93.3	-	-	-	-	-	-

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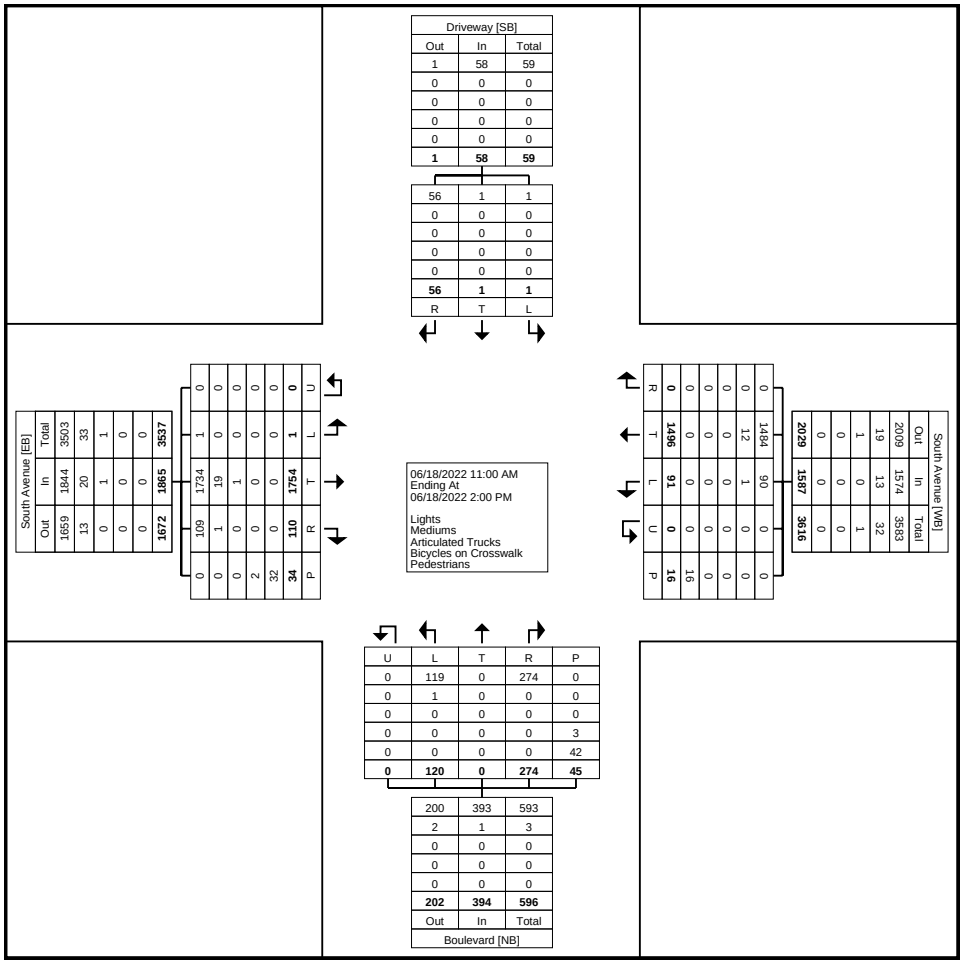
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648909, -74.345889

Count Name: 19. South Avenue and Boulevard
Site Code: 19
Start Date: 06/18/2022



Turning Movement Data Plot

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Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648909, -74.345889

Count Name: 19. South Avenue and Boulevard
Site Code: 19
Start Date: 06/18/2022
Page No: 3

Turning Movement Peak Hour Data (12:30 PM)

Start Time	South Avenue Eastbound						South Avenue Westbound						Boulevard Northbound						Driveway Southbound				
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	App. Total	Int. Total
12:30 PM	0	0	142	9	3	151	0	9	113	0	1	122	0	13	0	22	9	35	1	1	9	11	319
12:45 PM	0	0	156	11	2	167	0	8	129	0	1	137	0	4	0	29	5	33	0	0	5	5	342
1:00 PM	0	0	138	11	4	149	0	8	123	0	2	131	0	17	0	31	1	48	0	0	7	7	335
1:15 PM	0	0	154	11	1	165	0	7	139	0	0	146	0	8	0	22	3	30	0	0	2	2	343
Total	0	0	590	42	10	632	0	32	504	0	4	536	0	42	0	104	18	146	1	1	23	25	1339
Approach %	0.0	0.0	93.4	6.6	-	-	0.0	6.0	94.0	0.0	-	-	0.0	28.8	0.0	71.2	-	-	4.0	4.0	92.0	-	-
Total %	0.0	0.0	44.1	3.1	-	47.2	0.0	2.4	37.6	0.0	-	40.0	0.0	3.1	0.0	7.8	-	10.9	0.1	0.1	1.7	1.9	-
PHF	0.000	0.000	0.946	0.955	-	0.946	0.000	0.889	0.906	0.000	-	0.918	0.000	0.618	0.000	0.839	-	0.760	0.250	0.250	0.639	0.568	0.976
Lights	0	0	583	41	-	624	0	32	501	0	-	533	0	41	0	104	-	145	1	1	23	25	1327
% Lights	-	-	98.8	97.6	-	98.7	-	100.0	99.4	-	-	99.4	-	97.6	-	100.0	-	99.3	100.0	100.0	100.0	100.0	99.1
Mediums	0	0	7	1	-	8	0	0	3	0	-	3	0	1	0	0	-	1	0	0	0	0	12
% Mediums	-	-	1.2	2.4	-	1.3	-	0.0	0.6	-	-	0.6	-	2.4	-	0.0	-	0.7	0.0	0.0	0.0	0.0	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0
% Articulated Trucks	-	-	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
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-
% Bicycles on Crosswalk	-	-	-	-	10.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	4	-	-	-	-	-	18	-	-	-	-	-	-
% Pedestrians	-	-	-	-	90.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-

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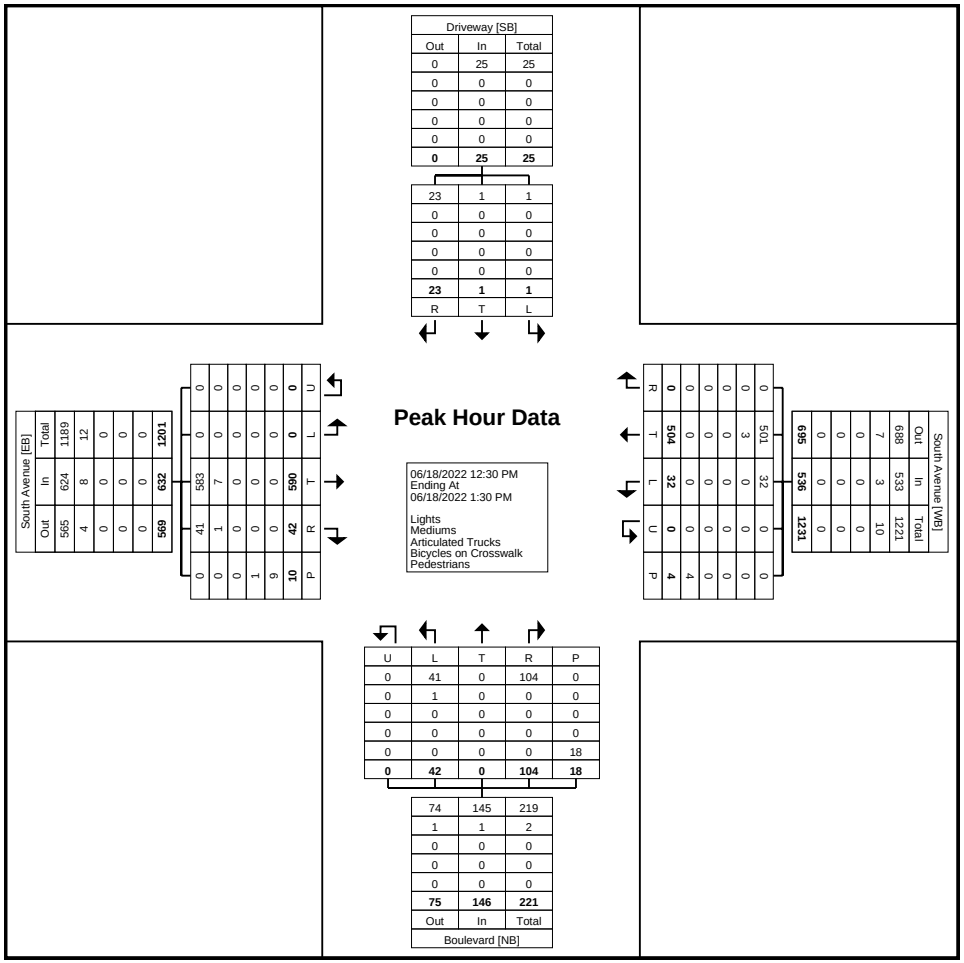


Turning Movement Peak Hour Data Plot (12:30 PM)

20. South Avenue and east of Boulevard - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965751, Location: 40.649075, -74.344837, Site Code: 20

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

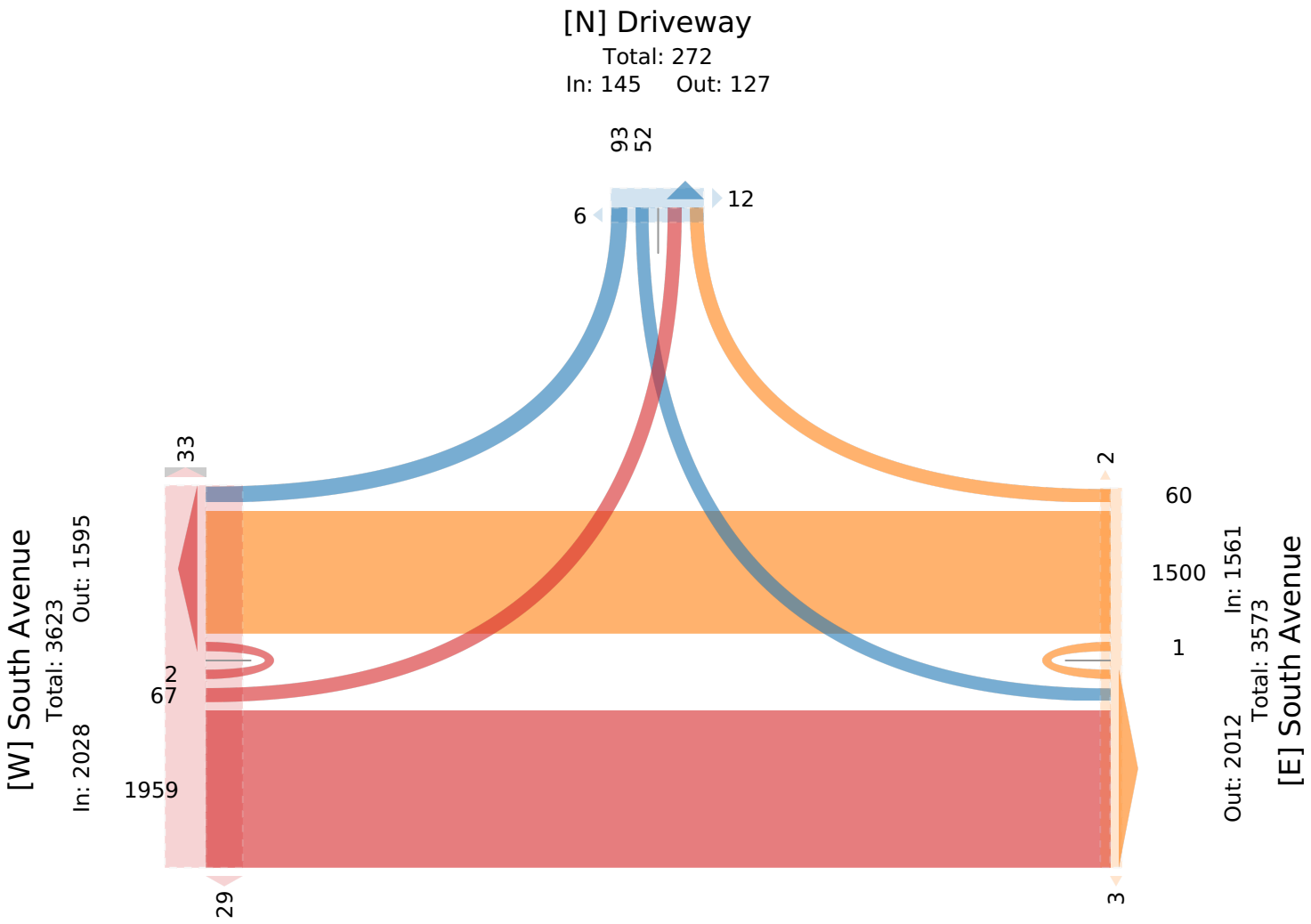
Leg Direction	Driveway Southbound					South Avenue Eastbound					South Avenue Westbound					
Time	L	R	U	**App**	Ped*	L	T	U	**App**	Ped*	T	R	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	3	9	0	**12**	2	5	188	0	**193**	1	139	4	0	**143**	0	**348**
11:15AM	3	12	0	**15**	2	7	155	0	**162**	5	142	3	0	**145**	0	**322**
11:30AM	6	9	0	**15**	0	6	152	1	**159**	5	129	3	0	**132**	1	**306**
11:45AM	6	7	0	**13**	1	2	160	0	**162**	1	132	6	0	**138**	0	**313**
Hourly Total	18	37	0	**55**	5	20	655	1	**676**	12	542	16	0	**558**	1	**1289**
12:00PM	4	10	0	**14**	1	5	162	0	**167**	3	115	6	0	**121**	1	**302**
12:15PM	6	10	0	**16**	2	8	171	0	**179**	4	104	9	0	**113**	0	**308**
12:30PM	3	9	0	**12**	1	10	155	0	**165**	11	114	6	0	**120**	0	**297**
12:45PM	6	8	0	**14**	3	3	180	0	**183**	7	133	6	1	**140**	1	**337**
Hourly Total	19	37	0	**56**	7	26	668	0	**694**	25	466	27	1	**494**	2	**1244**
1:00PM	2	4	0	**6**	0	3	162	0	**165**	5	123	5	0	**128**	0	**299**
1:15PM	4	7	0	**11**	1	8	170	0	**178**	14	142	7	0	**149**	0	**338**
1:30PM	7	4	0	**11**	1	3	150	1	**154**	3	114	4	0	**118**	1	**283**
1:45PM	2	4	0	**6**	4	7	154	0	**161**	3	113	1	0	**114**	1	**281**
Hourly Total	15	19	0	**34**	6	21	636	1	**658**	25	492	17	0	**509**	2	**1201**
Total	52	93	0	**145**	18	67	1959	2	**2028**	62	1500	60	1	**1561**	5	**3734**
% Approach	35.9%	64.1%	0%	**-**	-	3.3%	96.6%	0.1%	**-**	-	96.1%	3.8%	0.1%	**-**	-	**-**
% Total	1.4%	2.5%	0%	**3.9%**	-	1.8%	52.5%	0.1%	**54.3%**	-	40.2%	1.6%	0%	**41.8%**	-	**-**
Lights	52	93	0	**145**	-	66	1941	2	**2009**	-	1485	60	1	**1546**	-	3700
% Lights	100%	100%	0%	**100%**	-	98.5%	99.1%	100%	**99.1%**	-	99.0%	100%	100%	**99.0%**	-	99.1%
Articulated Trucks	0	0	0	**0**	-	0	1	0	**1**	-	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	**0%**	-	0%	0.1%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Buses and Single-Unit Trucks	0	0	0	**0**	-	1	17	0	**18**	-	15	0	0	**15**	-	33
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	-	1.5%	0.9%	0%	**0.9%**	-	1.0%	0%	0%	**1.0%**	-	0.9%
Pedestrians	-	-	-	-	17	-	-	-	-	62	-	-	-	-	5	
% Pedestrians	-	-	-	-	94.4%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	5.6%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

20. South Avenue and east of Boulevard - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965751, Location: 40.649075, -74.344837, Site Code: 20

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



20. South Avenue and east of Boulevard - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965751, Location: 40.649075, -74.344837, Site Code: 20

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Driveway Southbound					South Avenue Eastbound					South Avenue Westbound					
Time	L	R	U	**App**	Ped*	L	T	U	**App**	Ped*	T	R	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	3	9	0	**12**	2	5	188	0	**193**	1	139	4	0	**143**	0	**348**
11:15AM	3	12	0	**15**	2	7	155	0	**162**	5	142	3	0	**145**	0	**322**
11:30AM	6	9	0	**15**	0	6	152	1	**159**	5	129	3	0	**132**	1	**306**
11:45AM	6	7	0	**13**	1	2	160	0	**162**	1	132	6	0	**138**	0	**313**
Total	18	37	0	**55**	5	20	655	1	**676**	12	542	16	0	**558**	1	**1289**
% Approach	32.7%	67.3%	0%	**-**	-	3.0%	96.9%	0.1%	**-**	-	97.1%	2.9%	0%	**-**	-	**-**
% Total	1.4%	2.9%	0%	**4.3%**	-	1.6%	50.8%	0.1%	**52.4%**	-	42.0%	1.2%	0%	**43.3%**	-	**-**
PHF	0.750	0.771	-	**0.917**	-	0.714	0.871	0.250	**0.876**	-	0.954	0.667	-	**0.962**	-	0.926
Lights	18	37	0	**55**	-	20	649	1	**670**	-	536	16	0	**552**	-	1277
% Lights	100%	100%	0%	**100%**	-	100%	99.1%	100%	**99.1%**	-	98.9%	100%	0%	**98.9%**	-	99.1%
Articulated Trucks	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Articulated Trucks	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Buses and Single-Unit Trucks	0	0	0	**0**	-	0	6	0	**6**	-	6	0	0	**6**	-	12
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	-	0%	0.9%	0%	**0.9%**	-	1.1%	0%	0%	**1.1%**	-	0.9%
Pedestrians	-	-	-	-	4	-	-	-	-	12	-	-	-	-	1	
% Pedestrians	-	-	-	-	80.0%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	20.0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

20. South Avenue and east of Boulevard - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11 AM - 12 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965751, Location: 40.649075, -74.344837, Site Code: 20

Provided by: Imperial Traffic & Data Collection
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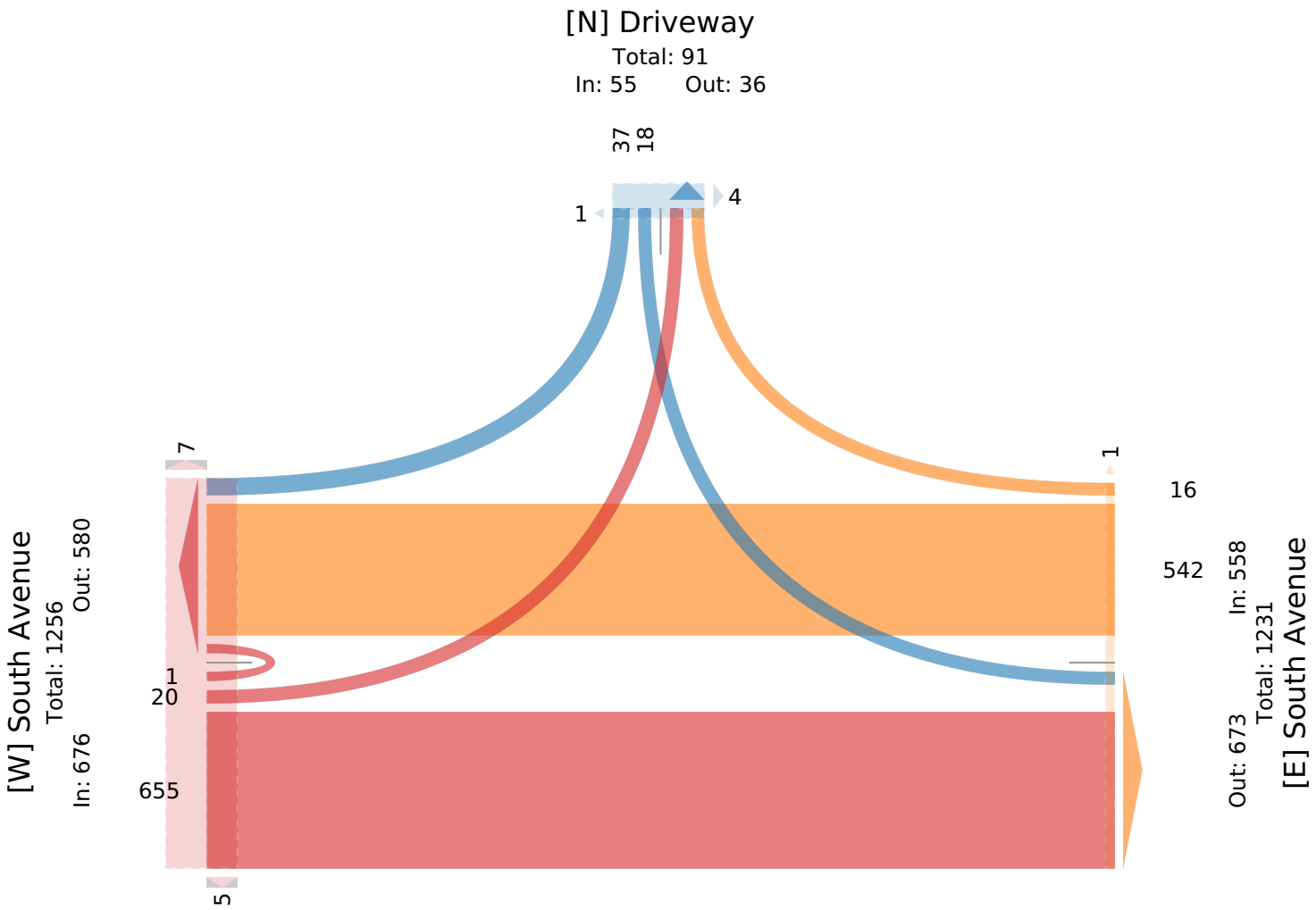
Cherry Hill, NJ, 08003, US



20. South Avenue and east of Boulevard - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965751, Location: 40.649075, -74.344837, Site Code: 20

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

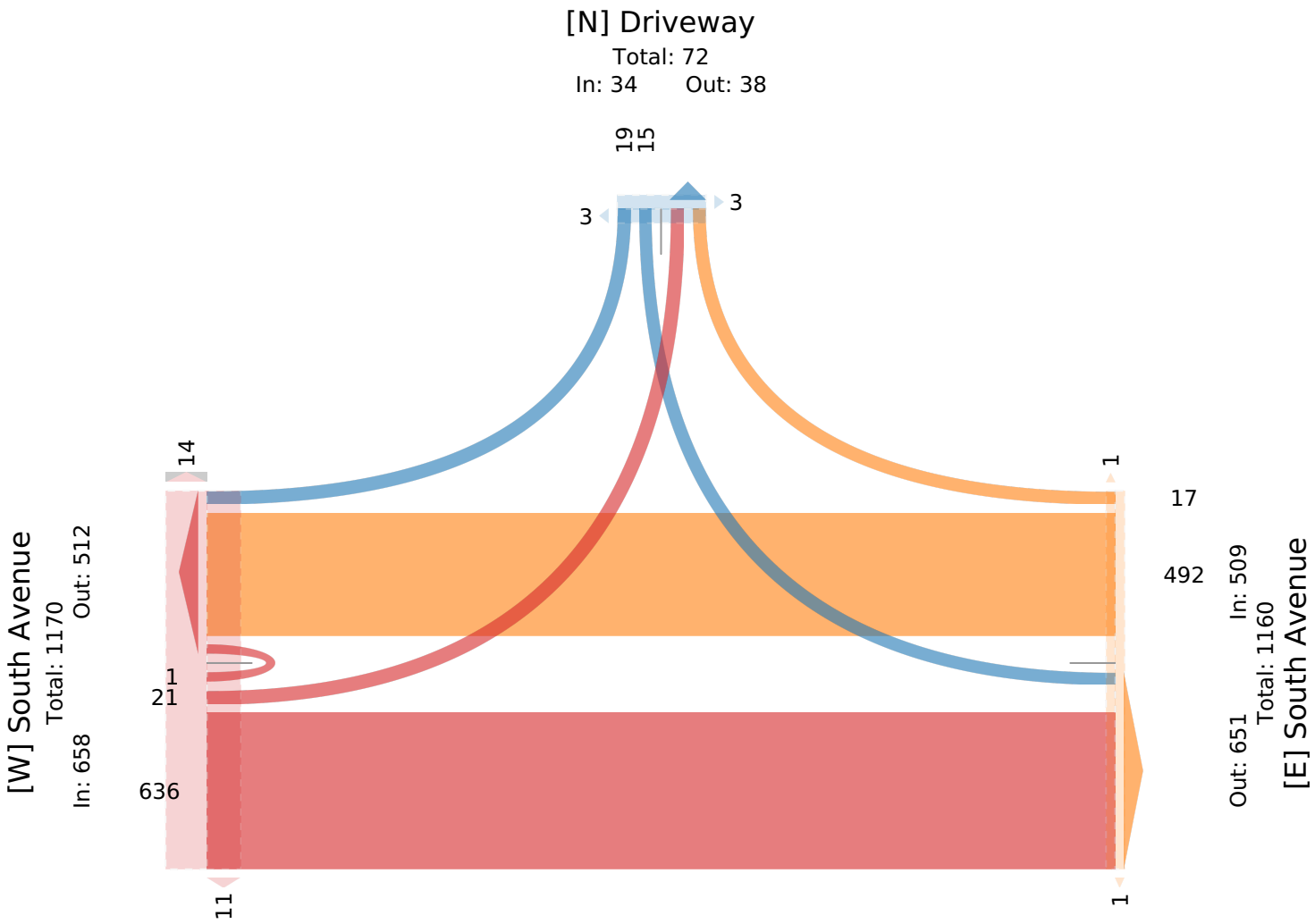
Leg Direction	Driveway Southbound					South Avenue Eastbound					South Avenue Westbound					
Time	L	R	U	**App**	Ped*	L	T	U	**App**	Ped*	T	R	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	2	4	0	**6**	0	3	162	0	**165**	5	123	5	0	**128**	0	**299**
1:15PM	4	7	0	**11**	1	8	170	0	**178**	14	142	7	0	**149**	0	**338**
1:30PM	7	4	0	**11**	1	3	150	1	**154**	3	114	4	0	**118**	1	**283**
1:45PM	2	4	0	**6**	4	7	154	0	**161**	3	113	1	0	**114**	1	**281**
Total	15	19	0	**34**	6	21	636	1	**658**	25	492	17	0	**509**	2	**1201**
% Approach	44.1%	55.9%	0%	**-**	-	3.2%	96.7%	0.2%	**-**	-	96.7%	3.3%	0%	**-**	-	**-**
% Total	1.2%	1.6%	0%	**2.8%**	-	1.7%	53.0%	0.1%	**54.8%**	-	41.0%	1.4%	0%	**42.4%**	-	**-**
PHF	0.536	0.679	-	**0.773**	-	0.656	0.935	0.250	**0.924**	-	0.866	0.607	-	**0.854**	-	0.888
Lights	15	19	0	**34**	-	20	629	1	**650**	-	487	17	0	**504**	-	1188
% Lights	100%	100%	0%	**100%**	-	95.2%	98.9%	100%	**98.8%**	-	99.0%	100%	0%	**99.0%**	-	98.9%
Articulated Trucks	0	0	0	**0**	-	0	1	0	**1**	-	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	**0%**	-	0%	0.2%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	**0**	-	1	6	0	**7**	-	5	0	0	**5**	-	12
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	-	4.8%	0.9%	0%	**1.1%**	-	1.0%	0%	0%	**1.0%**	-	1.0%
Pedestrians	-	-	-	-	6	-	-	-	-	25	-	-	-	-	2	
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

20. South Avenue and east of Boulevard - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965751, Location: 40.649075, -74.344837, Site Code: 20

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



Imperial Traffic & Data Collection
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PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.649075, -74.344837

Count Name: 20. South Avenue and east of Boulevard
Site Code: 20
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	South Avenue Eastbound					South Avenue Westbound					Driveway Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
11:00 AM	0	5	188	1	193	0	139	4	0	143	0	3	9	2	12	348
11:15 AM	0	7	155	5	162	0	142	3	0	145	0	3	12	2	15	322
11:30 AM	1	6	152	5	159	0	129	3	1	132	0	6	9	0	15	306
11:45 AM	0	2	160	1	162	0	132	6	0	138	0	6	7	1	13	313
Hourly Total	1	20	655	12	676	0	542	16	1	558	0	18	37	5	55	1289
12:00 PM	0	5	162	3	167	0	115	6	1	121	0	4	10	1	14	302
12:15 PM	0	8	171	4	179	0	104	9	0	113	0	6	10	2	16	308
12:30 PM	0	10	155	11	165	0	114	6	0	120	0	3	9	1	12	297
12:45 PM	0	3	180	7	183	1	133	6	1	140	0	6	8	3	14	337
Hourly Total	0	26	668	25	694	1	466	27	2	494	0	19	37	7	56	1244
1:00 PM	0	3	162	5	165	0	123	5	0	128	0	2	4	0	6	299
1:15 PM	0	8	170	14	178	0	142	7	0	149	0	4	7	1	11	338
1:30 PM	1	3	150	3	154	0	114	4	1	118	0	7	4	1	11	283
1:45 PM	0	7	154	3	161	0	113	1	1	114	0	2	4	4	6	281
Hourly Total	1	21	636	25	658	0	492	17	2	509	0	15	19	6	34	1201
Grand Total	2	67	1959	62	2028	1	1500	60	5	1561	0	52	93	18	145	3734
Approach %	0.1	3.3	96.6	-	-	0.1	96.1	3.8	-	-	0.0	35.9	64.1	-	-	-
Total %	0.1	1.8	52.5	-	54.3	0.0	40.2	1.6	-	41.8	0.0	1.4	2.5	-	3.9	-
Lights	2	66	1941	-	2009	1	1485	60	-	1546	0	52	93	-	145	3700
% Lights	100.0	98.5	99.1	-	99.1	100.0	99.0	100.0	-	99.0	-	100.0	100.0	-	100.0	99.1
Mediums	0	1	17	-	18	0	15	0	-	15	0	0	0	-	0	33
% Mediums	0.0	1.5	0.9	-	0.9	0.0	1.0	0.0	-	1.0	-	0.0	0.0	-	0.0	0.9
Articulated Trucks	0	0	1	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.1	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	5.6	-	-
Pedestrians	-	-	-	62	-	-	-	-	5	-	-	-	-	17	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	94.4	-	-

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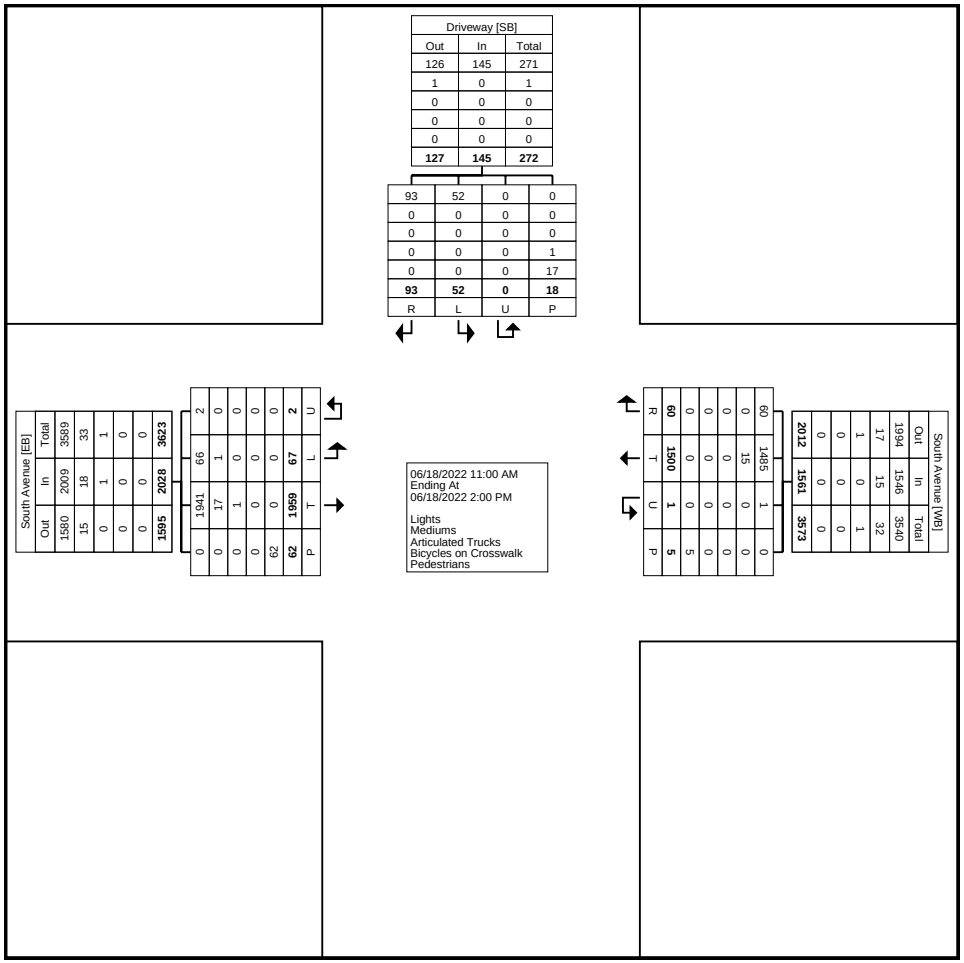
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.649075, -74.344837

Count Name: 20. South Avenue and east of Boulevard
Site Code: 20
Start Date: 06/18/2022



Turning Movement Data Plot

Imperial Traffic & Data Collection
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609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.649075, -74.344837

Count Name: 20. South Avenue and east of Boulevard
Site Code: 20
Start Date: 06/18/2022

Turning Movement Peak Hour Data (11:00 AM)

Start Time	South Avenue Eastbound					South Avenue Westbound					Driveway Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
11:00 AM	0	5	188	1	193	0	139	4	0	143	0	3	9	2	12	348
11:15 AM	0	7	155	5	162	0	142	3	0	145	0	3	12	2	15	322
11:30 AM	1	6	152	5	159	0	129	3	1	132	0	6	9	0	15	306
11:45 AM	0	2	160	1	162	0	132	6	0	138	0	6	7	1	13	313
Total	1	20	655	12	676	0	542	16	1	558	0	18	37	5	55	1289
Approach %	0.1	3.0	96.9	-	-	0.0	97.1	2.9	-	-	0.0	32.7	67.3	-	-	-
Total %	0.1	1.6	50.8	-	52.4	0.0	42.0	1.2	-	43.3	0.0	1.4	2.9	-	4.3	-
PHF	0.250	0.714	0.871	-	0.876	0.000	0.954	0.667	-	0.962	0.000	0.750	0.771	-	0.917	0.926
Lights	1	20	649	-	670	0	536	16	-	552	0	18	37	-	55	1277
% Lights	100.0	100.0	99.1	-	99.1	-	98.9	100.0	-	98.9	-	100.0	100.0	-	100.0	99.1
Mediums	0	0	6	-	6	0	6	0	-	6	0	0	0	-	0	12
% Mediums	0.0	0.0	0.9	-	0.9	-	1.1	0.0	-	1.1	-	0.0	0.0	-	0.0	0.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	12	-	-	-	-	1	-	-	-	-	4	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	80.0	-	-

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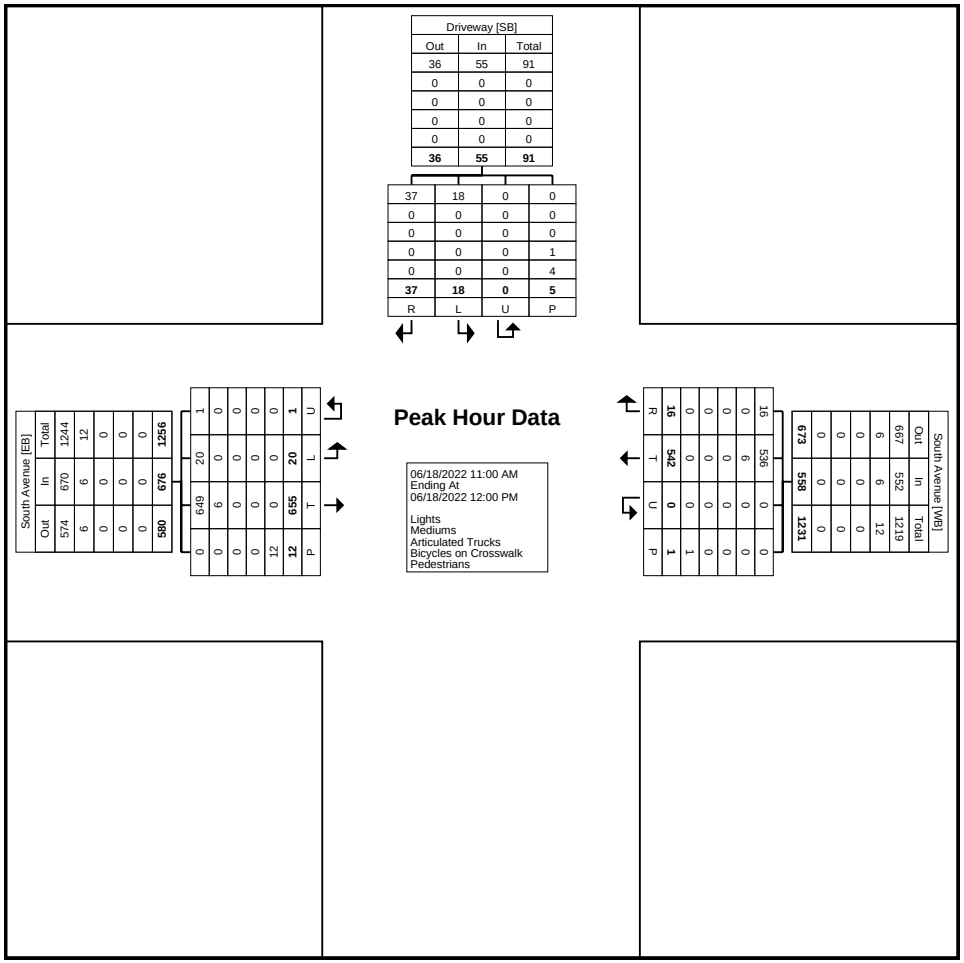
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.649075, -74.344837

Count Name: 20. South Avenue and east of Boulevard
Site Code: 20
Start Date: 06/18/2022



Turning Movement Peak Hour Data Plot (11:00 AM)

22. North Avenue and Parking Lot Egress Only - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965806, Location: 40.650255, -74.347411, Site Code: 22

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

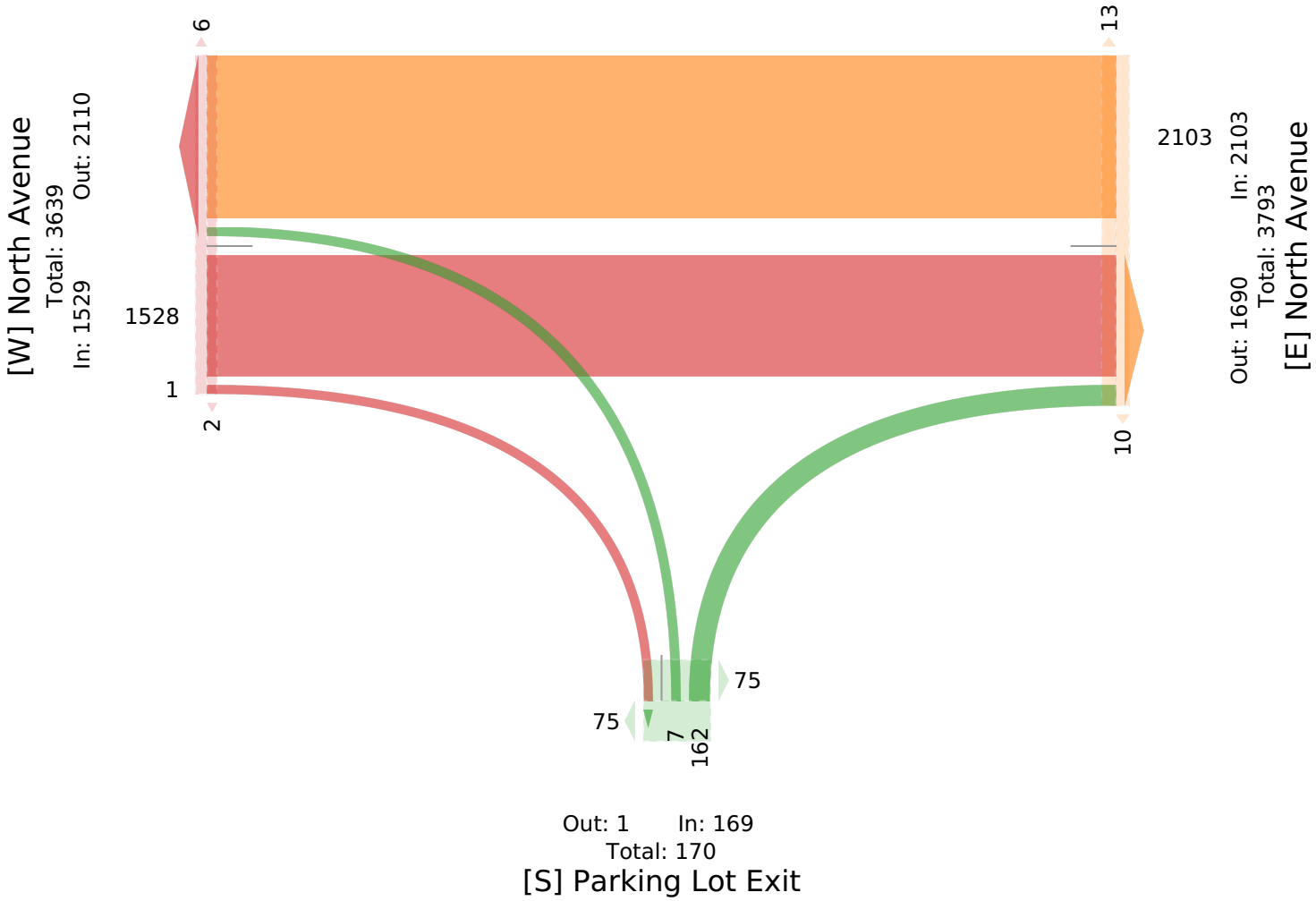
Leg Direction	Parking Lot Exit Northbound					North Avenue Eastbound					North Avenue Westbound					
Time	L	R	U	**App**	Ped*	T	R	U	**App**	Ped*	L	T	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	0	12	0	**12**	11	123	1	0	**124**	0	0	186	0	**186**	1	**322**
11:15AM	0	10	0	**10**	17	137	0	0	**137**	0	0	165	0	**165**	1	**312**
11:30AM	0	14	0	**14**	14	116	0	0	**116**	0	0	175	0	**175**	3	**305**
11:45AM	0	19	0	**19**	8	151	0	0	**151**	0	0	180	0	**180**	2	**350**
Hourly Total	0	55	0	**55**	50	527	1	0	**528**	0	0	706	0	**706**	7	**1289**
12:00PM	0	16	0	**16**	17	146	0	0	**146**	2	0	174	0	**174**	3	**336**
12:15PM	0	22	0	**22**	14	129	0	0	**129**	4	0	178	0	**178**	5	**329**
12:30PM	2	10	0	**12**	21	122	0	0	**122**	1	0	192	0	**192**	0	**326**
12:45PM	0	10	0	**10**	13	144	0	0	**144**	0	0	178	0	**178**	1	**332**
Hourly Total	2	58	0	**60**	65	541	0	0	**541**	7	0	722	0	**722**	9	**1323**
1:00PM	4	9	0	**13**	12	113	0	0	**113**	1	0	174	0	**174**	3	**300**
1:15PM	0	21	0	**21**	10	130	0	0	**130**	0	0	152	0	**152**	0	**303**
1:30PM	1	10	0	**11**	10	102	0	0	**102**	0	0	190	0	**190**	1	**303**
1:45PM	0	9	0	**9**	3	115	0	0	**115**	0	0	159	0	**159**	3	**283**
Hourly Total	5	49	0	**54**	35	460	0	0	**460**	1	0	675	0	**675**	7	**1189**
Total	7	162	0	**169**	150	1528	1	0	**1529**	8	0	2103	0	**2103**	23	**3801**
% Approach	4.1%	95.9%	0%	**-**	-	99.9%	0.1%	0%	**-**	-	0%	100%	0%	**-**	-	**-**
% Total	0.2%	4.3%	0%	**4.4%**	-	40.2%	0%	0%	**40.2%**	-	0%	55.3%	0%	**55.3%**	-	**-**
Lights	7	162	0	**169**	-	1513	1	0	**1514**	-	0	2066	0	**2066**	-	3749
% Lights	100%	100%	0%	**100%**	-	99.0%	100%	0%	**99.0%**	-	0%	98.2%	0%	**98.2%**	-	98.6%
Articulated Trucks	0	0	0	**0**	-	4	0	0	**4**	-	0	2	0	**2**	-	6
% Articulated Trucks	0%	0%	0%	**0%**	-	0.3%	0%	0%	**0.3%**	-	0%	0.1%	0%	**0.1%**	-	0.2%
Buses and Single-Unit Trucks	0	0	0	**0**	-	11	0	0	**11**	-	0	35	0	**35**	-	46
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	-	0.7%	0%	0%	**0.7%**	-	0%	1.7%	0%	**1.7%**	-	1.2%
Pedestrians	-	-	-	-	147	-	-	-	-	8	-	-	-	-	23	
% Pedestrians	-	-	-	-	98.0%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	2.0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

22. North Avenue and Parking Lot Egress Only - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965806, Location: 40.650255, -74.347411, Site Code: 22

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



22. North Avenue and Parking Lot Egress Only - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965806, Location: 40.650255, -74.347411, Site Code: 22

Provided by: Imperial Traffic & Data Collection
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Cherry Hill, NJ, 08003, US

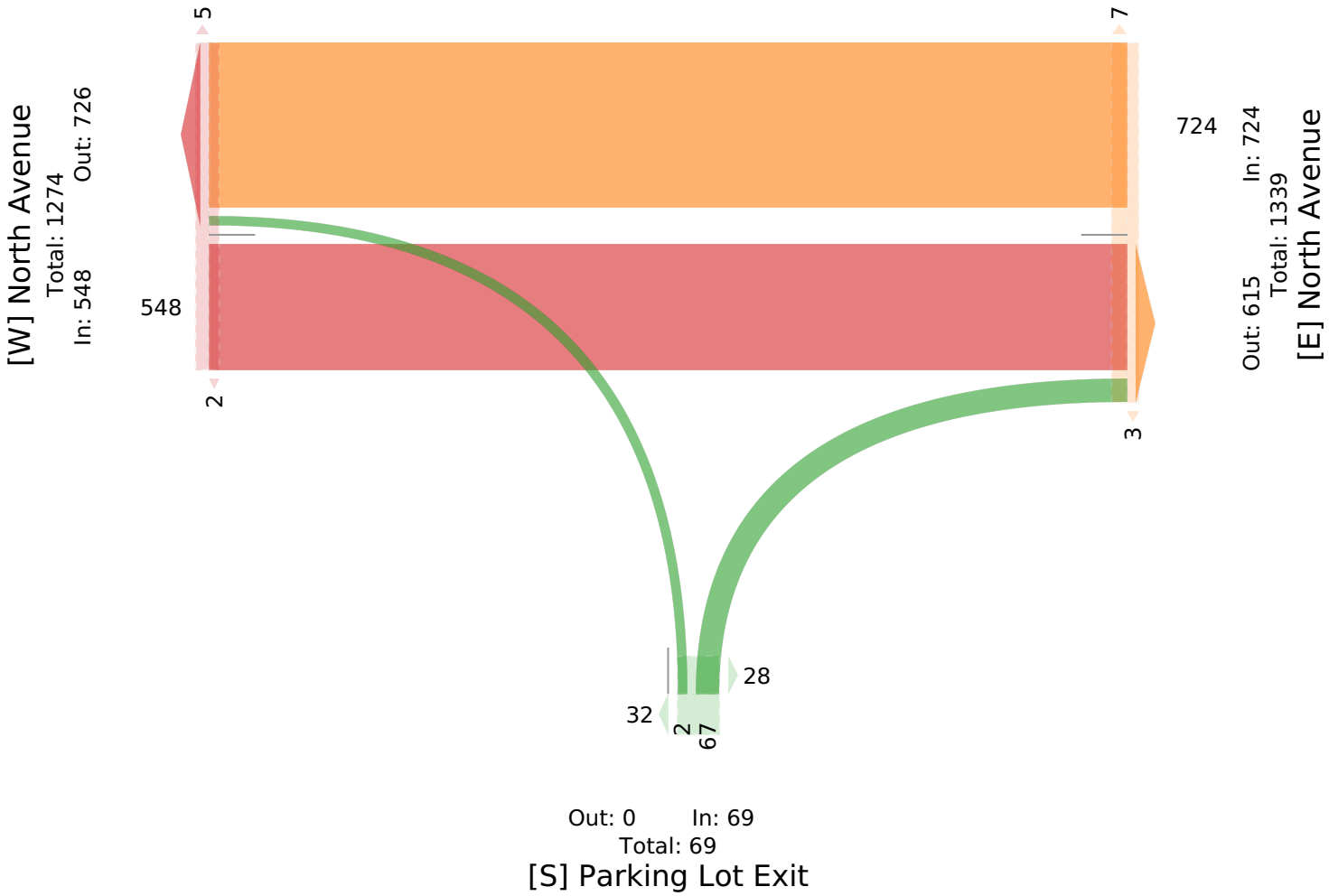
Leg Direction	Parking Lot Exit Northbound					North Avenue Eastbound					North Avenue Westbound					
Time	L	R	U	**App**	Ped*	T	R	U	**App**	Ped*	L	T	U	**App**	Ped*	**Int**
2022-06-18 11:45AM	0	19	0	**19**	8	151	0	0	**151**	0	0	180	0	**180**	2	**350**
12:00PM	0	16	0	**16**	17	146	0	0	**146**	2	0	174	0	**174**	3	**336**
12:15PM	0	22	0	**22**	14	129	0	0	**129**	4	0	178	0	**178**	5	**329**
12:30PM	2	10	0	**12**	21	122	0	0	**122**	1	0	192	0	**192**	0	**326**
Total	2	67	0	**69**	60	548	0	0	**548**	7	0	724	0	**724**	10	**1341**
% Approach	2.9%	97.1%	0%	**-**	-	100%	0%	0%	**-**	-	0%	100%	0%	**-**	-	**-**
% Total	0.1%	5.0%	0%	**5.1%**	-	40.9%	0%	0%	**40.9%**	-	0%	54.0%	0%	**54.0%**	-	**-**
PHF	0.250	0.761	-	**0.784**	-	0.907	-	-	**0.907**	-	-	0.943	-	**0.943**	-	0.958
Lights	2	67	0	**69**	-	541	0	0	**541**	-	0	712	0	**712**	-	1322
% Lights	100%	100%	0%	**100%**	-	98.7%	0%	0%	**98.7%**	-	0%	98.3%	0%	**98.3%**	-	98.6%
Articulated Trucks	0	0	0	**0**	-	3	0	0	**3**	-	0	1	0	**1**	-	4
% Articulated Trucks	0%	0%	0%	**0%**	-	0.5%	0%	0%	**0.5%**	-	0%	0.1%	0%	**0.1%**	-	0.3%
Buses and Single-Unit Trucks	0	0	0	**0**	-	4	0	0	**4**	-	0	11	0	**11**	-	15
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	-	0.7%	0%	0%	**0.7%**	-	0%	1.5%	0%	**1.5%**	-	1.1%
Pedestrians	-	-	-	-	60	-	-	-	-	7	-	-	-	-	10	
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

22. North Avenue and Parking Lot Egress Only - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965806, Location: 40.650255, -74.347411, Site Code: 22

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



22. North Avenue and Parking Lot Egress Only - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965806, Location: 40.650255, -74.347411, Site Code: 22

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

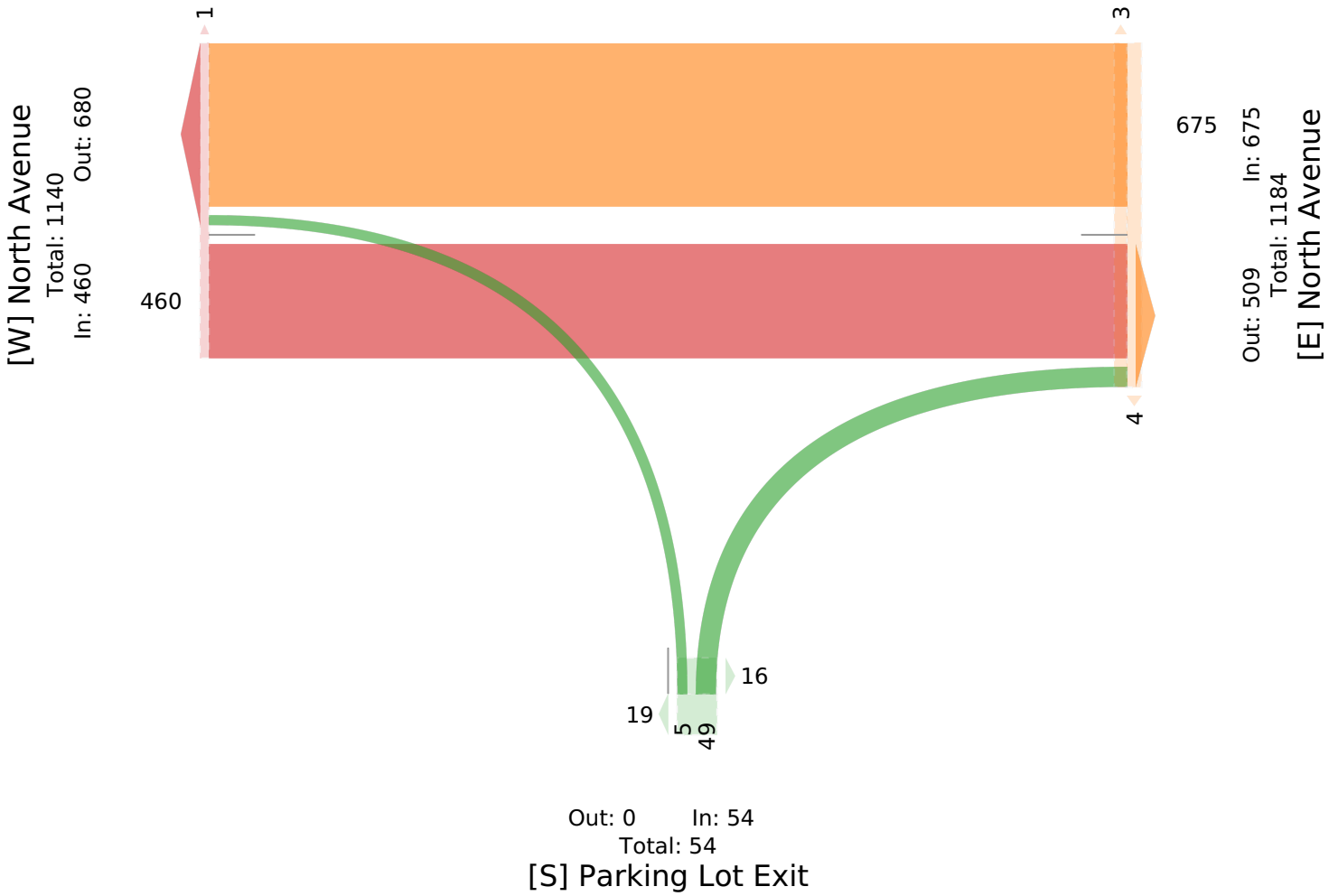
Leg Direction	Parking Lot Exit Northbound					North Avenue Eastbound					North Avenue Westbound					
Time	L	R	U	**App**	Ped*	T	R	U	**App**	Ped*	L	T	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	4	9	0	**13**	12	113	0	0	**113**	1	0	174	0	**174**	3	**300**
1:15PM	0	21	0	**21**	10	130	0	0	**130**	0	0	152	0	**152**	0	**303**
1:30PM	1	10	0	**11**	10	102	0	0	**102**	0	0	190	0	**190**	1	**303**
1:45PM	0	9	0	**9**	3	115	0	0	**115**	0	0	159	0	**159**	3	**283**
Total	5	49	0	**54**	35	460	0	0	**460**	1	0	675	0	**675**	7	**1189**
% Approach	9.3%	90.7%	0%	**-**	-	100%	0%	0%	**-**	-	0%	100%	0%	**-**	-	**-**
% Total	0.4%	4.1%	0%	**4.5%**	-	38.7%	0%	0%	**38.7%**	-	0%	56.8%	0%	**56.8%**	-	**-**
PHF	0.313	0.583	-	**0.643**	-	0.885	-	-	**0.885**	-	-	0.888	-	**0.888**	-	0.981
Lights	5	49	0	**54**	-	456	0	0	**456**	-	0	669	0	**669**	-	1179
% Lights	100%	100%	0%	**100%**	-	99.1%	0%	0%	**99.1%**	-	0%	99.1%	0%	**99.1%**	-	99.2%
Articulated Trucks	0	0	0	**0**	-	1	0	0	**1**	-	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	**0%**	-	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	**0**	-	3	0	0	**3**	-	0	6	0	**6**	-	9
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	-	0.7%	0%	0%	**0.7%**	-	0%	0.9%	0%	**0.9%**	-	0.8%
Pedestrians	-	-	-	-	35	-	-	-	-	1	-	-	-	-	7	
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

22. North Avenue and Parking Lot Egress Only - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965806, Location: 40.650255, -74.347411, Site Code: 22

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650255, -74.347411

Count Name: 22. North Avenue and Parking Lot Egress Only
Site Code: 22
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Avenue Eastbound					North Avenue Westbound					Parking Lot Exit Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
11:00 AM	0	123	1	0	124	0	0	186	1	186	0	0	12	11	12	322
11:15 AM	0	137	0	0	137	0	0	165	1	165	0	0	10	17	10	312
11:30 AM	0	116	0	0	116	0	0	175	3	175	0	0	14	14	14	305
11:45 AM	0	151	0	0	151	0	0	180	2	180	0	0	19	8	19	350
Hourly Total	0	527	1	0	528	0	0	706	7	706	0	0	55	50	55	1289
12:00 PM	0	146	0	2	146	0	0	174	3	174	0	0	16	17	16	336
12:15 PM	0	129	0	4	129	0	0	178	5	178	0	0	22	14	22	329
12:30 PM	0	122	0	1	122	0	0	192	0	192	0	2	10	21	12	326
12:45 PM	0	144	0	0	144	0	0	178	1	178	0	0	10	13	10	332
Hourly Total	0	541	0	7	541	0	0	722	9	722	0	2	58	65	60	1323
1:00 PM	0	113	0	1	113	0	0	174	3	174	0	4	9	12	13	300
1:15 PM	0	130	0	0	130	0	0	152	0	152	0	0	21	10	21	303
1:30 PM	0	102	0	0	102	0	0	190	1	190	0	1	10	10	11	303
1:45 PM	0	115	0	0	115	0	0	159	3	159	0	0	9	3	9	283
Hourly Total	0	460	0	1	460	0	0	675	7	675	0	5	49	35	54	1189
Grand Total	0	1528	1	8	1529	0	0	2103	23	2103	0	7	162	150	169	3801
Approach %	0.0	99.9	0.1	-	-	0.0	0.0	100.0	-	-	0.0	4.1	95.9	-	-	-
Total %	0.0	40.2	0.0	-	40.2	0.0	0.0	55.3	-	55.3	0.0	0.2	4.3	-	4.4	-
Lights	0	1513	1	-	1514	0	0	2066	-	2066	0	7	162	-	169	3749
% Lights	-	99.0	100.0	-	99.0	-	-	98.2	-	98.2	-	100.0	100.0	-	100.0	98.6
Mediums	0	11	0	-	11	0	0	35	-	35	0	0	0	-	0	46
% Mediums	-	0.7	0.0	-	0.7	-	-	1.7	-	1.7	-	0.0	0.0	-	0.0	1.2
Articulated Trucks	0	4	0	-	4	0	0	2	-	2	0	0	0	-	0	6
% Articulated Trucks	-	0.3	0.0	-	0.3	-	-	0.1	-	0.1	-	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	2.0	-	-
Pedestrians	-	-	-	8	-	-	-	-	23	-	-	-	-	147	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	98.0	-	-

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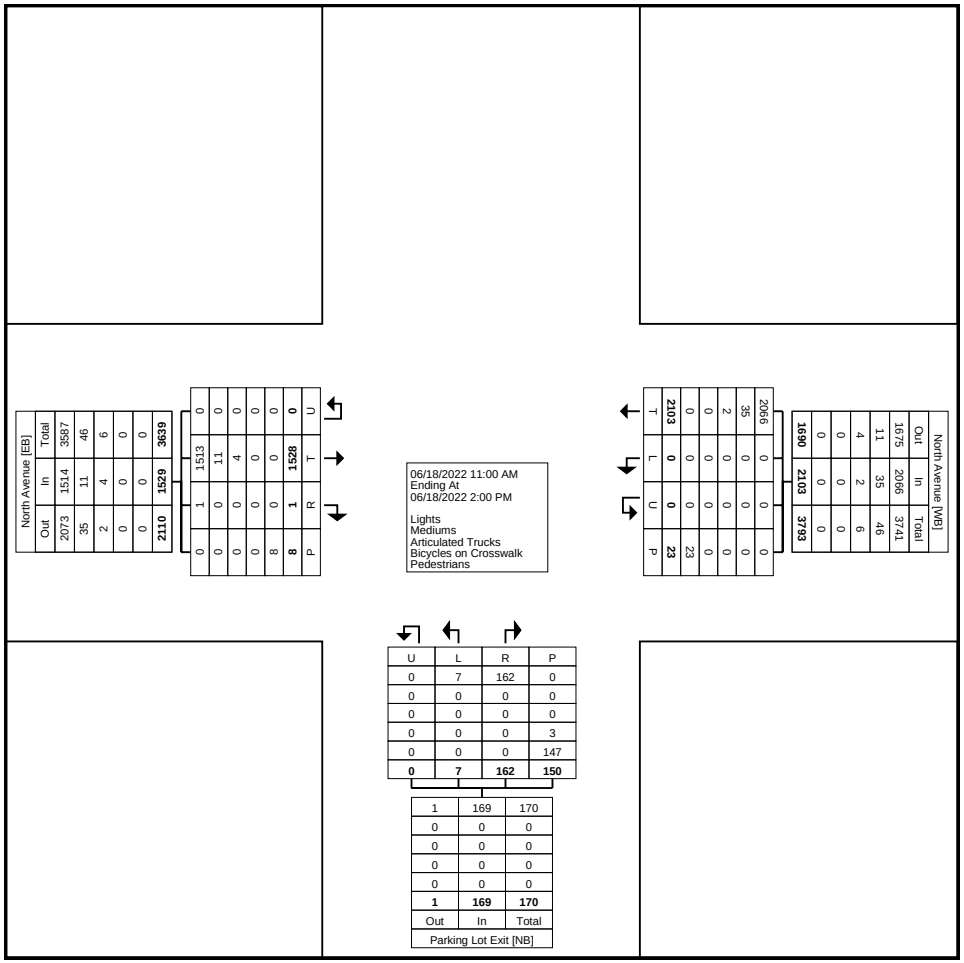
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650255, -74.347411

Count Name: 22. North Avenue and Parking Lot Egress Only
Site Code: 22
Start Date: 06/18/2022
Page No: 2



Turning Movement Data Plot

Imperial Traffic & Data Collection
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Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650255, -74.347411

Count Name: 22. North Avenue and Parking Lot Egress Only
Site Code: 22
Start Date: 06/18/2022

Turning Movement Peak Hour Data (11:45 AM)

Start Time	North Avenue Eastbound					North Avenue Westbound					Parking Lot Exit Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
11:45 AM	0	151	0	0	151	0	0	180	2	180	0	0	19	8	19	350
12:00 PM	0	146	0	2	146	0	0	174	3	174	0	0	16	17	16	336
12:15 PM	0	129	0	4	129	0	0	178	5	178	0	0	22	14	22	329
12:30 PM	0	122	0	1	122	0	0	192	0	192	0	2	10	21	12	326
Total	0	548	0	7	548	0	0	724	10	724	0	2	67	60	69	1341
Approach %	0.0	100.0	0.0	-	-	0.0	0.0	100.0	-	-	0.0	2.9	97.1	-	-	-
Total %	0.0	40.9	0.0	-	40.9	0.0	0.0	54.0	-	54.0	0.0	0.1	5.0	-	5.1	-
PHF	0.000	0.907	0.000	-	0.907	0.000	0.000	0.943	-	0.943	0.000	0.250	0.761	-	0.784	0.958
Lights	0	541	0	-	541	0	0	712	-	712	0	2	67	-	69	1322
% Lights	-	98.7	-	-	98.7	-	-	98.3	-	98.3	-	100.0	100.0	-	100.0	98.6
Mediums	0	4	0	-	4	0	0	11	-	11	0	0	0	-	0	15
% Mediums	-	0.7	-	-	0.7	-	-	1.5	-	1.5	-	0.0	0.0	-	0.0	1.1
Articulated Trucks	0	3	0	-	3	0	0	1	-	1	0	0	0	-	0	4
% Articulated Trucks	-	0.5	-	-	0.5	-	-	0.1	-	0.1	-	0.0	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	7	-	-	-	-	10	-	-	-	-	60	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

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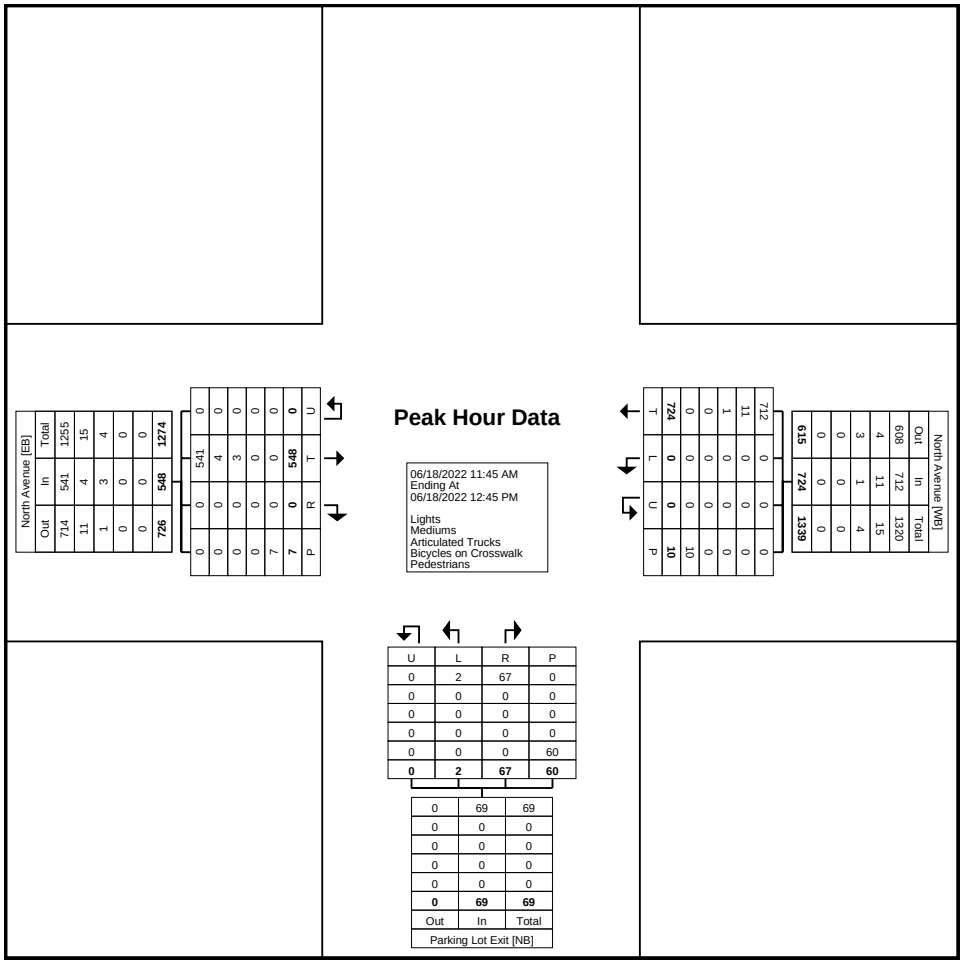
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.650255, -74.347411

Count Name: 22. North Avenue and Parking Lot Egress Only
Site Code: 22
Start Date: 06/18/2022
Page No: 4



Turning Movement Peak Hour Data Plot (11:45 AM)

23,24. North Avenue and Parking lot Driveways - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965817, Location: 40.650426, -74.346249, Site Code: 23,24

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

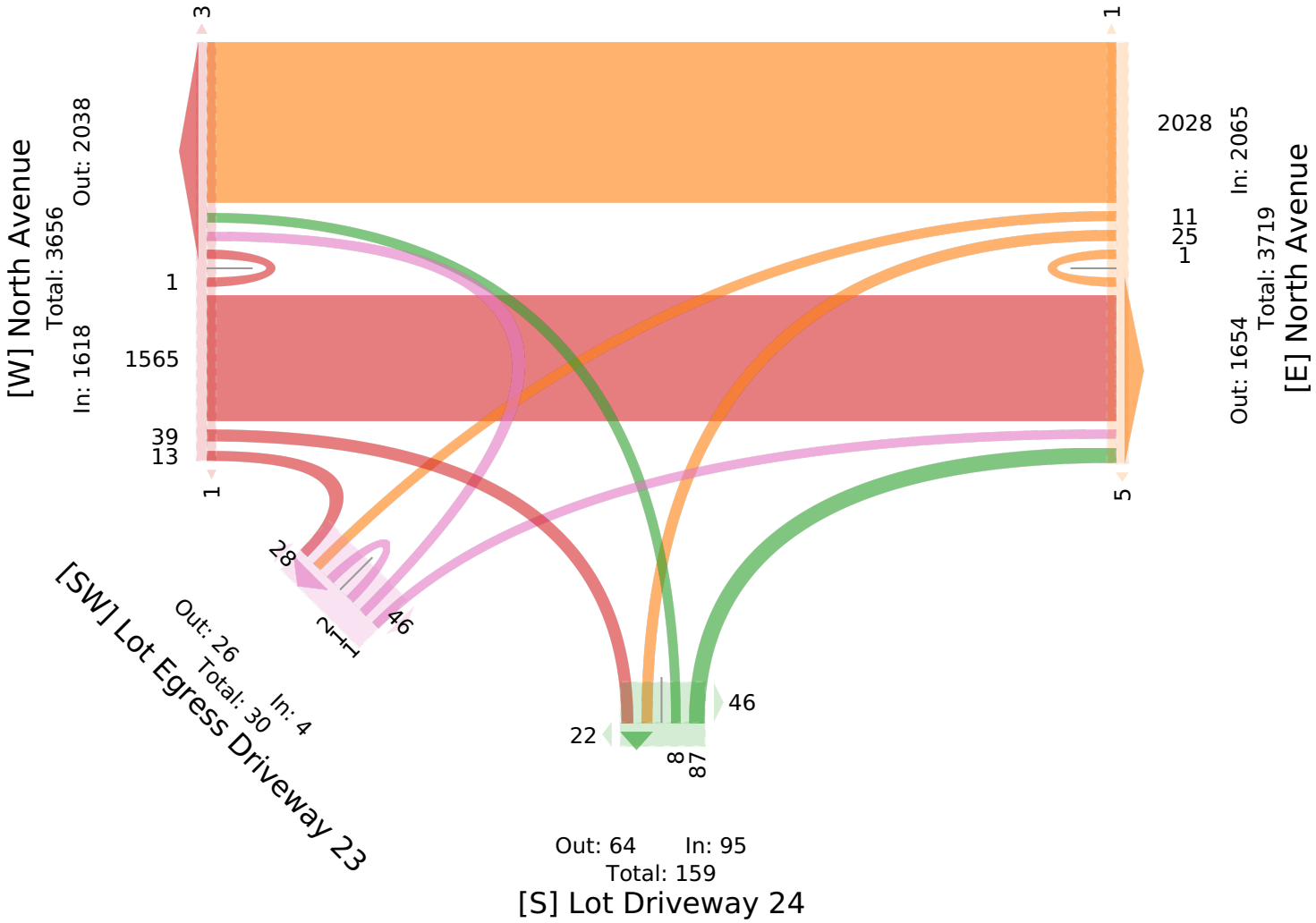
Leg	Lot Driveway 24						North Avenue						North Avenue						Lot Egress Driveway 23						
Direction	Northbound						Eastbound						Westbound						Northeastbound						
Time	HL	L	R	U	**App**	Ped*	T	R	HR	U	**App**	Ped*	L	BL	T	U	**App**	Ped*	HL	BR	HR	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	0	0	5	0	**5**	5	122	3	0	1	**126**	0	2	2	177	0	**181**	0	0	0	0	0	**0**	5	**312**
11:15AM	0	2	3	0	**5**	5	142	4	0	0	**146**	0	1	0	157	0	**158**	0	0	0	0	0	**0**	5	**309**
11:30AM	0	0	6	0	**6**	10	121	2	0	0	**123**	0	3	0	178	0	**181**	1	0	0	0	0	**0**	14	**310**
11:45AM	0	1	7	0	**8**	8	143	9	1	0	**153**	0	1	0	168	0	**169**	0	0	0	0	0	**0**	8	**330**
Hourly Total	0	3	21	0	**24**	28	528	18	1	1	**548**	0	7	2	680	0	**689**	1	0	0	0	0	**0**	32	**1261**
12:00PM	0	1	12	0	**13**	2	146	5	2	0	**153**	0	1	0	178	0	**179**	0	0	0	0	0	**0**	4	**345**
12:15PM	0	0	15	0	**15**	10	142	5	3	0	**150**	0	2	2	161	0	**165**	3	0	0	0	0	**0**	11	**330**
12:30PM	0	0	9	0	**9**	5	121	2	1	0	**124**	0	1	1	183	0	**185**	2	1	1	0	2	**4**	7	**322**
12:45PM	0	1	5	0	**6**	9	139	2	1	0	**142**	0	2	1	162	0	**165**	0	0	0	0	0	**0**	8	**313**
Hourly Total	0	2	41	0	**43**	26	548	14	7	0	**569**	0	6	4	684	0	**694**	5	1	1	0	2	**4**	30	**1310**
1:00PM	0	0	4	0	**4**	4	127	0	1	0	**128**	1	3	1	171	0	**175**	0	0	0	0	0	**0**	2	**307**
1:15PM	0	0	8	0	**8**	3	136	3	2	0	**141**	1	1	1	156	0	**158**	0	0	0	0	0	**0**	5	**307**
1:30PM	0	2	7	0	**9**	3	109	2	1	0	**112**	2	2	2	189	0	**193**	0	0	0	0	0	**0**	4	**314**
1:45PM	0	1	6	0	**7**	4	117	2	1	0	**120**	0	6	1	148	1	**156**	0	0	0	0	0	**0**	1	**283**
Hourly Total	0	3	25	0	**28**	14	489	7	5	0	**501**	4	12	5	664	1	**682**	0	0	0	0	0	**0**	12	**1211**
Total	0	8	87	0	**95**	68	1565	39	13	1	**1618**	4	25	11	2028	1	**2065**	6	1	1	0	2	**4**	74	**3782**
% Approach	0%	8.4%	91.6%	0%	**-**	-	96.7%	2.4%	0.8%	0.1%	**-**	-	1.2%	0.5%	98.2%	0%	**-**	-	25.0%	25.0%	0%	50.0%	**-**	-	**-**
% Total	0%	0.2%	2.3%	0%	**2.5%**	-	41.4%	1.0%	0.3%	0%	**42.8%**	-	0.7%	0.3%	53.6%	0%	**54.6%**	-	0%	0%	0%	0.1%	**0.1%**	-	**-**
Lights	0	8	86	0	**94**	-	1551	39	13	1	**1604**	-	25	11	1991	1	**2028**	-	1	1	0	2	**4**	-	3730
% Lights	0%	100%	98.9%	0%	**98.9%**	-	99.1%	100%	100%	100%	**99.1%**	-	100%	100%	98.2%	100%	**98.2%**	-	100%	100%	0%	100%	**100%**	-	98.6%
Articulated Trucks	0	0	0	0	**0**	-	2	0	0	0	**2**	-	0	0	3	0	**3**	-	0	0	0	0	**0**	-	5
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.1%	0%	0%	0%	**0.1%**	-	0%	0%	0.1%	0%	**0.1%**	-	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	0	1	0	**1**	-	12	0	0	0	**12**	-	0	0	34	0	**34**	-	0	0	0	0	**0**	-	47
% Buses and Single-Unit Trucks	0%	0%	1.1%	0%	**1.1%**	-	0.8%	0%	0%	0%	**0.7%**	-	0%	0%	1.7%	0%	**1.6%**	-	0%	0%	0%	0%	**0%**	-	1.2%
Pedestrians	-	-	-	-	-	64	-	-	-	-	-	4	-	-	-	-	-	6	-	-	-	-	-	71	
% Pedestrians	-	-	-	-	-	94.1%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	95.9%	-
Bicycles on Crosswalk	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	
% Bicycles on Crosswalk	-	-	-	-	-	5.9%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	4.1%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

23,24. North Avenue and Parking lot Driveways - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965817, Location: 40.650426, -74.346249, Site Code: 23,24

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



23,24. North Avenue and Parking lot Driveways - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965817, Location: 40.650426, -74.346249, Site Code: 23,24

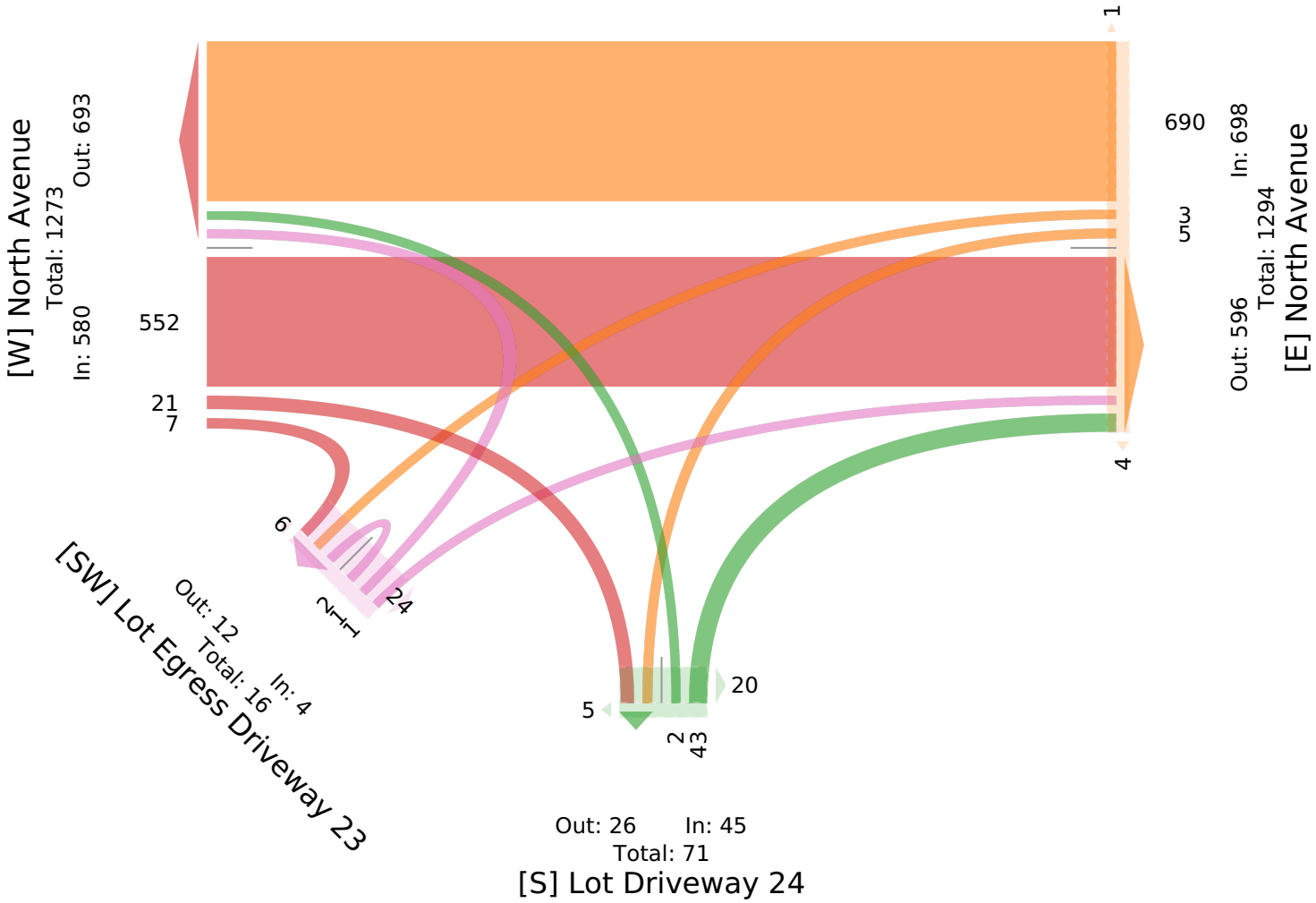
Leg	Lot Driveway 24						North Avenue						North Avenue						Lot Egress Driveway 23						
Direction	Northbound						Eastbound						Westbound						Northeastbound						
Time	HL	L	R	U	**App**	Ped*	T	R	HR	U	**App**	Ped*	L	BL	T	U	**App**	Ped*	HL	BR	HR	U	**App**	Ped*	**Int**
2022-06-18 11:45AM	0	1	7	0	**8**	8	143	9	1	0	**153**	0	1	0	168	0	**169**	0	0	0	0	0	**0**	8	**330**
12:00PM	0	1	12	0	**13**	2	146	5	2	0	**153**	0	1	0	178	0	**179**	0	0	0	0	0	**0**	4	**345**
12:15PM	0	0	15	0	**15**	10	142	5	3	0	**150**	0	2	2	161	0	**165**	3	0	0	0	0	**0**	11	**330**
12:30PM	0	0	9	0	**9**	5	121	2	1	0	**124**	0	1	1	183	0	**185**	2	1	1	0	2	**4**	7	**322**
Total	0	2	43	0	**45**	25	552	21	7	0	**580**	0	5	3	690	0	**698**	5	1	1	0	2	**4**	30	**1327**
% Approach	0%	4.4%	95.6%	0%	**-**	-	95.2%	3.6%	1.2%	0%	**-**	-	0.7%	0.4%	98.9%	0%	**-**	-	25.0%	25.0%	0%	50.0%	**-**	-	-
% Total	0%	0.2%	3.2%	0%	**3.4%**	-	41.6%	1.6%	0.5%	0%	**43.7%**	-	0.4%	0.2%	52.0%	0%	**52.6%**	-	0.1%	0.1%	0%	0.2%	**0.3%**	-	-
PHF	-	0.500	0.717	-	**0.750**	-	0.945	0.583	0.583	-	**0.948**	-	0.625	0.375	0.943	-	**0.943**	-	0.250	0.250	-	0.250	**0.250**	-	0.962
Lights	0	2	43	0	**45**	-	546	21	7	0	**574**	-	5	3	677	0	**685**	-	1	1	0	2	**4**	-	1308
% Lights	0%	100%	100%	0%	**100%**	-	98.9%	100%	100%	0%	**99.0%**	-	100%	100%	98.1%	0%	**98.1%**	-	100%	100%	0%	100%	**100%**	-	98.6%
Articulated Trucks	0	0	0	0	**0**	-	2	0	0	0	**2**	-	0	0	1	0	**1**	-	0	0	0	0	**0**	-	3
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.4%	0%	0%	0%	**0.3%**	-	0%	0%	0.1%	0%	**0.1%**	-	0%	0%	0%	0%	**0%**	-	0.2%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	4	0	0	0	**4**	-	0	0	12	0	**12**	-	0	0	0	0	**0**	-	16
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0.7%	0%	0%	0%	**0.7%**	-	0%	0%	1.7%	0%	**1.7%**	-	0%	0%	0%	0%	**0%**	-	1.2%
Pedestrians	-	-	-	-	-	24	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	29	
% Pedestrians	-	-	-	-	-	96.0%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	96.7%	-
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	
% Bicycles on Crosswalk	-	-	-	-	-	4.0%	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	3.3%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

23,24. North Avenue and Parking lot Driveways - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (11:45 AM - 12:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965817, Location: 40.650426, -74.346249, Site Code: 23,24

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



23,24. North Avenue and Parking lot Driveways - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965817, Location: 40.650426, -74.346249, Site Code: 23,24

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

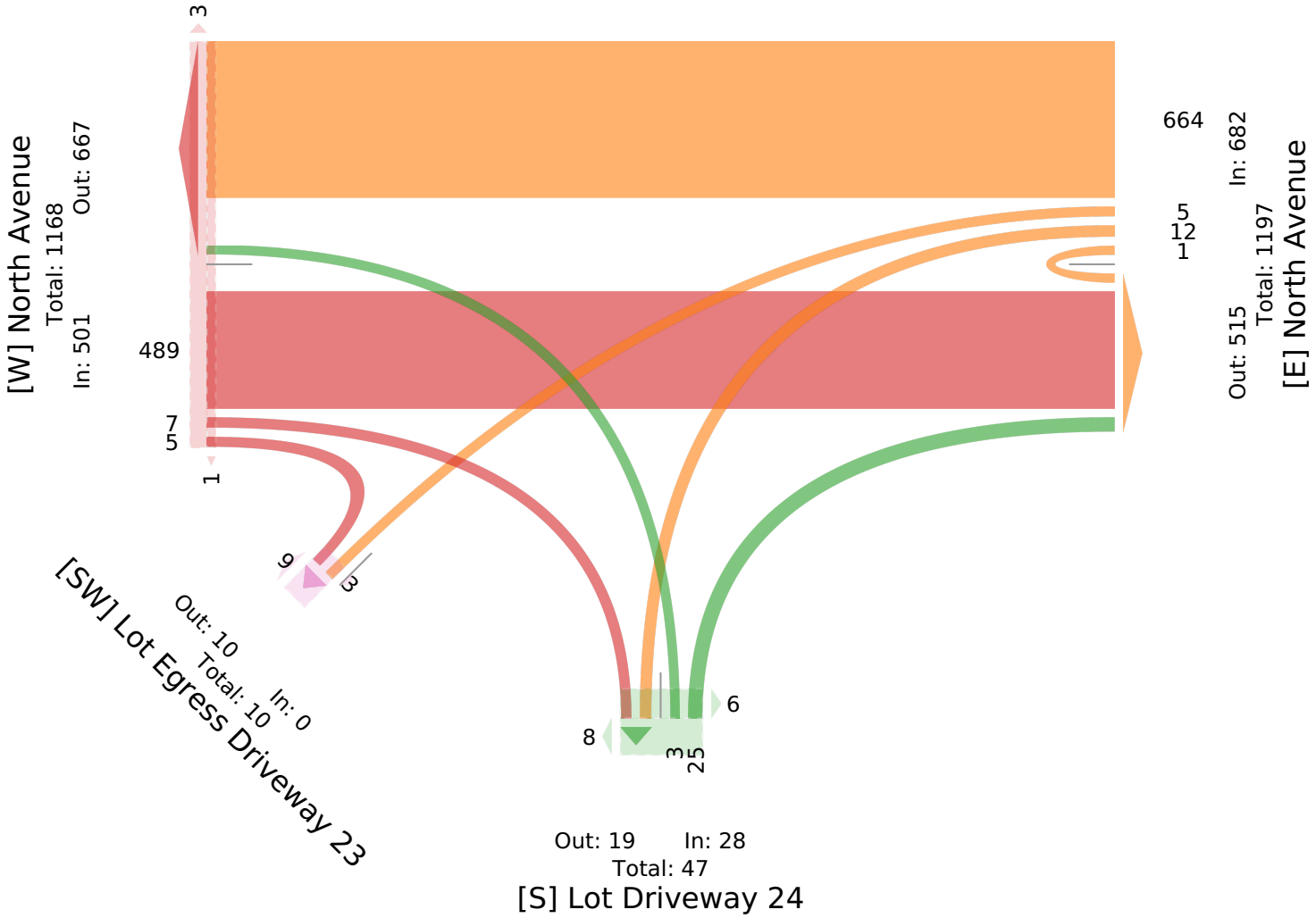
Leg Direction	Lot Driveway 24 Northbound						North Avenue Eastbound						North Avenue Westbound						Lot Egress Driveway 23 Northeastbound						
Time	HL	L	R	U	**App**	Ped*	T	R	HR	U	**App**	Ped*	L	BL	T	U	**App**	Ped*	HL	BR	HR	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	0	0	4	0	**4**	4	127	0	1	0	**128**	1	3	1	171	0	**175**	0	0	0	0	0	**0**	2	**307**
1:15PM	0	0	8	0	**8**	3	136	3	2	0	**141**	1	1	1	156	0	**158**	0	0	0	0	0	**0**	5	**307**
1:30PM	0	2	7	0	**9**	3	109	2	1	0	**112**	2	2	2	189	0	**193**	0	0	0	0	0	**0**	4	**314**
1:45PM	0	1	6	0	**7**	4	117	2	1	0	**120**	0	6	1	148	1	**156**	0	0	0	0	0	**0**	1	**283**
Total	0	3	25	0	**28**	14	489	7	5	0	**501**	4	12	5	664	1	**682**	0	0	0	0	0	**0**	12	**1211**
% Approach	0%	10.7%	89.3%	0%	**-**	-	97.6%	1.4%	1.0%	0%	**-**	-	1.8%	0.7%	97.4%	0.1%	**-**	-	0%	0%	0%	0%	**-**	-	-
% Total	0%	0.2%	2.1%	0%	**2.3%**	-	40.4%	0.6%	0.4%	0%	**41.4%**	-	1.0%	0.4%	54.8%	0.1%	**56.3%**	-	0%	0%	0%	0%	**0%**	-	-
PHF	-	0.375	0.781	-	**0.778**	-	0.899	0.583	0.625	-	**0.888**	-	0.500	0.625	0.878	0.250	**0.883**	-	-	-	-	-	**-**	-	0.964
Lights	0	3	25	0	**28**	-	485	7	5	0	**497**	-	12	5	656	1	**674**	-	0	0	0	0	**0**	-	1199
% Lights	0%	100%	100%	0%	**100%**	-	99.2%	100%	100%	0%	**99.2%**	-	100%	100%	98.8%	100%	**98.8%**	-	0%	0%	0%	0%	**-**	-	99.0%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	1	0	**1**	-	0	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0.2%	0%	**0.1%**	-	0%	0%	0%	0%	**-**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	4	0	0	0	**4**	-	0	0	7	0	**7**	-	0	0	0	0	**0**	-	11
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0.8%	0%	0%	0%	**0.8%**	-	0%	0%	1.1%	0%	**1.0%**	-	0%	0%	0%	0%	**-**	-	0.9%
Pedestrians	-	-	-	-	-	13	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	12	
% Pedestrians	-	-	-	-	-	92.9%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	7.1%	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

23,24. North Avenue and Parking lot Driveways - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965817, Location: 40.650426, -74.346249, Site Code: 23,24

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



25. South Avenue and South Lot - TMC

Provided by: Imperial Traffic & Data Collection
PO Box 4637, Cherry Hill, NJ, 08003, US

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965812, Location: 40.648635, -74.347943, Site Code: 25

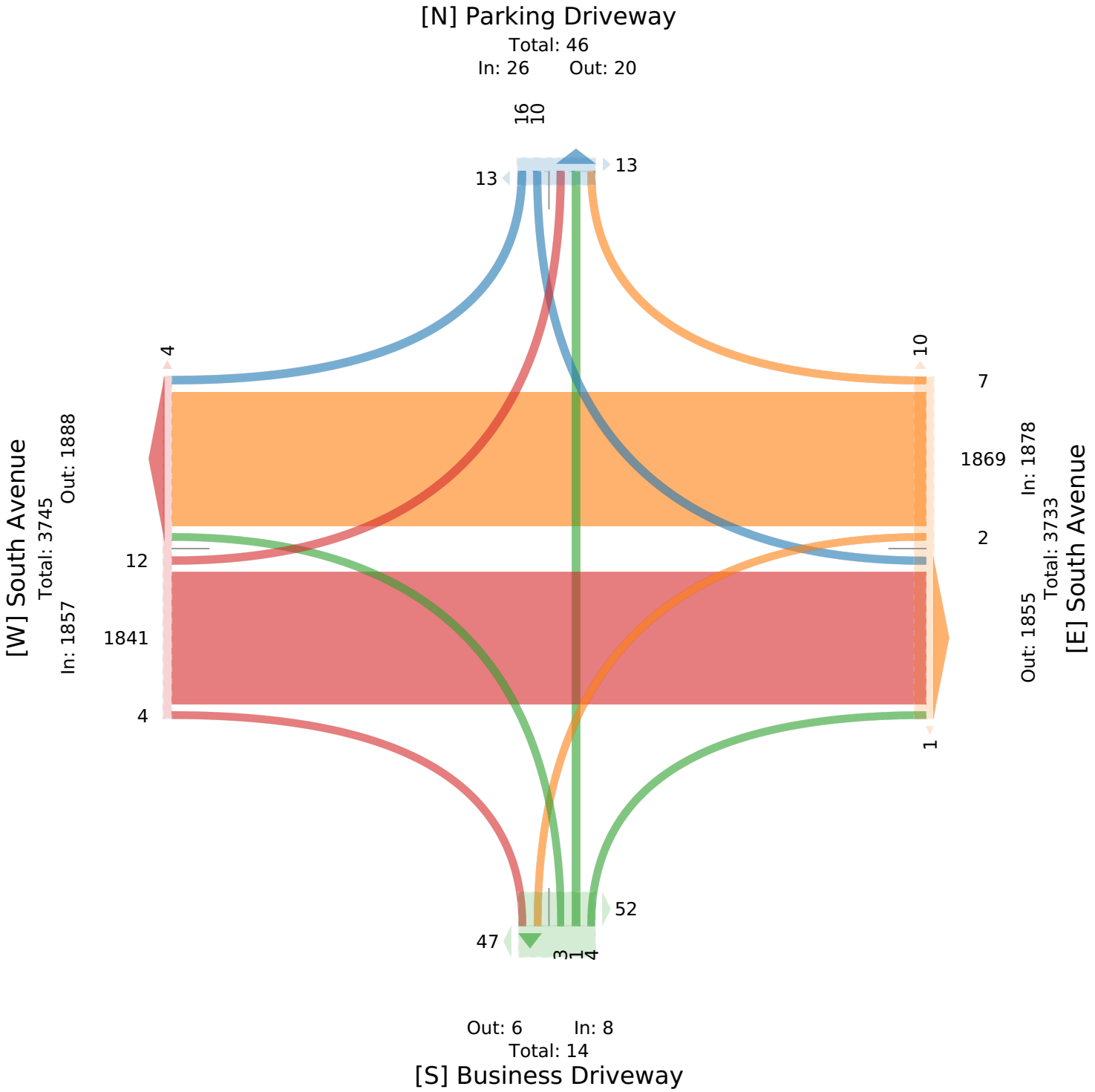
Leg / Direction	Business Driveway Northbound						Parking Driveway Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	1	0	2	0	**3**	13	1	0	3	0	**4**	0	0	167	1	0	**168**	0	1	158	0	0	**159**	3	**334**
11:15AM	0	0	0	0	**0**	7	0	0	1	0	**1**	1	0	151	1	0	**152**	0	0	179	1	0	**180**	0	**333**
11:30AM	0	0	1	0	**1**	5	0	0	2	0	**2**	3	3	145	0	0	**148**	1	0	145	0	0	**145**	3	**296**
11:45AM	0	0	0	0	**0**	10	0	0	1	0	**1**	2	1	141	0	0	**142**	1	1	163	4	0	**168**	0	**311**
Hourly Total	1	0	3	0	**4**	35	1	0	7	0	**8**	6	4	604	2	0	**610**	2	2	645	5	0	**652**	6	**1274**
12:00PM	2	0	0	0	**2**	11	1	0	0	0	**1**	5	0	161	0	0	**161**	1	0	151	0	0	**151**	1	**315**
12:15PM	0	0	1	0	**1**	5	1	0	3	0	**4**	4	0	163	0	0	**163**	0	0	157	0	0	**157**	1	**325**
12:30PM	0	0	0	0	**0**	8	2	0	0	0	**2**	1	0	147	0	0	**147**	1	0	144	0	0	**144**	0	**293**
12:45PM	0	0	0	0	**0**	2	2	0	1	0	**3**	2	1	174	0	0	**175**	0	0	159	1	0	**160**	1	**338**
Hourly Total	2	0	1	0	**3**	26	6	0	4	0	**10**	12	1	645	0	0	**646**	2	0	611	1	0	**612**	3	**1271**
1:00PM	0	0	0	0	**0**	11	1	0	1	0	**2**	2	3	148	0	0	**151**	0	0	163	1	0	**164**	0	**317**
1:15PM	0	0	0	0	**0**	2	1	0	0	0	**1**	2	0	160	1	0	**161**	0	0	171	0	0	**171**	0	**333**
1:30PM	0	0	0	0	**0**	10	0	0	2	0	**2**	2	2	144	0	0	**146**	0	0	144	0	0	**144**	1	**292**
1:45PM	0	1	0	0	**1**	15	1	0	2	0	**3**	2	2	140	1	0	**143**	0	0	135	0	0	**135**	1	**282**
Hourly Total	0	1	0	0	**1**	38	3	0	5	0	**8**	8	7	592	2	0	**601**	0	0	613	1	0	**614**	2	**1224**
Total	3	1	4	0	**8**	99	10	0	16	0	**26**	26	12	1841	4	0	**1857**	4	2	1869	7	0	**1878**	11	**3769**
% Approach	37.5%	12.5%	50.0%	0%	**-**	-	38.5%	0%	61.5%	0%	**-**	-	0.6%	99.1%	0.2%	0%	**-**	-	0.1%	99.5%	0.4%	0%	**-**	-	**-**
% Total	0.1%	0%	0.1%	0%	**0.2%**	-	0.3%	0%	0.4%	0%	**0.7%**	-	0.3%	48.8%	0.1%	0%	**49.3%**	-	0.1%	49.6%	0.2%	0%	**49.8%**	-	**-**
Lights	3	1	4	0	**8**	-	10	0	15	0	**25**	-	12	1823	4	0	**1839**	-	2	1855	7	0	**1864**	-	3736
% Lights	100%	100%	100%	0%	**100%**	-	100%	0%	93.8%	0%	**96.2%**	-	100%	99.0%	100%	0%	**99.0%**	-	100%	99.3%	100%	0%	**99.3%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	1	0	0	**1**	-	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.1%	0%	0%	**0.1%**	-	0%	0.1%	0%	0%	**0.1%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	0	1	0	**1**	-	0	17	0	0	**17**	-	0	13	0	0	**13**	-	31
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	6.3%	0%	**3.8%**	-	0%	0.9%	0%	0%	**0.9%**	-	0%	0.7%	0%	0%	**0.7%**	-	0.8%
Pedestrians	-	-	-	-	-	98	-	-	-	-	-	19	-	-	-	-	-	4	-	-	-	-	-	11	
% Pedestrians	-	-	-	-	-	99.0%	-	-	-	-	-	73.1%	-	-	-	-	-	100%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	7	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	1.0%	-	-	-	-	-	26.9%	-	-	-	-	-	0%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

25. South Avenue and South Lot - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965812, Location: 40.648635, -74.347943, Site Code: 25

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US



25. South Avenue and South Lot - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12:30 PM - 1:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965812, Location: 40.648635, -74.347943, Site Code: 25

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg / Direction	Business Driveway Northbound						Parking Driveway Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 12:30PM	0	0	0	0	**0**	8	2	0	0	0	**2**	1	0	147	0	0	**147**	1	0	144	0	0	**144**	0	**293**
12:45PM	0	0	0	0	**0**	2	2	0	1	0	**3**	2	1	174	0	0	**175**	0	0	159	1	0	**160**	1	**338**
1:00PM	0	0	0	0	**0**	11	1	0	1	0	**2**	2	3	148	0	0	**151**	0	0	163	1	0	**164**	0	**317**
1:15PM	0	0	0	0	**0**	2	1	0	0	0	**1**	2	0	160	1	0	**161**	0	0	171	0	0	**171**	0	**333**
Total	0	0	0	0	**0**	23	6	0	2	0	**8**	7	4	629	1	0	**634**	1	0	637	2	0	**639**	1	**1281**
% Approach	0%	0%	0%	0%	**-**	-	75.0%	0%	25.0%	0%	**-**	-	0.6%	99.2%	0.2%	0%	**-**	-	0%	99.7%	0.3%	0%	**-**	-	**-**
% Total	0%	0%	0%	0%	**0%**	-	0.5%	0%	0.2%	0%	**0.6%**	-	0.3%	49.1%	0.1%	0%	**49.5%**	-	0%	49.7%	0.2%	0%	**49.9%**	-	**-**
PHF	-	-	-	-	**-**	-	0.750	-	0.500	-	**0.667**	-	0.333	0.904	0.250	-	**0.906**	-	-	0.931	0.500	-	**0.934**	-	0.947
Lights	0	0	0	0	**0**	-	6	0	2	0	**8**	-	4	623	1	0	**628**	-	0	632	2	0	**634**	-	1270
% Lights	0%	0%	0%	0%	**-**	-	100%	0%	100%	0%	**100%**	-	100%	99.0%	100%	0%	**99.1%**	-	0%	99.2%	100%	0%	**99.2%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Articulated Trucks	0%	0%	0%	0%	**-**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	6	0	0	**6**	-	0	5	0	0	**5**	-	11
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**-**	-	0%	0%	0%	0%	**0%**	-	0%	1.0%	0%	0%	**0.9%**	-	0%	0.8%	0%	0%	**0.8%**	-	0.9%
Pedestrians	-	-	-	-	-	23	-	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	85.7%	-	-	-	-	-	100%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	14.3%	-	-	-	-	-	0%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

25. South Avenue and South Lot - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12:30 PM - 1:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965812, Location: 40.648635, -74.347943, Site Code: 25

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
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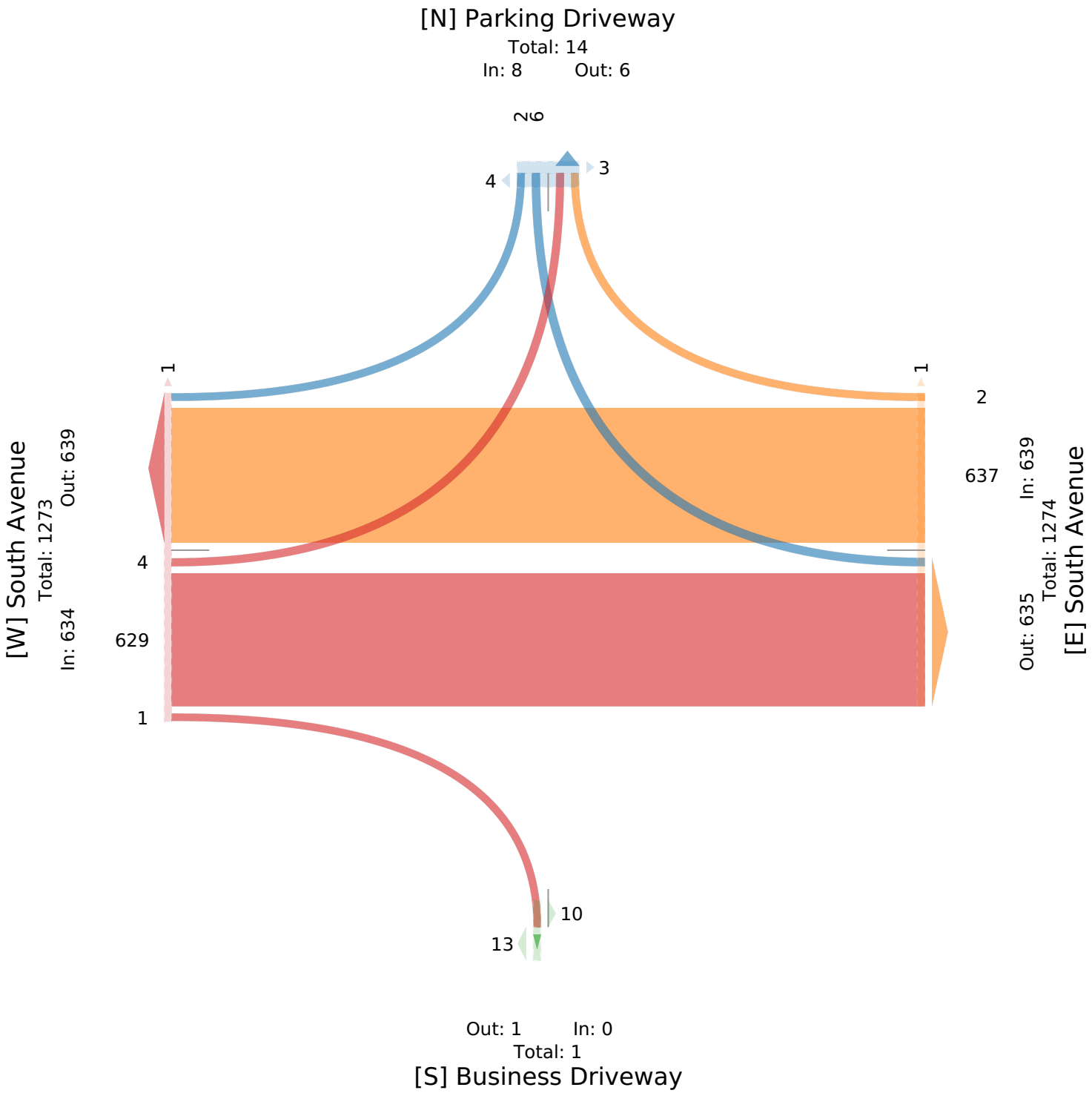

25. South Avenue and South Lot - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965812, Location: 40.648635, -74.347943, Site Code: 25

Provided by: Imperial Traffic & Data Collection
PO Box 4637,
Cherry Hill, NJ, 08003, US

Leg Direction	Business Driveway Northbound						Parking Driveway Southbound						South Avenue Eastbound						South Avenue Westbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	0	0	0	0	**0**	11	1	0	1	0	**2**	2	3	148	0	0	**151**	0	0	163	1	0	**164**	0	**317**
1:15PM	0	0	0	0	**0**	2	1	0	0	0	**1**	2	0	160	1	0	**161**	0	0	171	0	0	**171**	0	**333**
1:30PM	0	0	0	0	**0**	10	0	0	2	0	**2**	2	2	144	0	0	**146**	0	0	144	0	0	**144**	1	**292**
1:45PM	0	1	0	0	**1**	15	1	0	2	0	**3**	2	2	140	1	0	**143**	0	0	135	0	0	**135**	1	**282**
Total	0	1	0	0	**1**	38	3	0	5	0	**8**	8	7	592	2	0	**601**	0	0	613	1	0	**614**	2	**1224**
% Approach	0%	100%	0%	0%	**-**	-	37.5%	0%	62.5%	0%	**-**	-	1.2%	98.5%	0.3%	0%	**-**	-	0%	99.8%	0.2%	0%	**-**	-	-
% Total	0%	0.1%	0%	0%	**0.1%**	-	0.2%	0%	0.4%	0%	**0.7%**	-	0.6%	48.4%	0.2%	0%	**49.1%**	-	0%	50.1%	0.1%	0%	**50.2%**	-	-
PHF	-	0.250	-	-	**0.250**	-	0.750	-	0.625	-	**0.667**	-	0.583	0.925	0.500	-	**0.933**	-	-	0.896	0.250	-	**0.898**	-	0.919
Lights	0	1	0	0	**1**	-	3	0	5	0	**8**	-	7	585	2	0	**594**	-	0	608	1	0	**609**	-	1212
% Lights	0%	100%	0%	0%	**100%**	-	100%	0%	100%	0%	**100%**	-	100%	98.8%	100%	0%	**98.8%**	-	0%	99.2%	100%	0%	**99.2%**	-	99.0%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	6	0	0	**6**	-	0	5	0	0	**5**	-	11
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	1.0%	0%	0%	**1.0%**	-	0%	0.8%	0%	0%	**0.8%**	-	0.9%
Pedestrians	-	-	-	-	-	37	-	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	2	
% Pedestrians	-	-	-	-	-	97.4%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	2.6%	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

25. South Avenue and South Lot - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 965812, Location: 40.648635, -74.347943, Site Code: 25

Provided by: Imperial Traffic & Data Collection
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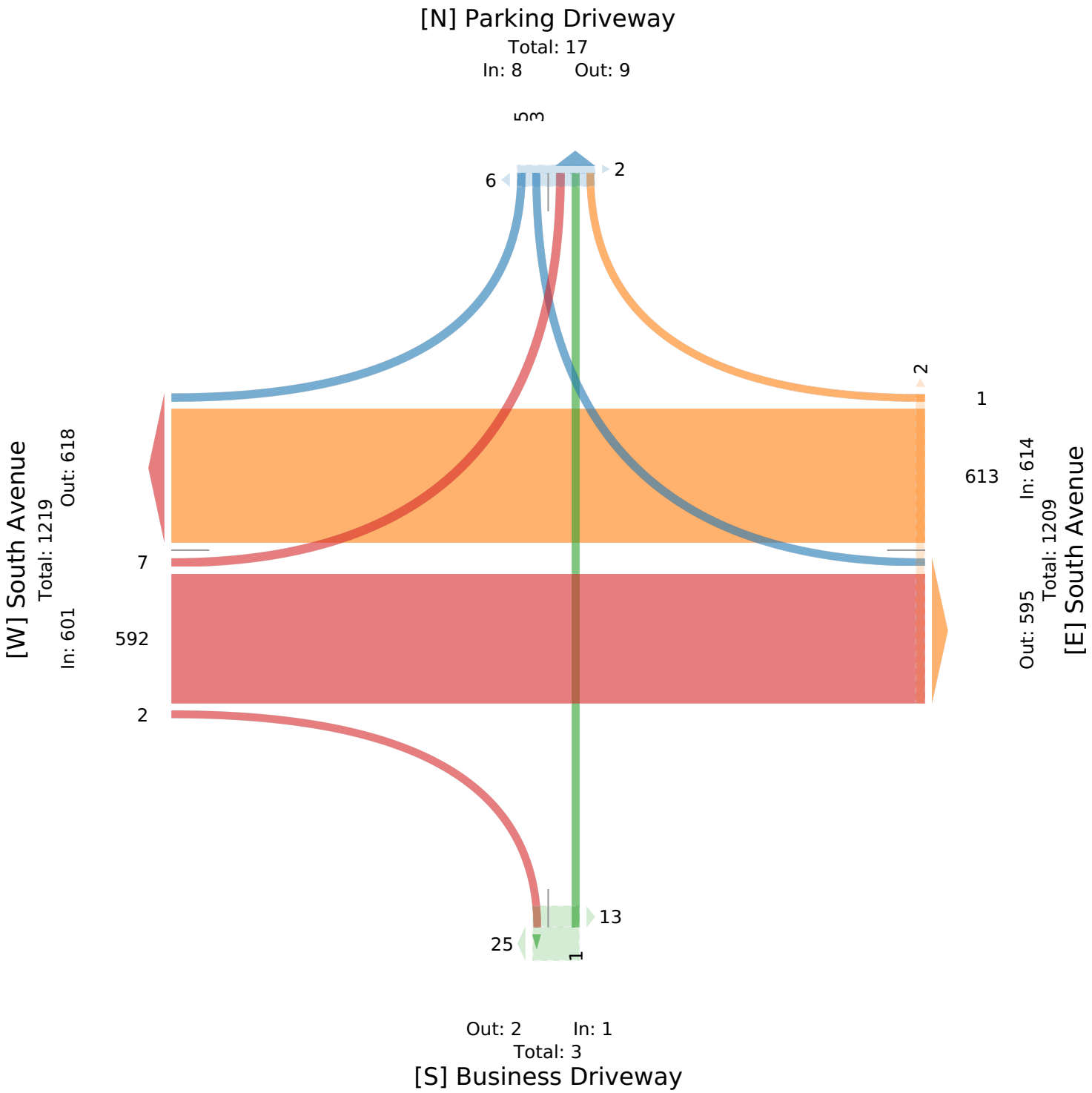

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648635, -74.347943

Count Name: 25. South Avenue and South Lot
Site Code: 25
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	South Avenue Eastbound						South Avenue Westbound						Business Driveway Northbound						Parking Driveway Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
11:00 AM	0	0	167	1	0	168	0	1	158	0	3	159	0	1	0	2	13	3	0	1	0	3	0	4	334
11:15 AM	0	0	151	1	0	152	0	0	179	1	0	180	0	0	0	0	7	0	0	0	0	1	1	1	333
11:30 AM	0	3	145	0	1	148	0	0	145	0	3	145	0	0	0	1	5	1	0	0	0	2	3	2	296
11:45 AM	0	1	141	0	1	142	0	1	163	4	0	168	0	0	0	0	10	0	0	0	0	1	2	1	311
Hourly Total	0	4	604	2	2	610	0	2	645	5	6	652	0	1	0	3	35	4	0	1	0	7	6	8	1274
12:00 PM	0	0	161	0	1	161	0	0	151	0	1	151	0	2	0	0	11	2	0	1	0	0	5	1	315
12:15 PM	0	0	163	0	0	163	0	0	157	0	1	157	0	0	0	1	5	1	0	1	0	3	4	4	325
12:30 PM	0	0	147	0	1	147	0	0	144	0	0	144	0	0	0	0	8	0	0	2	0	0	1	2	293
12:45 PM	0	1	174	0	0	175	0	0	159	1	1	160	0	0	0	0	2	0	0	2	0	1	2	3	338
Hourly Total	0	1	645	0	2	646	0	0	611	1	3	612	0	2	0	1	26	3	0	6	0	4	12	10	1271
1:00 PM	0	3	148	0	0	151	0	0	163	1	0	164	0	0	0	0	11	0	0	1	0	1	2	2	317
1:15 PM	0	0	160	1	0	161	0	0	171	0	0	171	0	0	0	0	2	0	0	1	0	0	2	1	333
1:30 PM	0	2	144	0	0	146	0	0	144	0	1	144	0	0	0	0	10	0	0	0	0	2	2	2	292
1:45 PM	0	2	140	1	0	143	0	0	135	0	1	135	0	0	1	0	15	1	0	1	0	2	2	3	282
Hourly Total	0	7	592	2	0	601	0	0	613	1	2	614	0	0	1	0	38	1	0	3	0	5	8	8	1224
Grand Total	0	12	1841	4	4	1857	0	2	1869	7	11	1878	0	3	1	4	99	8	0	10	0	16	26	26	3769
Approach %	0.0	0.6	99.1	0.2	-	-	0.0	0.1	99.5	0.4	-	-	0.0	37.5	12.5	50.0	-	-	0.0	38.5	0.0	61.5	-	-	-
Total %	0.0	0.3	48.8	0.1	-	49.3	0.0	0.1	49.6	0.2	-	49.8	0.0	0.1	0.0	0.1	-	0.2	0.0	0.3	0.0	0.4	-	0.7	-
Lights	0	12	1823	4	-	1839	0	2	1855	7	-	1864	0	3	1	4	-	8	0	10	0	15	-	25	3736
% Lights	-	100.0	99.0	100.0	-	99.0	-	100.0	99.3	100.0	-	99.3	-	100.0	100.0	100.0	-	100.0	-	100.0	-	93.8	-	96.2	99.1
Mediums	0	0	17	0	-	17	0	0	13	0	-	13	0	0	0	0	-	0	0	0	0	1	-	1	31
% Mediums	-	0.0	0.9	0.0	-	0.9	-	0.0	0.7	0.0	-	0.7	-	0.0	0.0	0.0	-	0.0	-	0.0	-	6.3	-	3.8	0.8
Articulated Trucks	0	0	1	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	-	0.0	0.1	0.0	-	0.1	-	0.0	0.1	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	1.0	-	-	-	-	-	26.9	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	11	-	-	-	-	-	98	-	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	99.0	-	-	-	-	-	73.1	-	-

Imperial Traffic & Data Collection
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Cherry Hill, New Jersey, United States 08034
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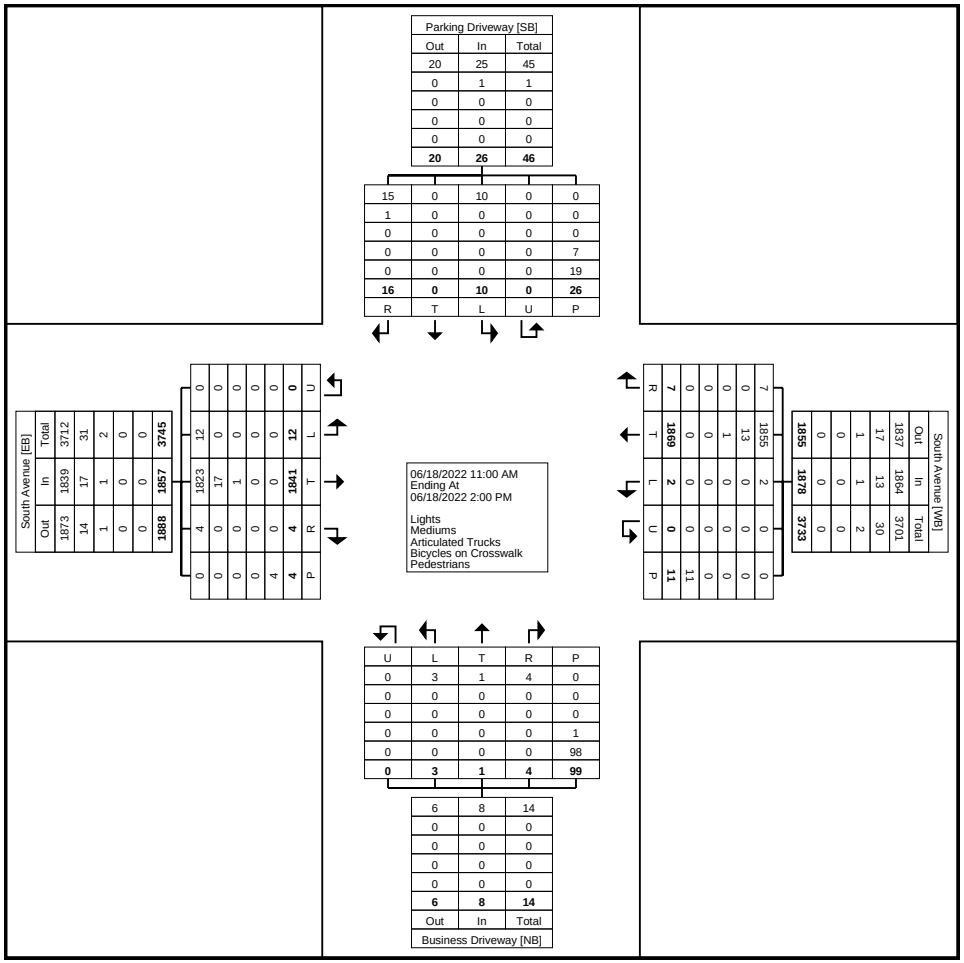
Project: North Ave, South Ave, Westfield NJ
Municipality: Westfield, Union County, NJ
Setup: NR/DR
Location: 40.648635, -74.347943

Count Name: 25. South Avenue and South Lot
Site Code: 25
Start Date: 06/18/2022



Turning Movement Data Plot

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Project: North Ave, South Ave, Westfield NJ
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Setup: NR/DR
Location: 40.648635, -74.347943

Count Name: 25. South Avenue and South Lot
Site Code: 25
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:30 PM)

Start Time	South Avenue Eastbound						South Avenue Westbound						Business Driveway Northbound						Parking Driveway Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
12:30 PM	0	0	147	0	1	147	0	0	144	0	0	144	0	0	0	0	8	0	0	2	0	0	1	2	293
12:45 PM	0	1	174	0	0	175	0	0	159	1	1	160	0	0	0	0	2	0	0	2	0	1	2	3	338
1:00 PM	0	3	148	0	0	151	0	0	163	1	0	164	0	0	0	0	11	0	0	1	0	1	2	2	317
1:15 PM	0	0	160	1	0	161	0	0	171	0	0	171	0	0	0	0	2	0	0	1	0	0	2	1	333
Total	0	4	629	1	1	634	0	0	637	2	1	639	0	0	0	0	23	0	0	6	0	2	7	8	1281
Approach %	0.0	0.6	99.2	0.2	-	-	0.0	0.0	99.7	0.3	-	-	0.0	0.0	0.0	0.0	-	-	0.0	75.0	0.0	25.0	-	-	-
Total %	0.0	0.3	49.1	0.1	-	49.5	0.0	0.0	49.7	0.2	-	49.9	0.0	0.0	0.0	0.0	-	0.0	0.0	0.5	0.0	0.2	-	0.6	-
PHF	0.000	0.333	0.904	0.250	-	0.906	0.000	0.000	0.931	0.500	-	0.934	0.000	0.000	0.000	0.000	-	0.000	0.000	0.750	0.000	0.500	-	0.667	0.947
Lights	0	4	623	1	-	628	0	0	632	2	-	634	0	0	0	0	-	0	0	6	0	2	-	8	1270
% Lights	-	100.0	99.0	100.0	-	99.1	-	-	99.2	100.0	-	99.2	-	-	-	-	-	-	-	100.0	-	100.0	-	100.0	99.1
Mediums	0	0	6	0	-	6	0	0	5	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	11
% Mediums	-	0.0	1.0	0.0	-	0.9	-	-	0.8	0.0	-	0.8	-	-	-	-	-	-	-	0.0	-	0.0	-	0.0	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	-	-	-	-	-	0.0	-	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	14.3	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	23	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	85.7	-	-

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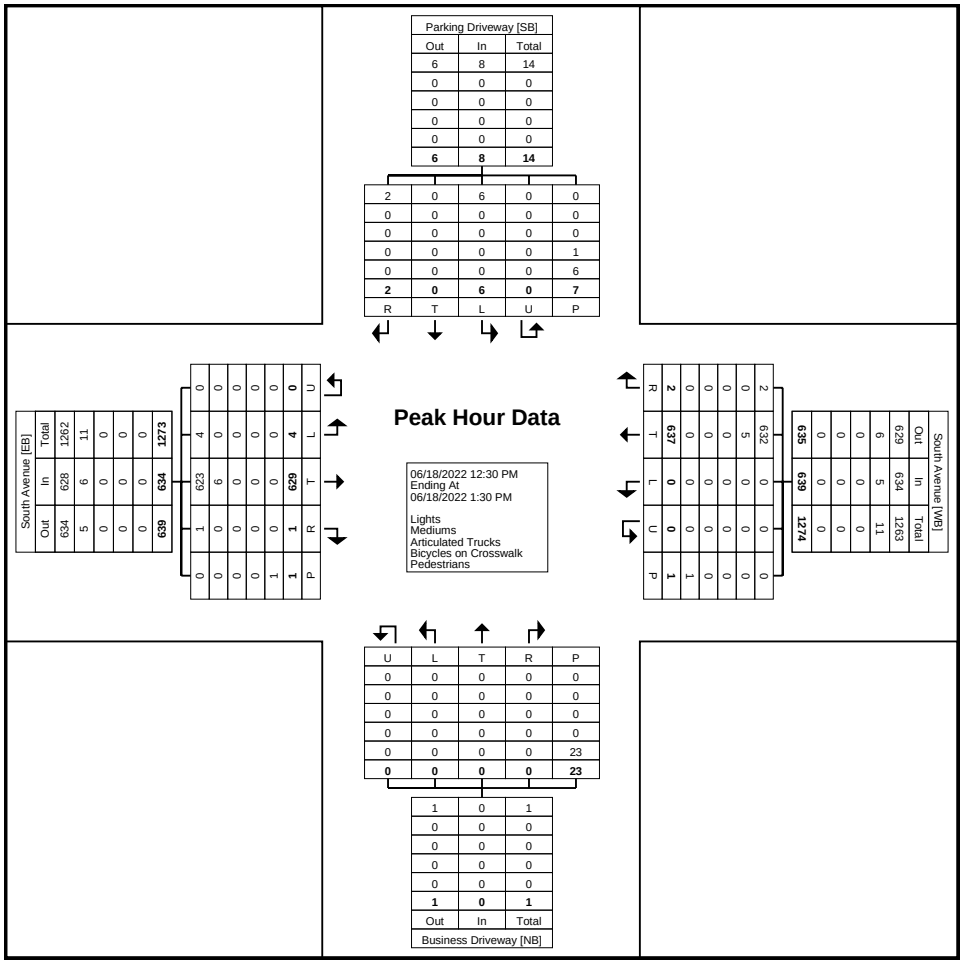

Turning Movement Peak Hour Data Plot (12:30 PM)

www.TSTData.com
184 Baker Rd

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

Westfield, NJ
Broad St & South Ave
Saturday, June 18, 2022
Location: 40.648031, -74.352108

Count Name: Broad Street & South Avenue
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	South Ave Eastbound						South Ave Westbound					Broad St Northbound						
	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	Int. Total
11:00 AM	87	16	2	0	0	105	85	92	0	1	177	24	57	14	0	4	95	377
11:15 AM	92	14	0	0	1	106	91	103	0	7	194	25	84	29	0	5	138	438
11:30 AM	91	21	0	0	8	112	70	90	0	25	160	25	56	20	0	5	101	373
11:45 AM	74	21	0	0	1	95	101	96	0	3	197	29	80	25	0	4	134	426
Hourly Total	344	72	2	0	10	418	347	381	0	36	728	103	277	88	0	18	468	1614
12:00 PM	94	10	2	0	1	106	92	81	0	1	173	22	67	27	0	8	116	395
12:15 PM	108	13	1	0	2	122	94	105	0	0	199	25	62	13	0	6	100	421
12:30 PM	93	24	2	0	2	119	98	87	0	5	185	34	54	14	0	1	102	406
12:45 PM	96	19	4	0	0	119	96	118	0	2	214	26	59	8	0	2	93	426
Hourly Total	391	66	9	0	5	466	380	391	0	8	771	107	242	62	0	17	411	1648
1:00 PM	91	8	1	0	0	100	113	90	0	3	203	22	68	23	0	10	113	416
1:15 PM	82	18	1	0	0	101	90	113	0	12	203	31	50	15	0	0	96	400
1:30 PM	62	13	1	0	2	76	96	87	0	3	183	21	68	17	0	2	106	365
1:45 PM	75	13	0	0	2	88	102	91	0	3	193	24	72	24	0	3	120	401
Hourly Total	310	52	3	0	4	365	401	381	0	21	782	98	258	79	0	15	435	1582
2:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	1046	190	14	0	19	1250	1128	1153	0	65	2281	308	777	229	0	50	1314	4845
Approach %	83.7	15.2	1.1	0.0	-	-	49.5	50.5	0.0	-	-	23.4	59.1	17.4	0.0	-	-	-
Total %	21.6	3.9	0.3	0.0	-	25.8	23.3	23.8	0.0	-	47.1	6.4	16.0	4.7	0.0	-	27.1	-
Lights	1040	190	13	0	-	1243	1116	1140	0	-	2256	306	774	225	0	-	1305	4804
% Lights	99.4	100.0	92.9	-	-	99.4	98.9	98.9	-	-	98.9	99.4	99.6	98.3	-	-	99.3	99.2
Buses	2	0	0	0	-	2	1	4	0	-	5	0	0	1	0	-	1	8
% Buses	0.2	0.0	0.0	-	-	0.2	0.1	0.3	-	-	0.2	0.0	0.0	0.4	-	-	0.1	0.2
Trucks	4	0	1	0	-	5	11	9	0	-	20	2	3	3	0	-	8	33
% Trucks	0.4	0.0	7.1	-	-	0.4	1.0	0.8	-	-	0.9	0.6	0.4	1.3	-	-	0.6	0.7
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	15.8	-	-	-	-	0.0	-	-	-	-	-	2.0	-	-
Pedestrians	-	-	-	-	16	-	-	-	-	65	-	-	-	-	-	49	-	-
% Pedestrians	-	-	-	-	84.2	-	-	-	-	100.0	-	-	-	-	-	98.0	-	-

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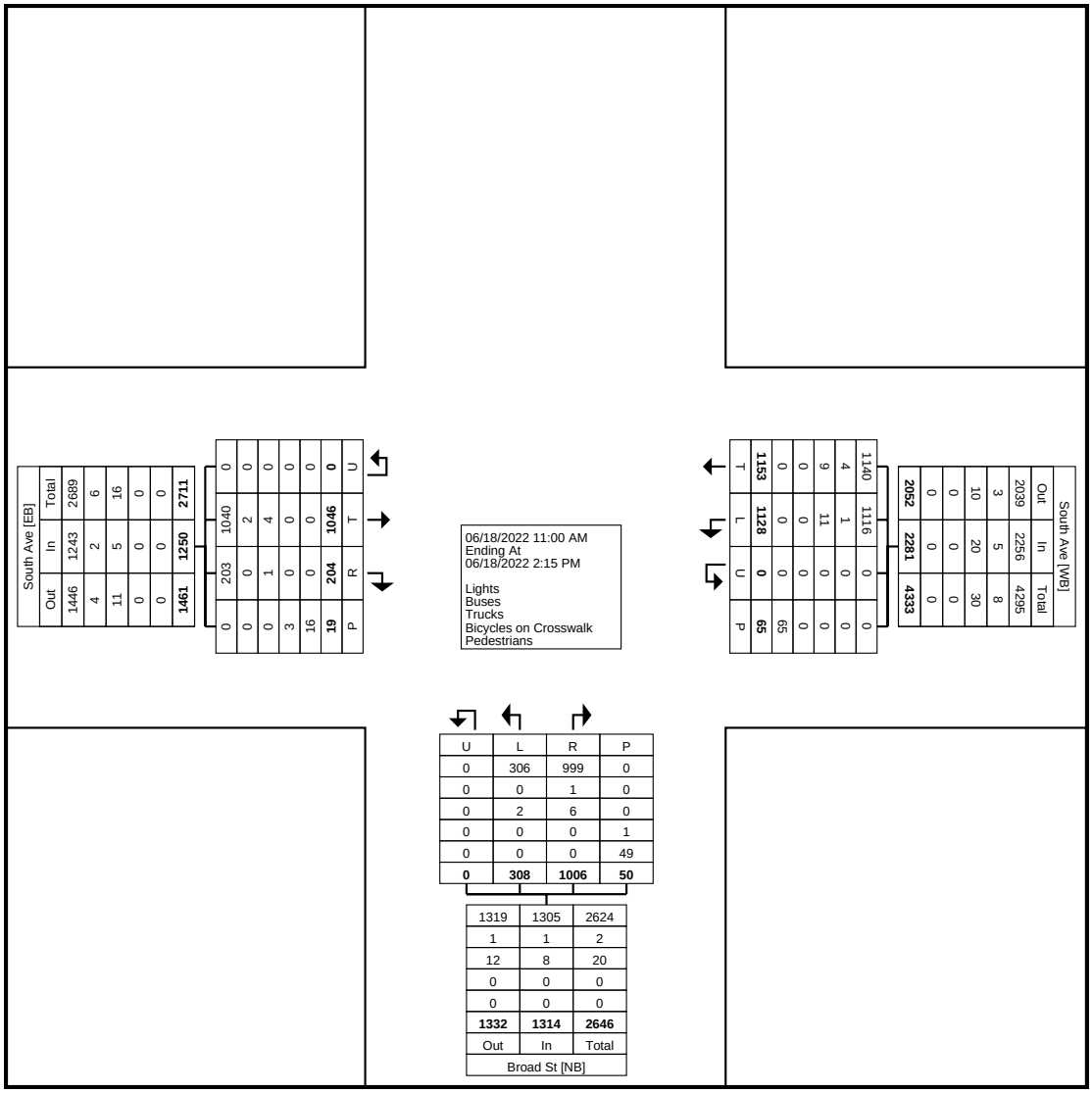
Westfield, NJ
Broad St & South Ave
Saturday, June 18, 2022
Location: 40.648031, -74.352108

Count Name: Broad Street & South Avenue
Site Code:
Start Date: 06/18/2022
Page No: 2



Turning Movement Data Plot

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Westfield, NJ
Broad St & South Ave
Saturday, June 18, 2022
Location: 40.648031, -74.352108

Count Name: Broad Street & South Avenue
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:15 PM)

Start Time	South Ave Eastbound						South Ave Westbound					Broad St Northbound						
	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	Int. Total
12:15 PM	108	13	1	0	2	122	94	105	0	0	199	25	62	13	0	6	100	421
12:30 PM	93	24	2	0	2	119	98	87	0	5	185	34	54	14	0	1	102	406
12:45 PM	96	19	4	0	0	119	96	118	0	2	214	26	59	8	0	2	93	426
1:00 PM	91	8	1	0	0	100	113	90	0	3	203	22	68	23	0	10	113	416
Total	388	64	8	0	4	460	401	400	0	10	801	107	243	58	0	19	408	1669
Approach %	84.3	13.9	1.7	0.0	-	-	50.1	49.9	0.0	-	-	26.2	59.6	14.2	0.0	-	-	-
Total %	23.2	3.8	0.5	0.0	-	27.6	24.0	24.0	0.0	-	48.0	6.4	14.6	3.5	0.0	-	24.4	-
PHF	0.898	0.667	0.500	0.000	-	0.943	0.887	0.847	0.000	-	0.936	0.787	0.893	0.630	0.000	-	0.903	0.979
Lights	386	64	7	0	-	457	396	396	0	-	792	106	242	58	0	-	406	1655
% Lights	99.5	100.0	87.5	-	-	99.3	98.8	99.0	-	-	98.9	99.1	99.6	100.0	-	-	99.5	99.2
Buses	1	0	0	0	-	1	0	1	0	-	1	0	0	0	0	-	0	2
% Buses	0.3	0.0	0.0	-	-	0.2	0.0	0.3	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	1	0	1	0	-	2	5	3	0	-	8	1	1	0	0	-	2	12
% Trucks	0.3	0.0	12.5	-	-	0.4	1.2	0.8	-	-	1.0	0.9	0.4	0.0	-	-	0.5	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	10	-	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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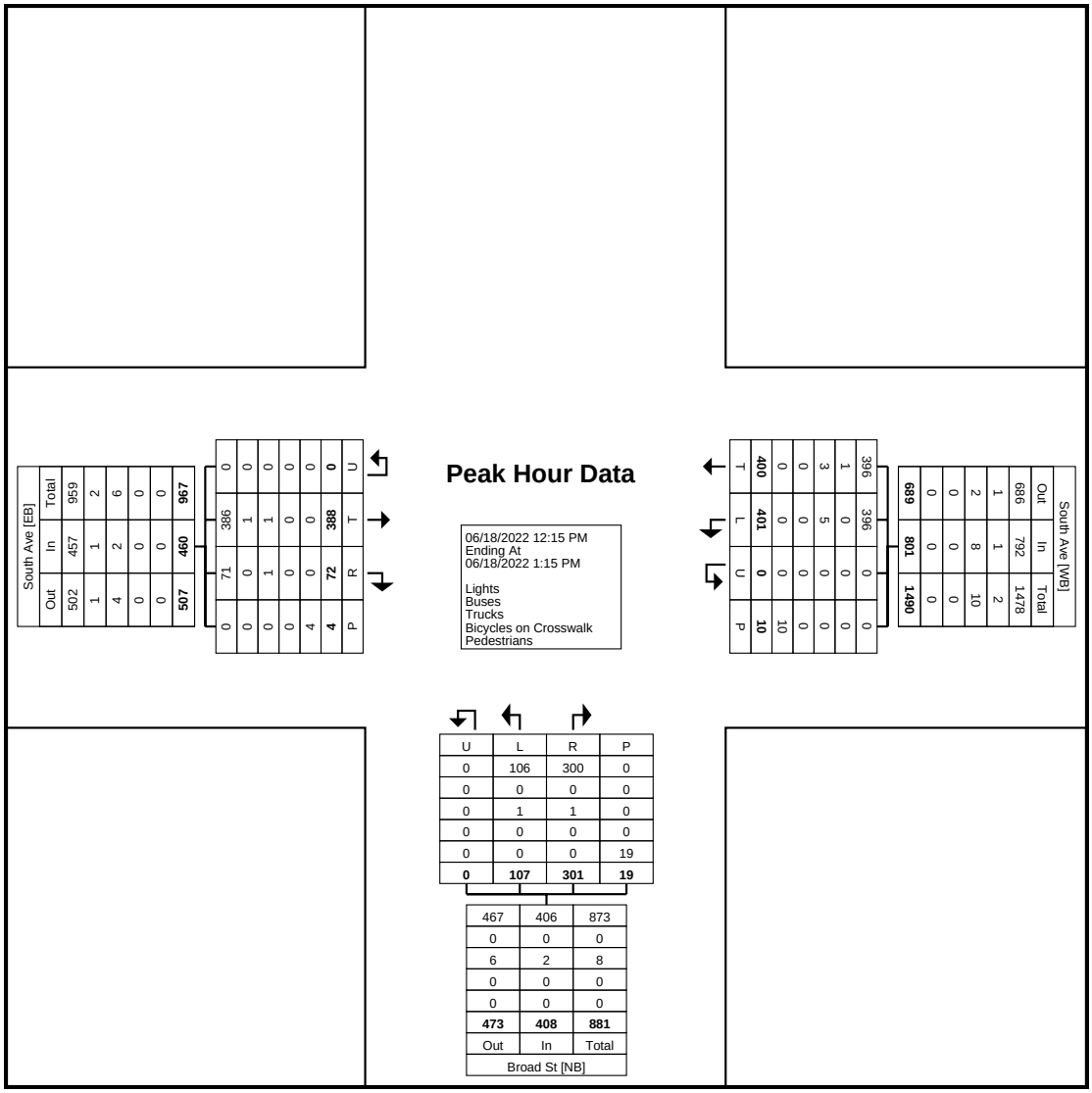
Broad St & South Ave
Saturday, June 18, 2022
Location: 40.648031, -74.352108

Count Name: Broad Street & South Avenue
Site Code:
Start Date: 06/18/2022
Page No: 4



Turning Movement Peak Hour Data Plot (12:15 PM)

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Westfield, NJ
Clark St & Parking Lot (north of Ferris Place)
Saturday, June 18, 2022
Location: 40.650119, -74.352385

Count Name: Clark Street & Parking Lot (north of Ferris Place)
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	Parking Lot Eastbound						Westbound Approach Westbound						Clark St Northbound						Clark St 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	0	0	0	0	2	0	8	0	0	0	3	8	0	36	0	0	0	36	0	33	0	0	0	33	77
11:15 AM	0	0	0	0	1	0	12	0	3	0	2	15	0	30	0	0	1	30	0	35	0	0	0	35	80
11:30 AM	0	0	0	0	1	0	9	0	1	0	6	10	0	41	0	0	0	41	0	29	0	0	0	29	80
11:45 AM	1	0	1	0	2	2	10	0	1	0	1	11	0	32	0	0	0	32	0	35	1	0	2	36	81
Hourly Total	1	0	1	0	6	2	39	0	5	0	12	44	0	139	0	0	1	139	0	132	1	0	2	133	318
12:00 PM	0	0	0	0	0	0	9	0	6	0	0	15	0	47	0	0	0	47	0	43	0	0	0	43	105
12:15 PM	1	0	0	0	0	1	8	0	1	0	3	9	0	37	0	1	1	38	0	36	0	0	0	36	84
12:30 PM	0	0	0	0	1	0	10	0	2	0	2	12	0	38	0	0	0	38	0	38	0	0	0	38	88
12:45 PM	0	0	0	0	1	0	14	0	2	0	5	16	0	38	0	0	1	38	0	48	0	0	2	48	102
Hourly Total	1	0	0	0	2	1	41	0	11	0	10	52	0	160	0	1	2	161	0	165	0	0	2	165	379
1:00 PM	0	0	1	0	0	1	12	0	1	0	6	13	0	39	0	0	0	39	0	34	0	0	0	34	87
1:15 PM	0	0	0	0	0	0	9	0	2	0	6	11	0	40	0	0	0	40	0	37	1	0	1	38	89
1:30 PM	0	0	0	0	1	0	5	0	3	0	10	8	0	39	0	0	1	39	0	37	0	0	0	37	84
1:45 PM	0	0	0	0	2	0	8	0	6	0	5	14	0	29	0	0	1	29	0	25	0	0	0	25	68
Hourly Total	0	0	1	0	3	1	34	0	12	0	27	46	0	147	0	0	2	147	0	133	1	0	1	134	328
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	2	0	2	0	11	4	114	0	28	0	49	142	0	446	0	1	5	447	0	430	2	0	5	432	1025
Approach %	50.0	0.0	50.0	0.0	-	-	80.3	0.0	19.7	0.0	-	-	0.0	99.8	0.0	0.2	-	-	0.0	99.5	0.5	0.0	-	-	-
Total %	0.2	0.0	0.2	0.0	-	0.4	11.1	0.0	2.7	0.0	-	13.9	0.0	43.5	0.0	0.1	-	43.6	0.0	42.0	0.2	0.0	-	42.1	-
Lights	2	0	2	0	-	4	113	0	28	0	-	141	0	436	0	1	-	437	0	425	2	0	-	427	1009
% Lights	100.0	-	100.0	-	-	100.0	99.1	-	100.0	-	-	99.3	-	97.8	-	100.0	-	97.8	-	98.8	100.0	-	-	98.8	98.4
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	5	0	0	-	5	0	0	0	0	-	0	5
% Buses	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	1.1	-	0.0	-	1.1	-	0.0	0.0	-	-	0.0	0.5
Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	5	0	0	-	5	0	5	0	0	-	5	11
% Trucks	0.0	-	0.0	-	-	0.0	0.9	-	0.0	-	-	0.7	-	1.1	-	0.0	-	1.1	-	1.2	0.0	-	-	1.2	1.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	6.1	-	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	46	-	-	-	-	-	4	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	93.9	-	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-

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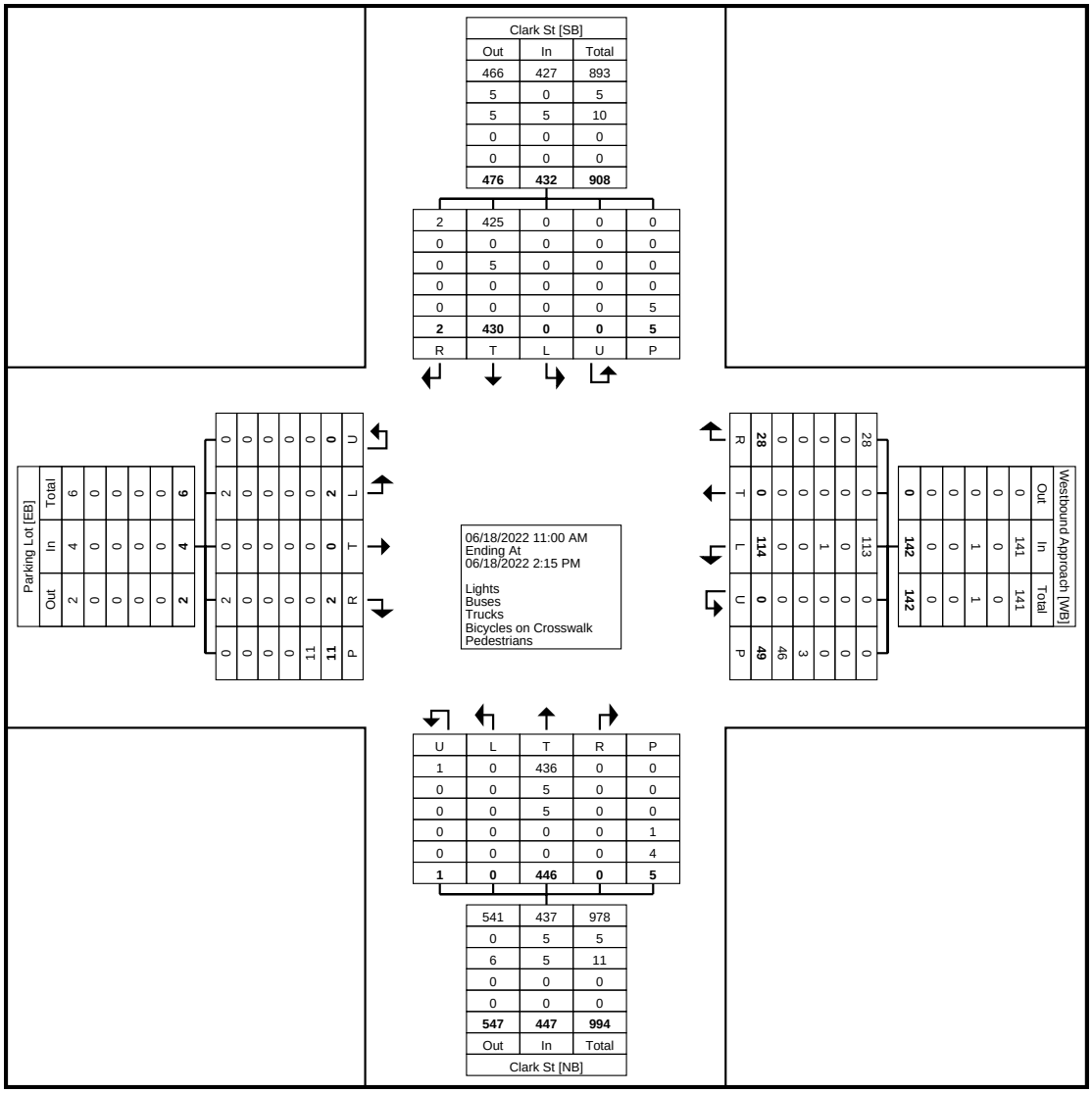
Westfield, NJ
Clark St & Parking Lot (north of Ferris Place)
Saturday, June 18, 2022
Location: 40.650119, -74.352385

Count Name: Clark Street & Parking Lot (north of Ferris Place)
Site Code:
Start Date: 06/18/2022
Page No: 2



Turning Movement Data Plot

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Clark St & Parking Lot (north of Ferris Place)
Saturday, June 18, 2022
Location: 40.650119, -74.352385

Count Name: Clark Street & Parking Lot (north of Ferris Place)
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Parking Lot Eastbound						Westbound Approach Westbound						Clark St Northbound						Clark St 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	
12:00 PM	0	0	0	0	0	0	9	0	6	0	0	15	0	47	0	0	0	47	0	43	0	0	0	43	105
12:15 PM	1	0	0	0	0	1	8	0	1	0	3	9	0	37	0	1	1	38	0	36	0	0	0	36	84
12:30 PM	0	0	0	0	1	0	10	0	2	0	2	12	0	38	0	0	0	38	0	38	0	0	0	38	88
12:45 PM	0	0	0	0	1	0	14	0	2	0	5	16	0	38	0	0	1	38	0	48	0	0	2	48	102
Total	1	0	0	0	2	1	41	0	11	0	10	52	0	160	0	1	2	161	0	165	0	0	2	165	379
Approach %	100.0	0.0	0.0	0.0	-	-	78.8	0.0	21.2	0.0	-	-	0.0	99.4	0.0	0.6	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	0.3	0.0	0.0	0.0	-	0.3	10.8	0.0	2.9	0.0	-	13.7	0.0	42.2	0.0	0.3	-	42.5	0.0	43.5	0.0	0.0	-	43.5	-
PHF	0.250	0.000	0.000	0.000	-	0.250	0.732	0.000	0.458	0.000	-	0.813	0.000	0.851	0.000	0.250	-	0.856	0.000	0.859	0.000	0.000	-	0.859	0.902
Lights	1	0	0	0	-	1	41	0	11	0	-	52	0	154	0	1	-	155	0	162	0	0	-	162	370
% Lights	100.0	-	-	-	-	100.0	100.0	-	100.0	-	-	100.0	-	96.3	-	100.0	-	96.3	-	98.2	-	-	-	98.2	97.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	5	0	0	-	5	0	0	0	0	-	0	5
% Buses	0.0	-	-	-	-	0.0	0.0	-	0.0	-	-	0.0	-	3.1	-	0.0	-	3.1	-	0.0	-	-	-	0.0	1.3
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	3	0	0	-	3	4
% Trucks	0.0	-	-	-	-	0.0	0.0	-	0.0	-	-	0.0	-	0.6	-	0.0	-	0.6	-	1.8	-	-	-	1.8	1.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-	-	-	-	50.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	9	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-	-	-	-	50.0	-	-	-	-	-	100.0	-	-

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Saturday, June 18, 2022
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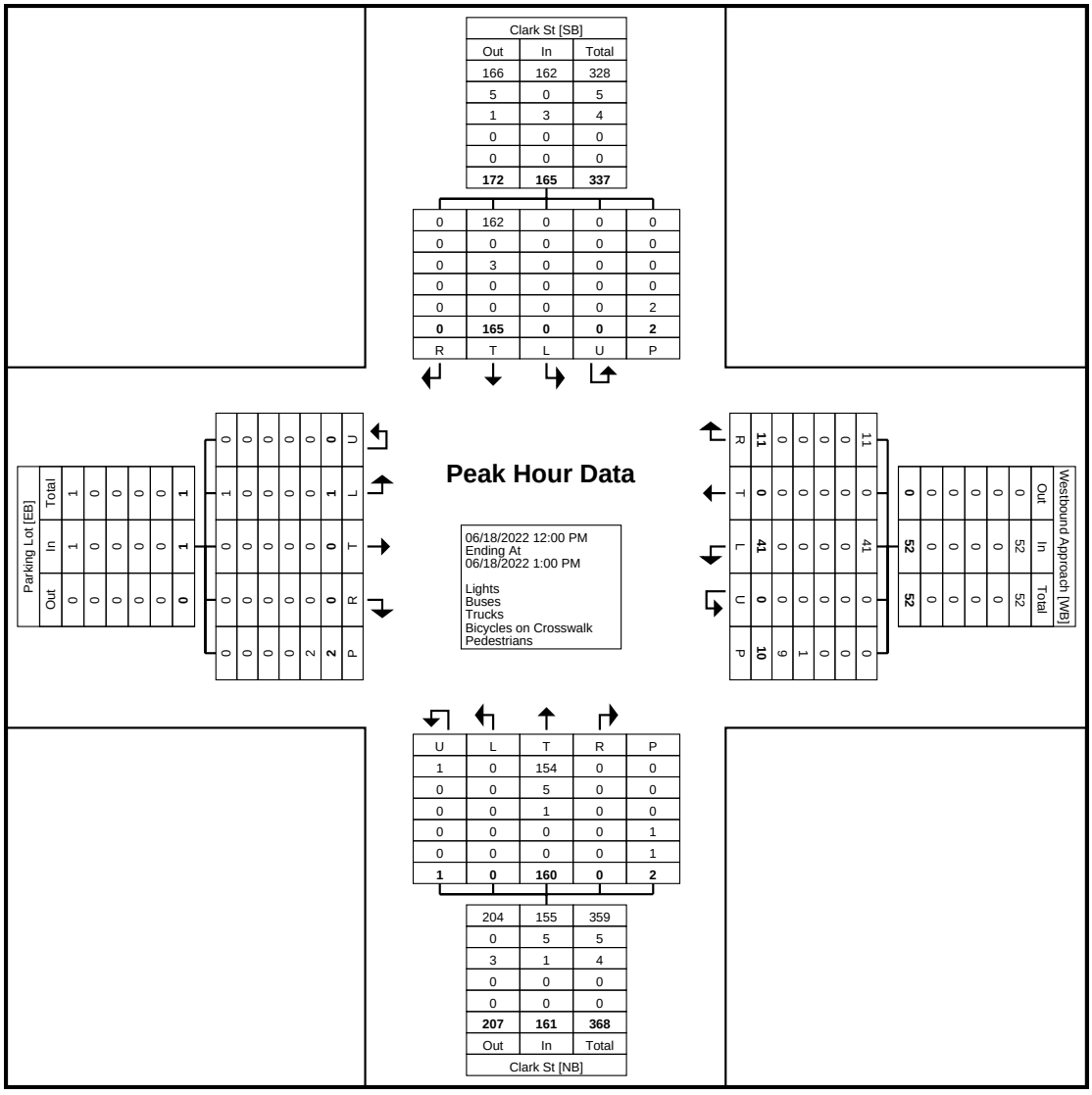

Turning Movement Peak Hour Data Plot (12:00 PM)

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Westfield, NJ
Crossway Place/Edgewood Ave & North Ave
Saturday, June 18, 2022
Location: 40.647913, -74.364487

Count Name: Crossway Place/Edgewood Avenue & North Avenue
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Ave Eastbound							North Ave Westbound							Crossway Pl Northbound							Edgewood Ave 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	2	97	8	3	0	0	110	49	108	3	1	0	0	161	19	6	23	36	0	0	84	2	6	0	1	0	2	9	364
11:15 AM	1	114	20	2	0	0	137	47	121	2	0	0	0	170	15	12	21	34	0	0	82	4	12	0	1	0	1	17	406
11:30 AM	1	107	15	0	0	0	123	49	119	1	1	0	1	170	15	8	15	31	0	0	69	3	11	0	1	0	0	15	377
11:45 AM	2	120	8	1	0	0	131	46	127	3	1	0	3	177	18	8	20	42	0	0	88	3	6	2	2	0	1	13	409
Hourly Total	6	438	51	6	0	0	501	191	475	9	3	0	4	678	67	34	79	143	0	0	323	12	35	2	5	0	4	54	1556
12:00 PM	2	130	15	0	0	0	147	55	129	6	0	0	2	190	20	14	49	23	0	0	106	3	15	0	0	0	0	18	461
12:15 PM	0	108	12	0	0	0	120	49	122	1	0	0	0	172	13	15	47	33	0	0	108	0	10	3	4	0	0	17	417
12:30 PM	3	94	13	0	0	0	110	60	127	5	0	0	0	192	21	12	16	44	0	0	93	1	14	0	3	0	0	18	413
12:45 PM	1	114	8	1	0	0	124	60	119	5	0	0	0	184	12	16	22	35	0	0	85	1	18	1	2	0	0	22	415
Hourly Total	6	446	48	1	0	0	501	224	497	17	0	0	2	738	66	57	134	135	0	0	392	5	57	4	9	0	0	75	1706
1:00 PM	1	113	12	1	0	0	127	50	120	2	0	0	0	172	12	16	16	18	0	0	62	1	15	1	1	0	0	18	379
1:15 PM	2	96	11	0	0	0	109	52	126	3	0	0	0	181	24	12	11	25	0	0	72	3	14	0	2	0	2	19	381
1:30 PM	4	100	12	0	0	0	116	38	114	2	0	0	0	154	24	17	14	28	0	0	83	3	13	1	0	0	1	17	370
1:45 PM	4	100	18	1	0	0	123	41	107	1	0	0	1	149	14	12	10	40	0	0	76	5	8	0	1	0	1	14	362
Hourly Total	11	409	53	2	0	0	475	181	467	8	0	0	1	656	74	57	51	111	0	0	293	12	50	2	4	0	4	68	1492
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1
Grand Total	23	1293	152	9	0	0	1477	596	1439	34	3	0	7	2072	207	148	265	389	0	0	1009	29	142	8	18	0	8	197	4755
Approach %	1.6	87.5	10.3	0.6	0.0	-	-	28.8	69.4	1.6	0.1	0.0	-	-	20.5	14.7	26.3	38.6	0.0	-	-	14.7	72.1	4.1	9.1	0.0	-	-	-
Total %	0.5	27.2	3.2	0.2	0.0	-	31.1	12.5	30.3	0.7	0.1	0.0	-	43.6	4.4	3.1	5.6	8.2	0.0	-	21.2	0.6	3.0	0.2	0.4	0.0	-	4.1	-
Lights	23	1281	152	9	0	-	1465	590	1418	33	3	0	-	2044	204	148	260	381	0	-	993	29	141	8	17	0	-	195	4697
% Lights	100.0	99.1	100.0	100.0	-	-	99.2	99.0	98.5	97.1	100.0	-	-	98.6	98.6	100.0	98.1	97.9	-	-	98.4	100.0	99.3	100.0	94.4	-	-	99.0	98.8
Buses	0	2	0	0	0	-	2	0	1	0	0	0	-	1	0	0	1	0	0	-	1	0	0	0	0	0	-	0	4
% Buses	0.0	0.2	0.0	0.0	-	-	0.1	0.0	0.1	0.0	0.0	-	-	0.0	0.0	0.0	0.4	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	0	10	0	0	0	-	10	6	20	1	0	0	-	27	3	0	4	8	0	-	15	0	1	0	1	0	-	2	54
% Trucks	0.0	0.8	0.0	0.0	-	-	0.7	1.0	1.4	2.9	0.0	-	-	1.3	1.4	0.0	1.5	2.1	-	-	1.5	0.0	0.7	0.0	5.6	-	-	1.0	1.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	62.5	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	7	-	-	-	-	-	-	0	-	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	37.5	-	-

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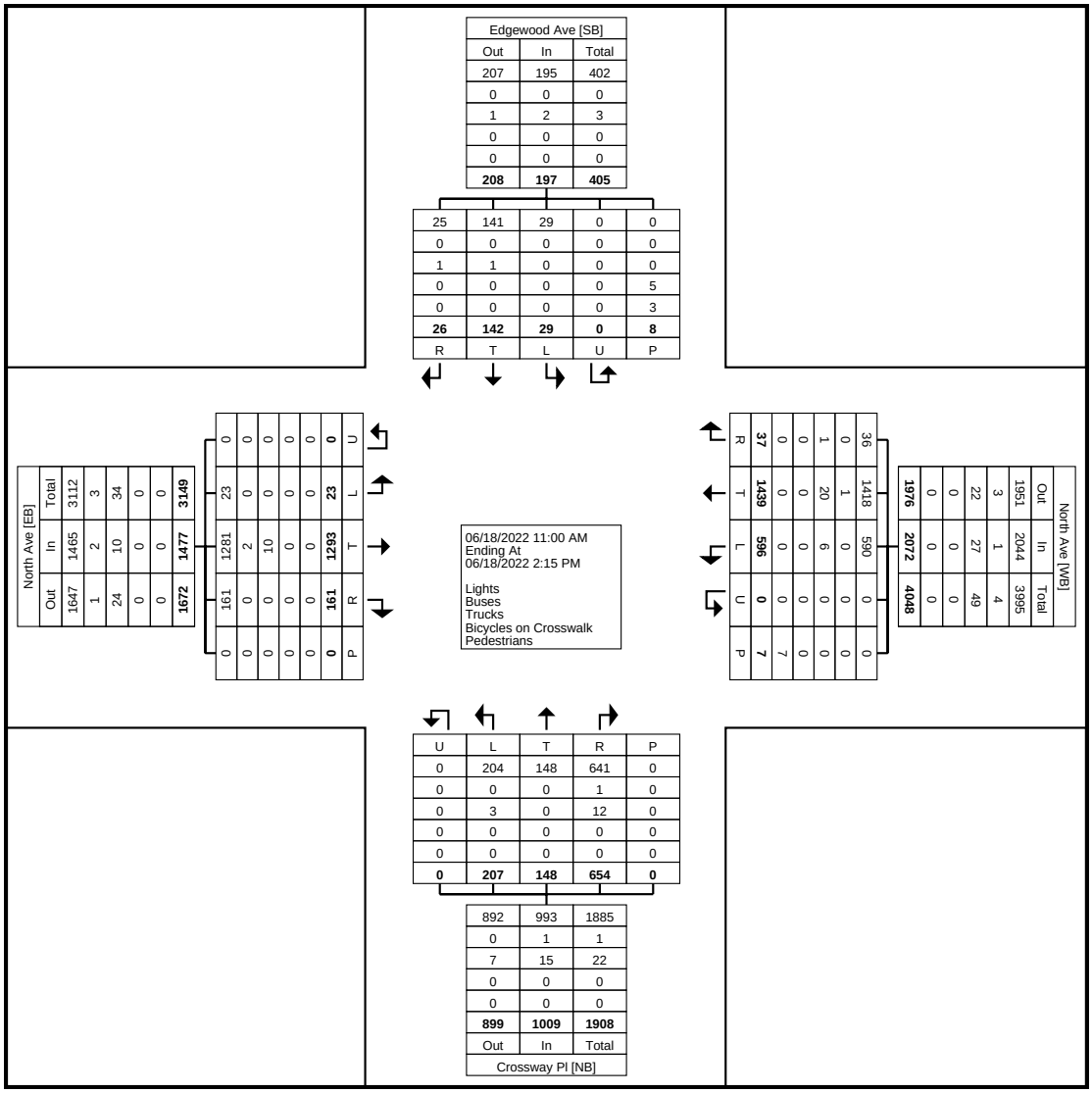
Westfield, NJ
Crossway Place/Edgewood Ave & North Ave
Saturday, June 18, 2022
Location: 40.647913, -74.364487

Count Name: Crossway Place/Edgewood Avenue & North Avenue
Site Code:
Start Date: 06/18/2022



Turning Movement Data Plot

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Westfield, NJ
Crossway Place/Edgewood Ave & North Ave
Saturday, June 18, 2022
Location: 40.647913, -74.364487

Count Name: Crossway Place/Edgewood Avenue & North Avenue
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	North Ave Eastbound							North Ave Westbound							Crossway Pl Northbound							Edgewood Ave 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	
12:00 PM	2	130	15	0	0	0	147	55	129	6	0	0	2	190	20	14	49	23	0	0	106	3	15	0	0	0	0	18	461
12:15 PM	0	108	12	0	0	0	120	49	122	1	0	0	0	172	13	15	47	33	0	0	108	0	10	3	4	0	0	17	417
12:30 PM	3	94	13	0	0	0	110	60	127	5	0	0	0	192	21	12	16	44	0	0	93	1	14	0	3	0	0	18	413
12:45 PM	1	114	8	1	0	0	124	60	119	5	0	0	0	184	12	16	22	35	0	0	85	1	18	1	2	0	0	22	415
Total	6	446	48	1	0	0	501	224	497	17	0	0	2	738	66	57	134	135	0	0	392	5	57	4	9	0	0	75	1706
Approach %	1.2	89.0	9.6	0.2	0.0	-	-	30.4	67.3	2.3	0.0	0.0	-	-	16.8	14.5	34.2	34.4	0.0	-	-	6.7	76.0	5.3	12.0	0.0	-	-	-
Total %	0.4	26.1	2.8	0.1	0.0	-	29.4	13.1	29.1	1.0	0.0	0.0	-	43.3	3.9	3.3	7.9	7.9	0.0	-	23.0	0.3	3.3	0.2	0.5	0.0	-	4.4	-
PHF	0.500	0.858	0.800	0.250	0.000	-	0.852	0.933	0.963	0.708	0.000	0.000	-	0.961	0.786	0.891	0.684	0.767	0.000	-	0.907	0.417	0.792	0.333	0.563	0.000	-	0.852	0.925
Lights	6	440	48	1	0	-	495	222	482	17	0	0	-	721	66	57	132	132	0	-	387	5	57	4	9	0	-	75	1678
% Lights	100.0	98.7	100.0	100.0	-	-	98.8	99.1	97.0	100.0	-	-	-	97.7	100.0	100.0	98.5	97.8	-	-	98.7	100.0	100.0	100.0	100.0	-	-	100.0	98.4
Buses	0	1	0	0	0	-	1	0	1	0	0	0	-	1	0	0	1	0	0	-	1	0	0	0	0	0	-	0	3
% Buses	0.0	0.2	0.0	0.0	-	-	0.2	0.0	0.2	0.0	-	-	-	0.1	0.0	0.0	0.7	0.0	-	-	0.3	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Trucks	0	5	0	0	0	-	5	2	14	0	0	0	-	16	0	0	1	3	0	-	4	0	0	0	0	0	-	0	25
% Trucks	0.0	1.1	0.0	0.0	-	-	1.0	0.9	2.8	0.0	-	-	-	2.2	0.0	0.0	0.7	2.2	-	-	1.0	0.0	0.0	0.0	0.0	-	-	0.0	1.5
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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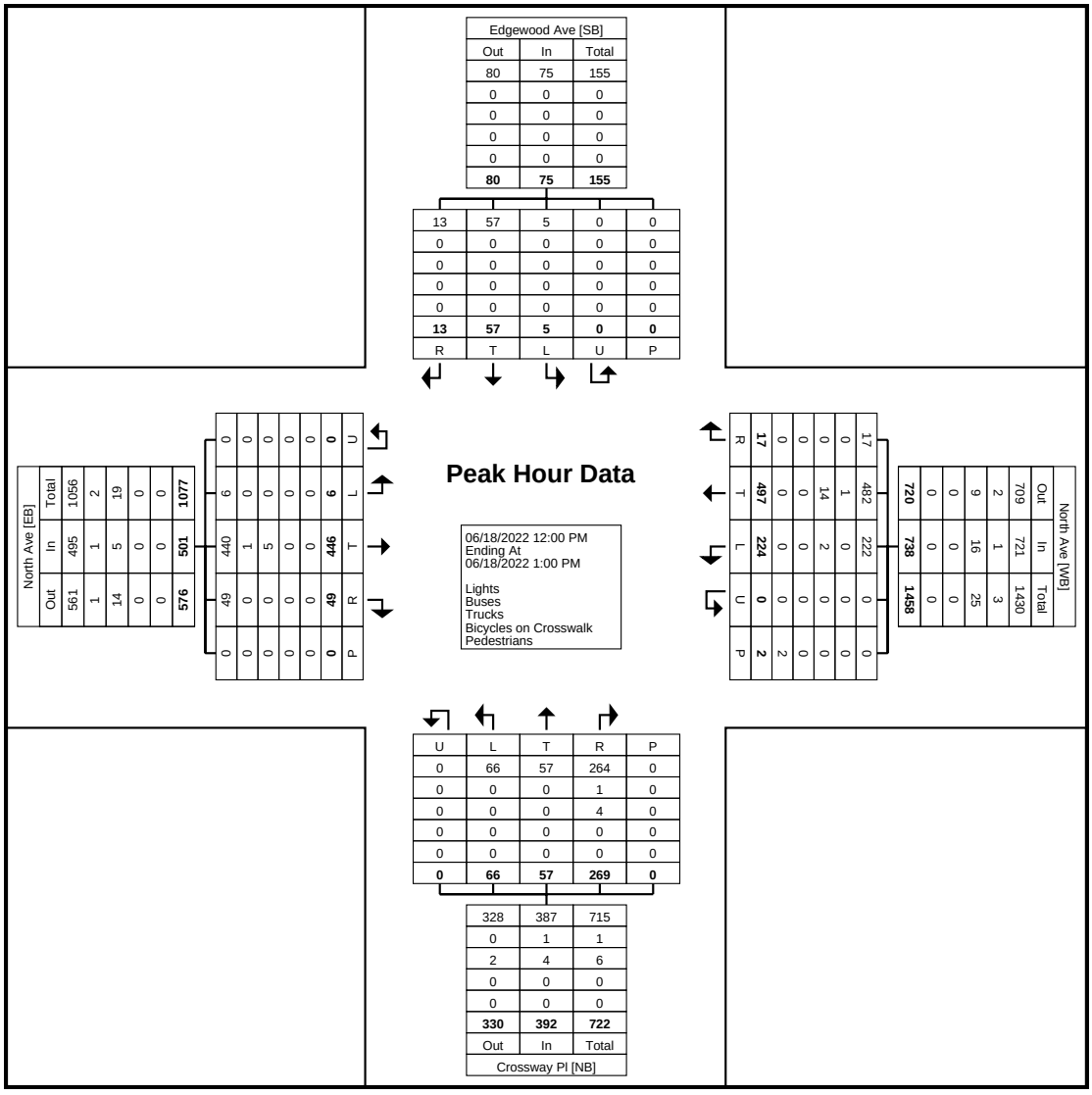
Westfield, NJ
Crossway Place/Edgewood Ave & North Ave
Saturday, June 18, 2022
Location: 40.647913, -74.364487

Count Name: Crossway Place/Edgewood Avenue & North Avenue
Site Code:
Start Date: 06/18/2022
Page No: 4



Turning Movement Peak Hour Data Plot (12:00 PM)

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Westfield, NJ
Crossway Place/Scotch Plains & South Ave
Saturday, June 18, 2022
Location: 40.646411, -74.364115

Count Name: Crossway Place/Scotch Plains Avenue & South Avenue
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	South Ave Eastbound							South Ave Westbound							Scotch Plains Ave Northbound							Crossway Pl Southbound							
	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	Int. Total
11:00 AM	40	86	8	4	0	0	138	4	97	10	0	0	1	111	8	20	9	0	0	2	37	8	19	17	12	0	5	56	342
11:15 AM	38	91	3	1	0	0	133	3	80	14	0	0	2	97	9	28	1	1	0	3	39	14	34	17	12	0	5	77	346
11:30 AM	31	77	6	5	0	0	119	4	82	9	0	0	4	95	13	24	6	1	0	3	44	13	27	17	16	0	2	73	331
11:45 AM	36	58	6	2	0	0	102	1	88	13	0	0	1	102	11	35	8	2	0	3	56	9	28	17	11	0	1	65	325
Hourly Total	145	312	23	12	0	0	492	12	347	46	0	0	8	405	41	107	24	4	0	11	176	44	108	68	51	0	13	271	1344
12:00 PM	39	102	4	2	0	1	147	7	74	18	0	0	2	99	20	43	4	0	0	1	67	17	35	18	11	0	5	81	394
12:15 PM	41	88	10	1	0	1	140	6	92	21	0	0	1	119	10	42	3	0	0	0	55	13	28	21	2	0	0	64	378
12:30 PM	35	90	7	3	0	1	135	6	80	15	0	0	0	101	6	36	3	0	0	0	45	15	30	21	10	0	0	76	357
12:45 PM	30	80	13	4	0	0	127	6	90	18	1	0	0	115	6	33	7	2	0	1	48	16	39	23	9	0	0	87	377
Hourly Total	145	360	34	10	0	3	549	25	336	72	1	0	3	434	42	154	17	2	0	2	215	61	132	83	32	0	5	308	1506
1:00 PM	22	86	7	4	0	1	119	5	87	10	1	0	0	103	11	26	3	2	0	0	42	15	27	28	9	0	1	79	343
1:15 PM	22	68	9	1	0	3	100	4	91	20	0	0	0	115	5	24	0	3	0	1	32	11	38	16	6	0	1	71	318
1:30 PM	23	58	5	3	0	4	89	8	84	14	0	0	2	106	7	32	3	2	0	2	44	10	20	16	10	0	0	56	295
1:45 PM	29	71	5	4	0	1	109	1	73	11	0	0	3	85	4	34	3	3	0	0	44	13	32	15	7	0	0	67	305
Hourly Total	96	283	26	12	0	9	417	18	335	55	1	0	5	409	27	116	9	10	0	3	162	49	117	75	32	0	2	273	1261
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	386	955	83	34	0	12	1458	55	1018	173	2	0	16	1248	110	377	50	16	0	16	553	154	357	226	115	0	20	852	4111
Approach %	26.5	65.5	5.7	2.3	0.0	-	-	4.4	81.6	13.9	0.2	0.0	-	-	19.9	68.2	9.0	2.9	0.0	-	-	18.1	41.9	26.5	13.5	0.0	-	-	-
Total %	9.4	23.2	2.0	0.8	0.0	-	35.5	1.3	24.8	4.2	0.0	0.0	-	30.4	2.7	9.2	1.2	0.4	0.0	-	13.5	3.7	8.7	5.5	2.8	0.0	-	20.7	-
Lights	382	947	83	34	0	-	1446	53	1006	170	2	0	-	1231	109	369	49	15	0	-	542	153	356	226	113	0	-	848	4067
% Lights	99.0	99.2	100.0	100.0	-	-	99.2	96.4	98.8	98.3	100.0	-	-	98.6	99.1	97.9	98.0	93.8	-	-	98.0	99.4	99.7	100.0	98.3	-	-	99.5	98.9
Buses	0	2	0	0	0	-	2	0	4	0	0	0	-	4	0	2	0	0	0	-	2	0	0	0	0	0	-	0	8
% Buses	0.0	0.2	0.0	0.0	-	-	0.1	0.0	0.4	0.0	0.0	-	-	0.3	0.0	0.5	0.0	0.0	-	-	0.4	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Trucks	4	6	0	0	0	-	10	2	8	3	0	0	-	13	1	6	1	1	0	-	9	1	1	0	2	0	-	4	36
% Trucks	1.0	0.6	0.0	0.0	-	-	0.7	3.6	0.8	1.7	0.0	-	-	1.0	0.9	1.6	2.0	6.3	-	-	1.6	0.6	0.3	0.0	1.7	-	-	0.5	0.9
Bicycles on Crosswalk	-	-	-	-	-	6	-	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	50.0	-	-	-	-	-	-	18.8	-	-	-	-	-	-	6.3	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	6	-	-	-	-	-	-	13	-	-	-	-	-	-	15	-	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	-	50.0	-	-	-	-	-	-	81.3	-	-	-	-	-	-	93.8	-	-	-	-	-	-	100.0	-	-

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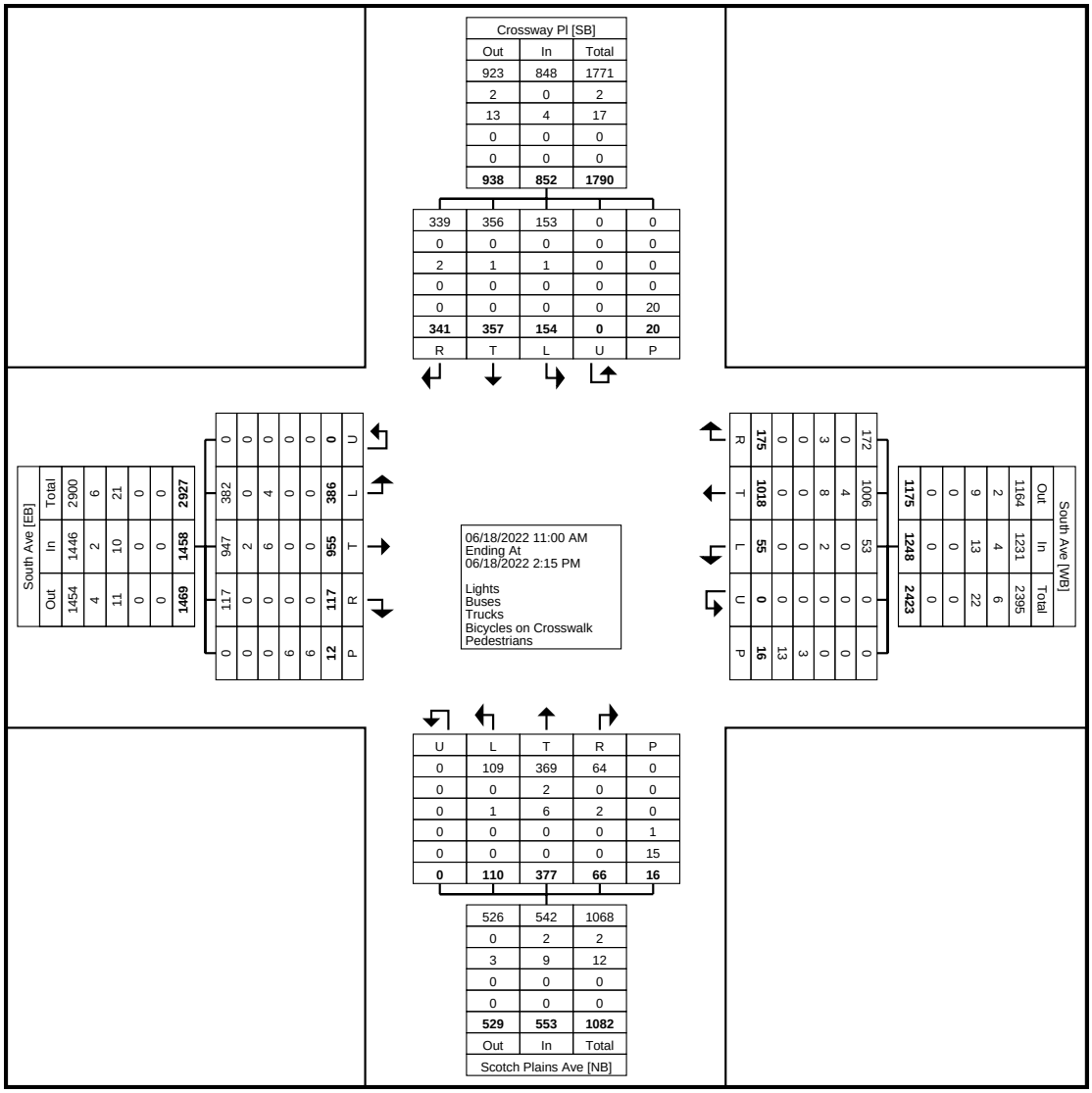
Saturday, June 18, 2022
Location: 40.646411, -74.364115

Count Name: Crossway Place/Scotch Plains Avenue & South Avenue
Site Code:
Start Date: 06/18/2022
Page No: 2



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Saturday, June 18, 2022
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Count Name: Crossway Place/Scotch Plains Avenue & South Avenue
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	South Ave Eastbound							South Ave Westbound							Scotch Plains Ave Northbound							Crossway Pl Southbound							
	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	Int. Total
12:00 PM	39	102	4	2	0	1	147	7	74	18	0	0	2	99	20	43	4	0	0	1	67	17	35	18	11	0	5	81	394
12:15 PM	41	88	10	1	0	1	140	6	92	21	0	0	1	119	10	42	3	0	0	0	55	13	28	21	2	0	0	64	378
12:30 PM	35	90	7	3	0	1	135	6	80	15	0	0	0	101	6	36	3	0	0	0	45	15	30	21	10	0	0	76	357
12:45 PM	30	80	13	4	0	0	127	6	90	18	1	0	0	115	6	33	7	2	0	1	48	16	39	23	9	0	0	87	377
Total	145	360	34	10	0	3	549	25	336	72	1	0	3	434	42	154	17	2	0	2	215	61	132	83	32	0	5	308	1506
Approach %	26.4	65.6	6.2	1.8	0.0	-	-	5.8	77.4	16.6	0.2	0.0	-	-	19.5	71.6	7.9	0.9	0.0	-	-	19.8	42.9	26.9	10.4	0.0	-	-	-
Total %	9.6	23.9	2.3	0.7	0.0	-	36.5	1.7	22.3	4.8	0.1	0.0	-	28.8	2.8	10.2	1.1	0.1	0.0	-	14.3	4.1	8.8	5.5	2.1	0.0	-	20.5	-
PHF	0.884	0.882	0.654	0.625	0.000	-	0.934	0.893	0.913	0.857	0.250	0.000	-	0.912	0.525	0.895	0.607	0.250	0.000	-	0.802	0.897	0.846	0.902	0.727	0.000	-	0.885	0.956
Lights	143	358	34	10	0	-	545	24	333	71	1	0	-	429	42	151	16	2	0	-	211	60	132	83	32	0	-	307	1492
% Lights	98.6	99.4	100.0	100.0	-	-	99.3	96.0	99.1	98.6	100.0	-	-	98.8	100.0	98.1	94.1	100.0	-	-	98.1	98.4	100.0	100.0	100.0	-	-	99.7	99.1
Buses	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	1	0	0	0	-	1	0	0	0	0	0	-	0	2
% Buses	0.0	0.3	0.0	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.6	0.0	0.0	-	-	0.5	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	2	1	0	0	0	-	3	1	3	1	0	0	-	5	0	2	1	0	0	-	3	1	0	0	0	0	-	1	12
% Trucks	1.4	0.3	0.0	0.0	-	-	0.5	4.0	0.9	1.4	0.0	-	-	1.2	0.0	1.3	5.9	0.0	-	-	1.4	1.6	0.0	0.0	0.0	-	-	0.3	0.8
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	33.3	-	-	-	-	-	-	66.7	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	66.7	-	-	-	-	-	-	33.3	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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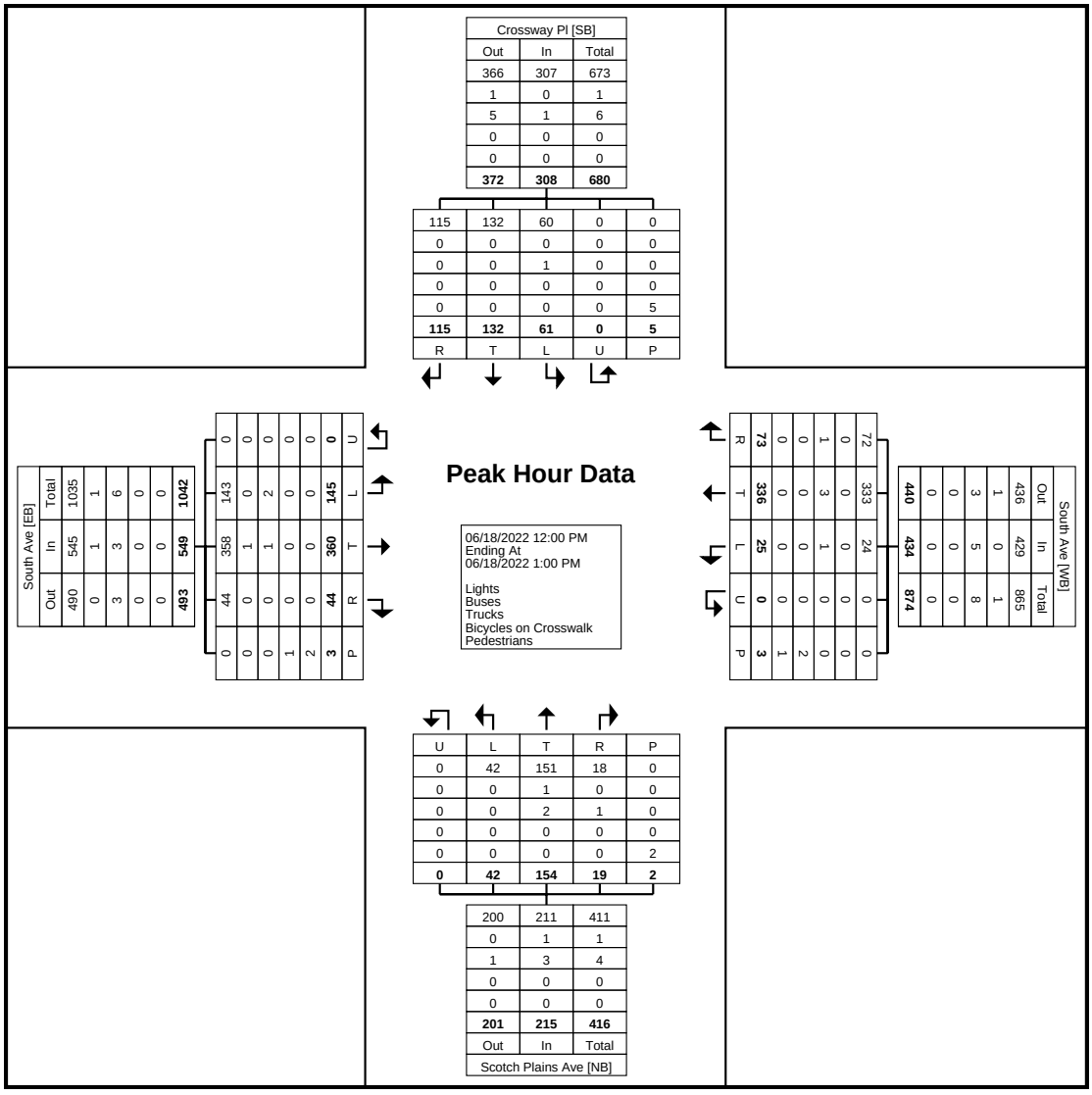


Turning Movement Peak Hour Data Plot (12:00 PM)

Ferris Place & Driveway In & Out - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 964862, Location: 40.650247, -74.351845

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

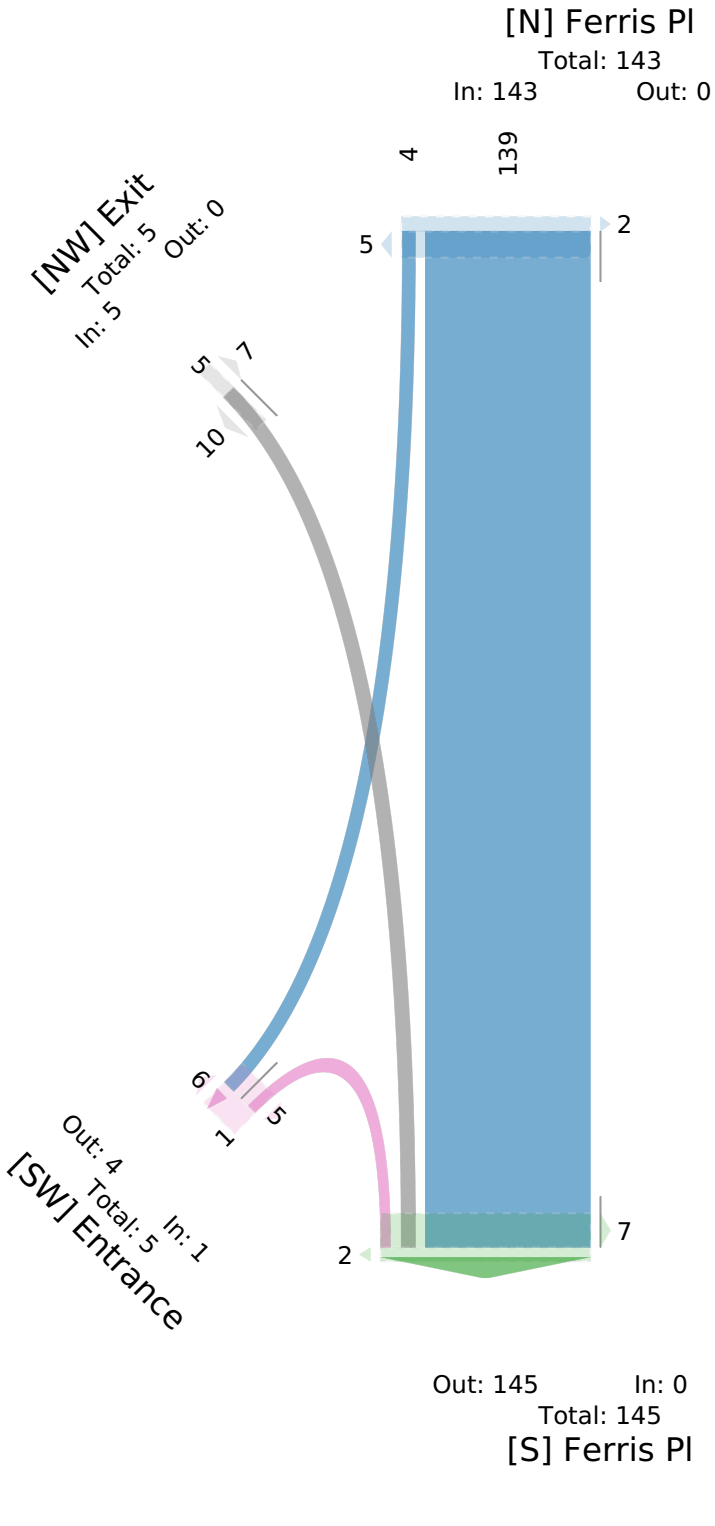
Leg	Ferris Pl					Ferris Pl		Entrance					Exit					
Direction	Southbound					Northbound		Northeastbound					Southeastbound					
Time	HR	BR	T	**App**	Ped*	**App**	Ped*	HR	L	U	**App**	Ped*	R	BR	U	**App**	Ped*	**Int**
2022-06-18 11:00AM	0	1	8	**9**	1	**0**	1	0	0	0	**0**	0	0	0	0	**0**	1	**9**
11:15AM	0	0	13	**13**	0	**0**	0	0	0	0	**0**	0	0	2	0	**2**	1	**15**
11:30AM	0	0	10	**10**	0	**0**	0	0	0	0	**0**	2	0	0	0	**0**	2	**10**
11:45AM	0	1	11	**12**	3	**0**	0	0	0	0	**0**	0	0	0	0	**0**	3	**12**
Hourly Total	0	2	42	**44**	4	**0**	1	0	0	0	**0**	2	0	2	0	**2**	7	**46**
12:00PM	0	1	16	**17**	0	**0**	2	0	0	0	**0**	2	0	0	0	**0**	0	**17**
12:15PM	0	0	10	**10**	0	**0**	1	0	0	0	**0**	1	0	0	0	**0**	0	**10**
12:30PM	0	0	13	**13**	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**13**
12:45PM	0	0	15	**15**	0	**0**	0	0	0	0	**0**	3	0	0	0	**0**	2	**15**
Hourly Total	0	1	54	**55**	0	**0**	3	0	0	0	**0**	6	0	0	0	**0**	2	**55**
1:00PM	0	1	12	**13**	0	**0**	0	0	0	0	**0**	0	0	1	0	**1**	2	**14**
1:15PM	0	0	10	**10**	3	**0**	0	0	0	0	**0**	1	0	1	0	**1**	3	**11**
1:30PM	0	0	8	**8**	0	**0**	4	0	0	0	**0**	0	0	0	0	**0**	1	**8**
1:45PM	0	0	12	**12**	0	**0**	1	1	0	0	**1**	2	0	1	0	**1**	2	**14**
Hourly Total	0	1	42	**43**	3	**0**	5	1	0	0	**1**	3	0	3	0	**3**	8	**47**
2:00PM	0	0	1	**1**	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**1**
Hourly Total	0	0	1	**1**	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**1**
Total	0	4	139	**143**	7	**0**	9	1	0	0	**1**	11	0	5	0	**5**	17	**149**
% Approach	0%	2.8%	97.2%	**-**	-	**-**	-	100%	0%	0%	**-**	-	0%	100%	0%	**-**	-	-
% Total	0%	2.7%	93.3%	**96.0%**	-	**0%**	-	0.7%	0%	0%	**0.7%**	-	0%	3.4%	0%	**3.4%**	-	-
Lights	0	4	138	**142**	-	**0**	-	1	0	0	**1**	-	0	5	0	**5**	-	148
% Lights	0%	100%	99.3%	**99.3%**	-	**-**	-	100%	0%	0%	**100%**	-	0%	100%	0%	**100%**	-	99.3%
Articulated Trucks and Single-Unit Trucks	0	0	1	**1**	-	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	1
% Articulated Trucks and Single-Unit Trucks	0%	0%	0.7%	**0.7%**	-	**-**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0.7%
Buses	0	0	0	**0**	-	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Buses	0%	0%	0%	**0%**	-	**-**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	7	-	9	-	-	-	-	11	-	-	-	-	17	
% Pedestrians	-	-	-	-	100%	-	100%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. BR: Bear right, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Ferris Place & Driveway In & Out - TMC

Sat Jun 18, 2022
Full Length (11 AM-2 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 964862, Location: 40.650247, -74.351845

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US



Ferris Place & Driveway In & Out - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12 PM - 1 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 964862, Location: 40.650247, -74.351845

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Ferris Pl					Ferris Pl		Entrance					Exit					
Direction	Southbound					Northbound		Northeastbound					Southeastbound					
Time	HR	BR	T	**App**	Ped*	**App**	Ped*	HR	L	U	**App**	Ped*	R	BR	U	**App**	Ped*	**Int**
2022-06-18 12:00PM	0	1	16	**17**	0	**0**	2	0	0	0	**0**	2	0	0	0	**0**	0	**17**
12:15PM	0	0	10	**10**	0	**0**	1	0	0	0	**0**	1	0	0	0	**0**	0	**10**
12:30PM	0	0	13	**13**	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**13**
12:45PM	0	0	15	**15**	0	**0**	0	0	0	0	**0**	3	0	0	0	**0**	2	**15**
Total	0	1	54	**55**	0	**0**	3	0	0	0	**0**	6	0	0	0	**0**	2	**55**
% Approach	0%	1.8%	98.2%	**-**	-	**-**	-	0%	0%	0%	**-**	-	0%	0%	0%	**-**	-	-
% Total	0%	1.8%	98.2%	**100%**	-	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	-
PHF	-	0.250	0.844	**0.809**	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	-	0.809
Lights	0	1	54	**55**	-	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	55
% Lights	0%	100%	100%	**100%**	-	**-**	-	0%	0%	0%	**-**	-	0%	0%	0%	**-**	-	100%
Articulated Trucks and Single-Unit Trucks	0	0	0	**0**	-	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	**0%**	-	**-**	-	0%	0%	0%	**-**	-	0%	0%	0%	**-**	-	0%
Buses	0	0	0	**0**	-	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Buses	0%	0%	0%	**0%**	-	**-**	-	0%	0%	0%	**-**	-	0%	0%	0%	**-**	-	0%
Pedestrians	-	-	-	-	0	-	3	-	-	-	-	6	-	-	-	-	2	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. BR: Bear right, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Ferris Place & Driveway In & Out - TMC

Sat Jun 18, 2022
Midday Peak (WKND) (12 PM - 1 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 964862, Location: 40.650247, -74.351845

Provided by: Tri-State Traffic Data, Inc.
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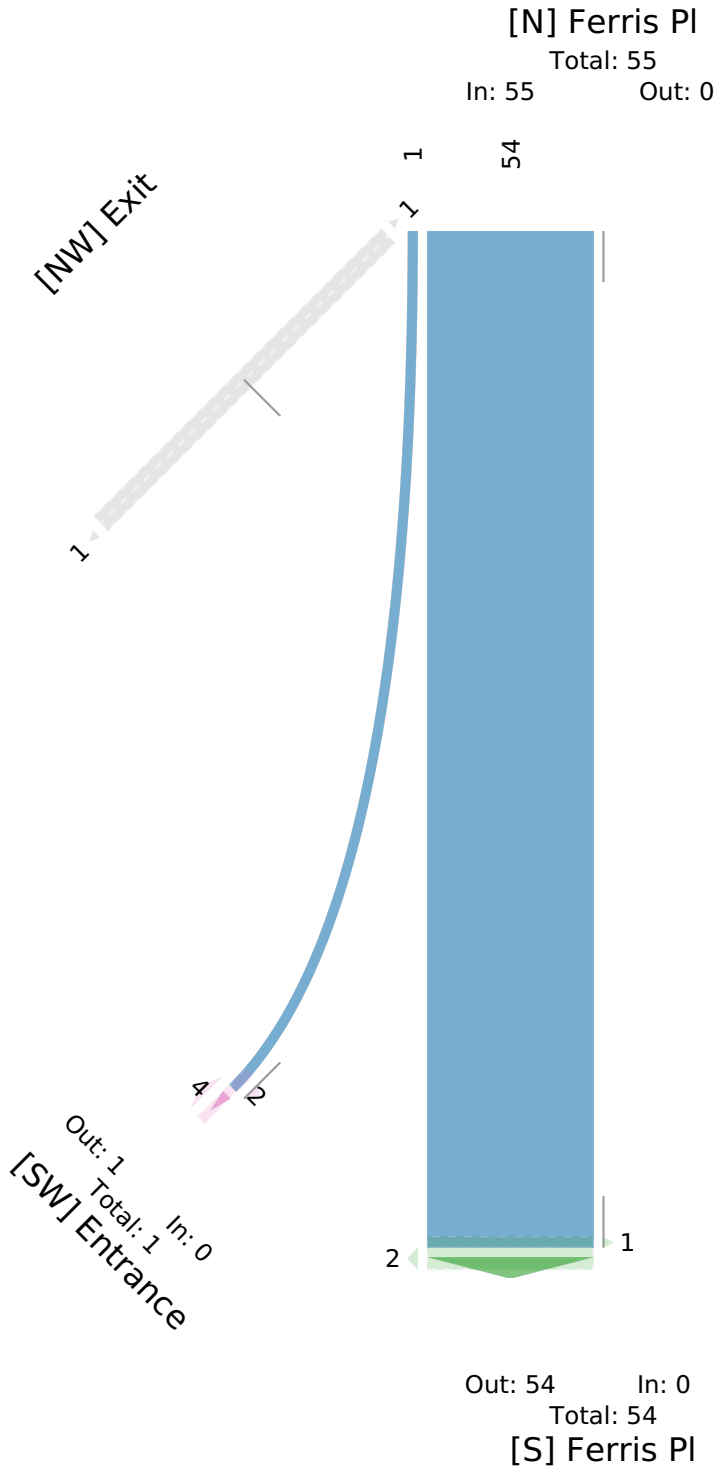

Ferris Place & Driveway In & Out - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 964862, Location: 40.650247, -74.351845

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Ferris Pl					Ferris Pl		Entrance					Exit					
Direction	Southbound					Northbound		Northeastbound					Southeastbound					
Time	HR	BR	T	**App**	Ped*	**App**	Ped*	HR	L	U	**App**	Ped*	R	BR	U	**App**	Ped*	**Int**
2022-06-18 1:00PM	0	1	12	**13**	0	**0**	0	0	0	0	**0**	0	0	1	0	**1**	2	**14**
1:15PM	0	0	10	**10**	3	**0**	0	0	0	0	**0**	1	0	1	0	**1**	3	**11**
1:30PM	0	0	8	**8**	0	**0**	4	0	0	0	**0**	0	0	0	0	**0**	1	**8**
1:45PM	0	0	12	**12**	0	**0**	1	1	0	0	**1**	2	0	1	0	**1**	2	**14**
Total	0	1	42	**43**	3	**0**	5	1	0	0	**1**	3	0	3	0	**3**	8	**47**
% Approach	0%	2.3%	97.7%	**-**	-	**-**	-	100%	0%	0%	**-**	-	0%	100%	0%	**-**	-	**-**
% Total	0%	2.1%	89.4%	**91.5%**	-	**0%**	-	2.1%	0%	0%	**2.1%**	-	0%	6.4%	0%	**6.4%**	-	**-**
PHF	-	0.250	0.875	**0.827**	-	**-**	-	0.250	-	-	**0.250**	-	-	0.750	-	**0.750**	-	0.839
Lights	0	1	41	**42**	-	**0**	-	1	0	0	**1**	-	0	3	0	**3**	-	46
% Lights	0%	100%	97.6%	**97.7%**	-	**-**	-	100%	0%	0%	**100%**	-	0%	100%	0%	**100%**	-	97.9%
Articulated Trucks and Single-Unit Trucks	0	0	1	**1**	-	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	1
% Articulated Trucks and Single-Unit Trucks	0%	0%	2.4%	**2.3%**	-	**-**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	2.1%
Buses	0	0	0	**0**	-	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Buses	0%	0%	0%	**0%**	-	**-**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	3	-	5	-	-	-	-	3	-	-	-	-	8	
% Pedestrians	-	-	-	-	100%	-	100%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	0%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. BR: Bear right, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Ferris Place & Driveway In & Out - TMC

Sat Jun 18, 2022
PM Peak (WKND) (1 PM - 2 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 964862, Location: 40.650247, -74.351845

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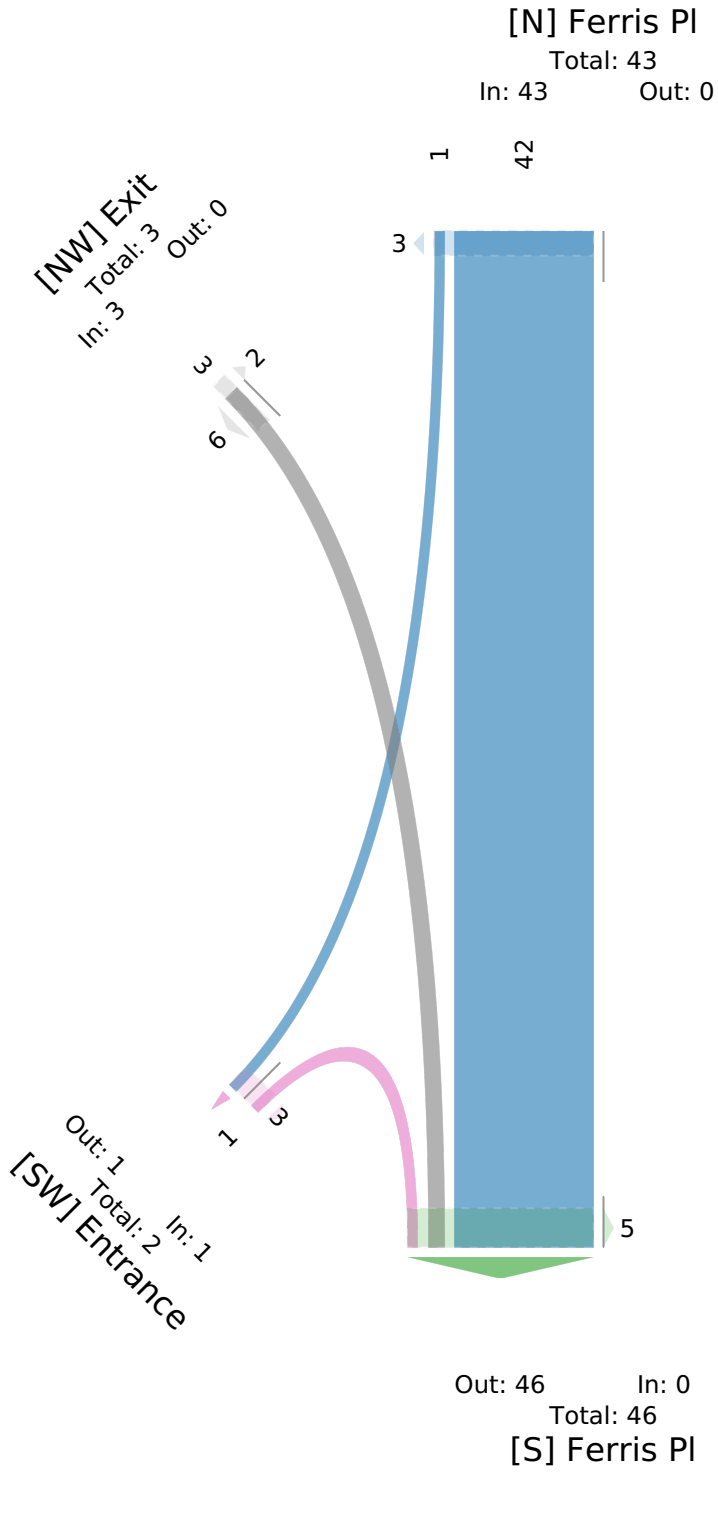

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Westfield, NJ
North Ave & Parking Lot (East of Charles)
Saturday, June 18, 2022
Location: 40.649366, -74.353947

Count Name: North Avenue & Parking Lot (east of Charles Street)
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Ave Eastbound						North Ave Westbound						South Parking Lot Northbound						North Parking Lot 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	0	116	0	0	0	116	0	132	0	0	0	132	0	0	0	0	0	0	0	0	0	0	1	0	248
11:15 AM	0	140	1	0	0	141	0	123	0	0	0	123	0	0	0	0	0	0	0	0	0	0	0	0	264
11:30 AM	0	110	0	0	0	110	0	119	0	0	0	119	0	0	0	0	2	0	0	0	0	0	1	0	229
11:45 AM	1	136	0	0	0	137	0	124	0	0	0	124	0	0	0	0	0	0	0	0	0	0	0	0	261
Hourly Total	1	502	1	0	0	504	0	498	0	0	0	498	0	0	0	0	2	0	0	0	0	0	2	0	1002
12:00 PM	0	138	0	0	0	138	0	123	0	0	0	123	0	0	0	0	0	0	0	0	0	0	1	0	261
12:15 PM	0	126	0	0	0	126	0	123	0	0	0	123	0	0	0	0	0	0	0	0	0	0	0	0	249
12:30 PM	0	102	0	0	0	102	0	170	0	0	0	170	0	0	0	0	1	0	0	0	0	0	0	0	272
12:45 PM	1	133	0	0	0	134	1	135	0	0	0	136	2	0	0	0	3	2	0	0	1	0	0	1	273
Hourly Total	1	499	0	0	0	500	1	551	0	0	0	552	2	0	0	0	4	2	0	0	1	0	1	1	1055
1:00 PM	0	118	0	0	0	118	0	131	0	0	0	131	0	0	0	0	0	0	1	0	0	0	7	1	250
1:15 PM	0	134	0	0	0	134	1	116	0	0	0	117	0	0	0	0	0	0	1	0	0	0	2	1	252
1:30 PM	0	107	0	0	0	107	0	131	0	0	0	131	0	0	0	0	2	0	0	0	0	0	1	0	238
1:45 PM	0	102	1	0	0	103	0	106	0	0	0	106	0	0	0	0	0	0	0	0	0	0	0	0	209
Hourly Total	0	461	1	0	0	462	1	484	0	0	0	485	0	0	0	0	2	0	2	0	0	0	10	2	949
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	2	1462	2	0	0	1466	2	1533	0	0	0	1535	2	0	0	0	8	2	2	0	1	0	13	3	3006
Approach %	0.1	99.7	0.1	0.0	-	-	0.1	99.9	0.0	0.0	-	-	100.0	0.0	0.0	0.0	-	-	66.7	0.0	33.3	0.0	-	-	-
Total %	0.1	48.6	0.1	0.0	-	48.8	0.1	51.0	0.0	0.0	-	51.1	0.1	0.0	0.0	0.0	-	0.1	0.1	0.0	0.0	0.0	-	0.1	-
Lights	2	1445	2	0	-	1449	2	1516	0	0	-	1518	2	0	0	0	-	2	2	0	1	0	-	3	2972
% Lights	100.0	98.8	100.0	-	-	98.8	100.0	98.9	-	-	-	98.9	100.0	-	-	-	-	100.0	100.0	-	100.0	-	-	100.0	98.9
Buses	0	2	0	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	4
% Buses	0.0	0.1	0.0	-	-	0.1	0.0	0.1	-	-	-	0.1	0.0	-	-	-	-	0.0	0.0	-	0.0	-	-	0.0	0.1
Trucks	0	15	0	0	-	15	0	15	0	0	-	15	0	0	0	0	-	0	0	0	0	0	-	0	30
% Trucks	0.0	1.0	0.0	-	-	1.0	0.0	1.0	-	-	-	1.0	0.0	-	-	-	-	0.0	0.0	-	0.0	-	-	0.0	1.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.5	-	-	-	-	-	100.0	-	-

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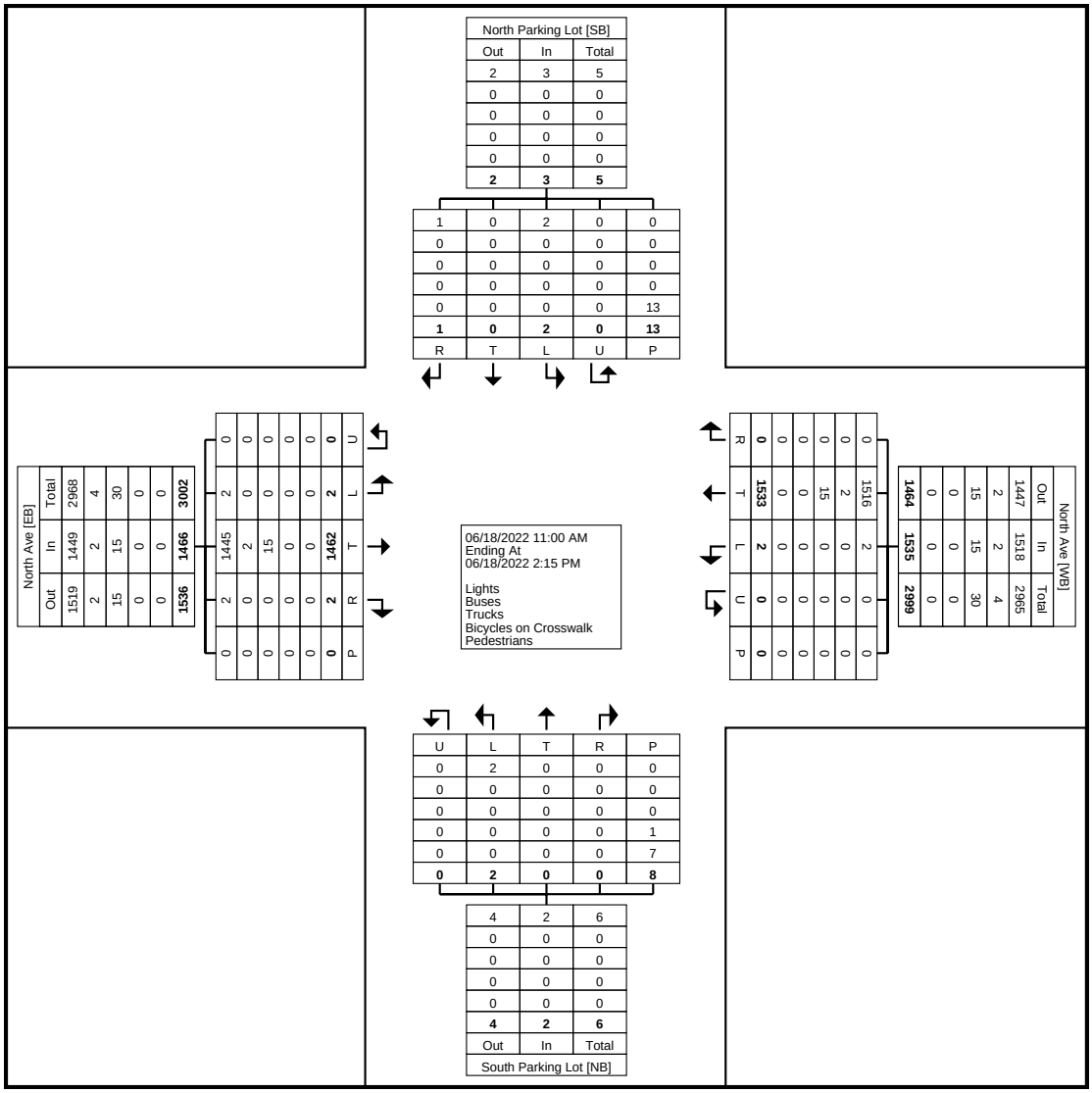
Westfield, NJ
North Ave & Parking Lot (East of Charles)
Saturday, June 18, 2022
Location: 40.649366, -74.353947

Count Name: North Avenue & Parking Lot (east of Charles Street)
Site Code:
Start Date: 06/18/2022



Turning Movement Data Plot

TRI-STATE TRAFFIC DATA
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Westfield, NJ
North Ave & Parking Lot (East of Charles)
Saturday, June 18, 2022
Location: 40.649366, -74.353947

Count Name: North Avenue & Parking Lot (east of Charles Street)
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	North Ave Eastbound						North Ave Westbound						South Parking Lot Northbound						North Parking Lot 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	
12:00 PM	0	138	0	0	0	138	0	123	0	0	0	123	0	0	0	0	0	0	0	0	0	0	1	0	261
12:15 PM	0	126	0	0	0	126	0	123	0	0	0	123	0	0	0	0	0	0	0	0	0	0	0	0	249
12:30 PM	0	102	0	0	0	102	0	170	0	0	0	170	0	0	0	0	1	0	0	0	0	0	0	0	272
12:45 PM	1	133	0	0	0	134	1	135	0	0	0	136	2	0	0	0	3	2	0	0	1	0	0	1	273
Total	1	499	0	0	0	500	1	551	0	0	0	552	2	0	0	0	4	2	0	0	1	0	1	1	1055
Approach %	0.2	99.8	0.0	0.0	-	-	0.2	99.8	0.0	0.0	-	-	100.0	0.0	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	-
Total %	0.1	47.3	0.0	0.0	-	47.4	0.1	52.2	0.0	0.0	-	52.3	0.2	0.0	0.0	0.0	-	0.2	0.0	0.0	0.1	0.0	-	0.1	-
PHF	0.250	0.904	0.000	0.000	-	0.906	0.250	0.810	0.000	0.000	-	0.812	0.250	0.000	0.000	0.000	-	0.250	0.000	0.000	0.250	0.000	-	0.250	0.966
Lights	1	491	0	0	-	492	1	539	0	0	-	540	2	0	0	0	-	2	0	0	1	0	-	1	1035
% Lights	100.0	98.4	-	-	-	98.4	100.0	97.8	-	-	-	97.8	100.0	-	-	-	-	100.0	-	-	100.0	-	-	100.0	98.1
Buses	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Buses	0.0	0.2	-	-	-	0.2	0.0	0.2	-	-	-	0.2	0.0	-	-	-	-	0.0	-	-	0.0	-	-	0.0	0.2
Trucks	0	7	0	0	-	7	0	11	0	0	-	11	0	0	0	0	-	0	0	0	0	0	-	0	18
% Trucks	0.0	1.4	-	-	-	1.4	0.0	2.0	-	-	-	2.0	0.0	-	-	-	-	0.0	-	-	0.0	-	-	0.0	1.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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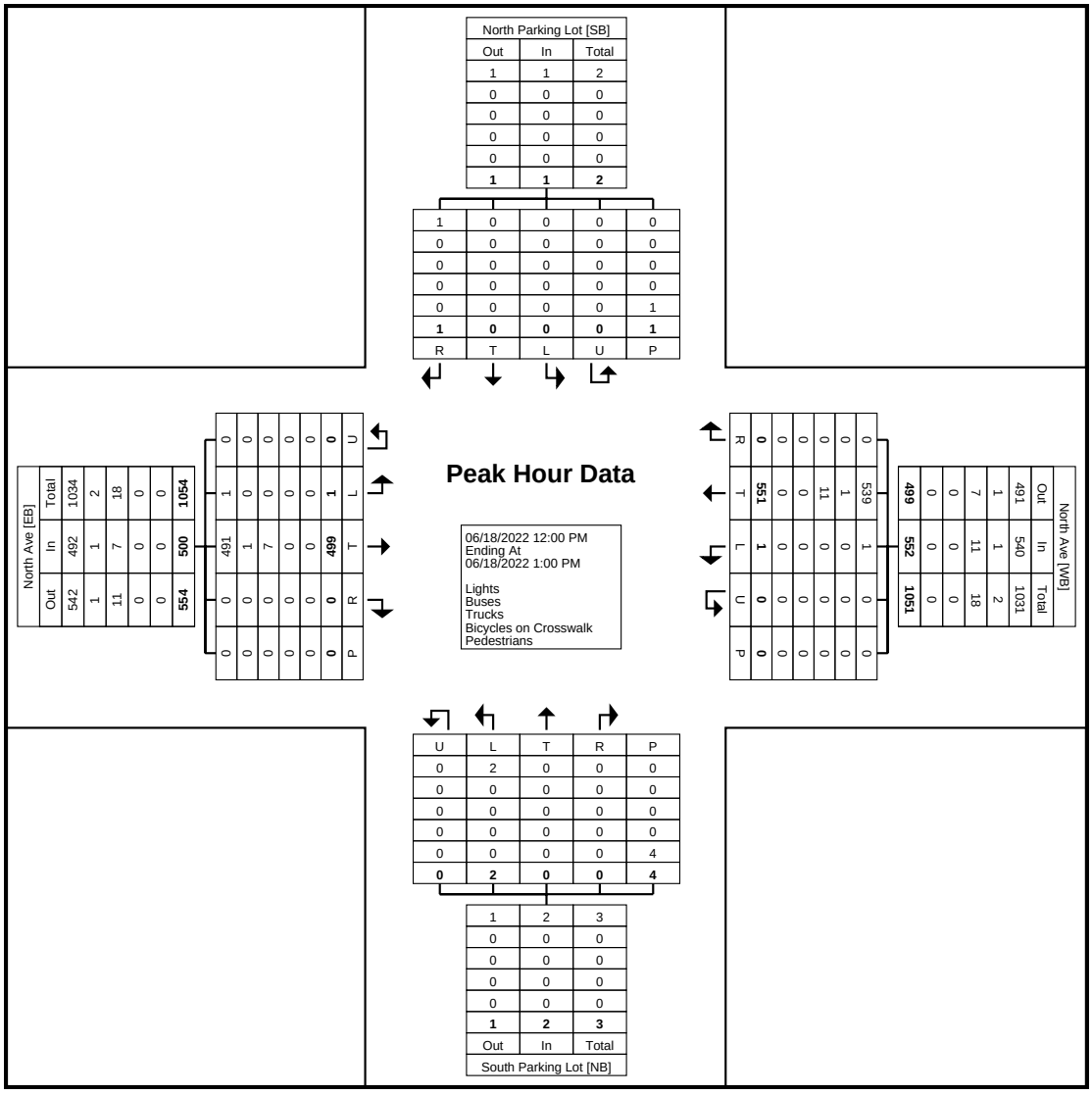
Westfield, NJ
North Ave & Parking Lot (East of Charles)
Saturday, June 18, 2022
Location: 40.649366, -74.353947

Count Name: North Avenue & Parking Lot (east of Charles Street)
Site Code:
Start Date: 06/18/2022
Page No: 4



Turning Movement Peak Hour Data Plot (12:00 PM)

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Westfield, NJ
North Ave & Parking Lot (west of Broad)
Saturday, June 18, 2022
Location: 40.649789, -74.351097

Count Name: North Avenue & Parking Lot (west of Broad Street)
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Ave Eastbound					North Ave Westbound					Parking Lot Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:00 AM	0	161	0	0	161	171	0	0	0	171	0	0	0	2	0	332
11:15 AM	0	186	0	0	186	148	0	0	0	148	0	0	0	0	0	334
11:30 AM	0	142	0	0	142	155	0	0	0	155	0	0	0	2	0	297
11:45 AM	0	177	0	0	177	156	0	0	0	156	0	0	0	2	0	333
Hourly Total	0	666	0	0	666	630	0	0	0	630	0	0	0	6	0	1296
12:00 PM	0	182	0	0	182	161	0	0	0	161	0	0	0	1	0	343
12:15 PM	0	169	0	0	169	154	0	0	0	154	0	0	0	0	0	323
12:30 PM	0	139	0	0	139	198	0	0	0	198	0	0	0	0	0	337
12:45 PM	1	195	0	0	196	168	0	0	0	168	0	0	0	5	0	364
Hourly Total	1	685	0	0	686	681	0	0	0	681	0	0	0	6	0	1367
1:00 PM	0	160	0	0	160	152	0	0	0	152	0	0	0	12	0	312
1:15 PM	0	181	0	1	181	155	0	0	0	155	0	0	0	5	0	336
1:30 PM	0	141	0	0	141	170	0	0	0	170	0	0	0	3	0	311
1:45 PM	0	136	0	0	136	132	0	0	0	132	0	0	0	4	0	268
Hourly Total	0	618	0	1	618	609	0	0	0	609	0	0	0	24	0	1227
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	1969	0	1	1970	1920	0	0	0	1920	0	0	0	36	0	3890
Approach %	0.1	99.9	0.0	-	-	100.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	50.6	0.0	-	50.6	49.4	0.0	0.0	-	49.4	0.0	0.0	0.0	-	0.0	-
Lights	0	1948	0	-	1948	1885	0	0	-	1885	0	0	0	-	0	3833
% Lights	0.0	98.9	-	-	98.9	98.2	-	-	-	98.2	-	-	-	-	-	98.5
Buses	1	2	0	-	3	5	0	0	-	5	0	0	0	-	0	8
% Buses	100.0	0.1	-	-	0.2	0.3	-	-	-	0.3	-	-	-	-	-	0.2
Trucks	0	19	0	-	19	30	0	0	-	30	0	0	0	-	0	49
% Trucks	0.0	1.0	-	-	1.0	1.6	-	-	-	1.6	-	-	-	-	-	1.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	13.9	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	31	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	86.1	-	-

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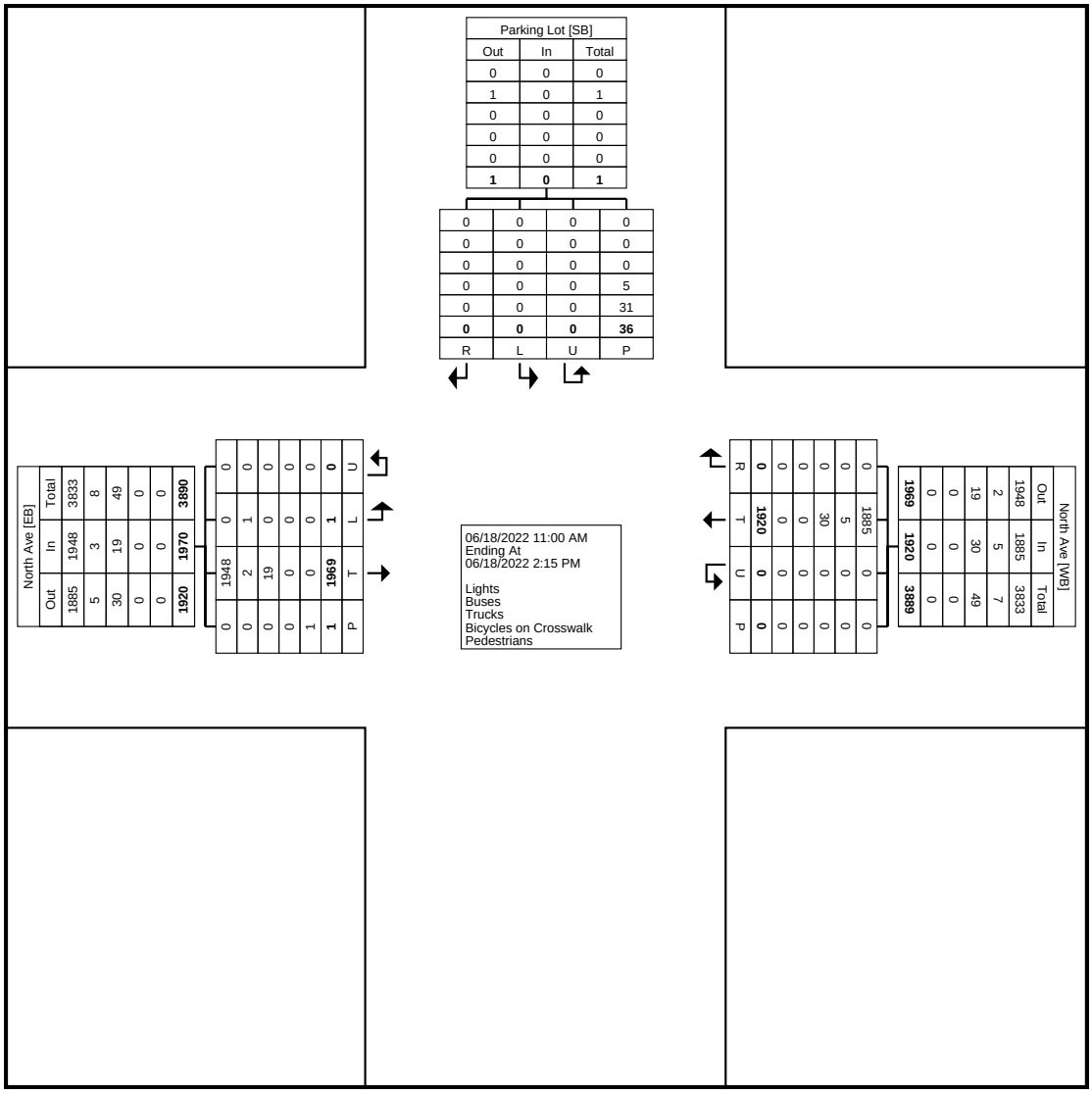
Westfield, NJ
North Ave & Parking Lot (west of Broad)
Saturday, June 18, 2022
Location: 40.649789, -74.351097

Count Name: North Avenue & Parking Lot (west of Broad Street)
Site Code:
Start Date: 06/18/2022



Turning Movement Data Plot

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Westfield, NJ
North Ave & Parking Lot (west of Broad)
Saturday, June 18, 2022
Location: 40.649789, -74.351097

Count Name: North Avenue & Parking Lot (west of Broad Street)
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	North Ave Eastbound					North Ave Westbound					Parking Lot Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
12:00 PM	0	182	0	0	182	161	0	0	0	161	0	0	0	1	0	343
12:15 PM	0	169	0	0	169	154	0	0	0	154	0	0	0	0	0	323
12:30 PM	0	139	0	0	139	198	0	0	0	198	0	0	0	0	0	337
12:45 PM	1	195	0	0	196	168	0	0	0	168	0	0	0	5	0	364
Total	1	685	0	0	686	681	0	0	0	681	0	0	0	6	0	1367
Approach %	0.1	99.9	0.0	-	-	100.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-
Total %	0.1	50.1	0.0	-	50.2	49.8	0.0	0.0	-	49.8	0.0	0.0	0.0	-	0.0	-
PHF	0.250	0.878	0.000	-	0.875	0.860	0.000	0.000	-	0.860	0.000	0.000	0.000	-	0.000	0.939
Lights	0	675	0	-	675	660	0	0	-	660	0	0	0	-	0	1335
% Lights	0.0	98.5	-	-	98.4	96.9	-	-	-	96.9	-	-	-	-	-	97.7
Buses	1	1	0	-	2	4	0	0	-	4	0	0	0	-	0	6
% Buses	100.0	0.1	-	-	0.3	0.6	-	-	-	0.6	-	-	-	-	-	0.4
Trucks	0	9	0	-	9	17	0	0	-	17	0	0	0	-	0	26
% Trucks	0.0	1.3	-	-	1.3	2.5	-	-	-	2.5	-	-	-	-	-	1.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0	-	-

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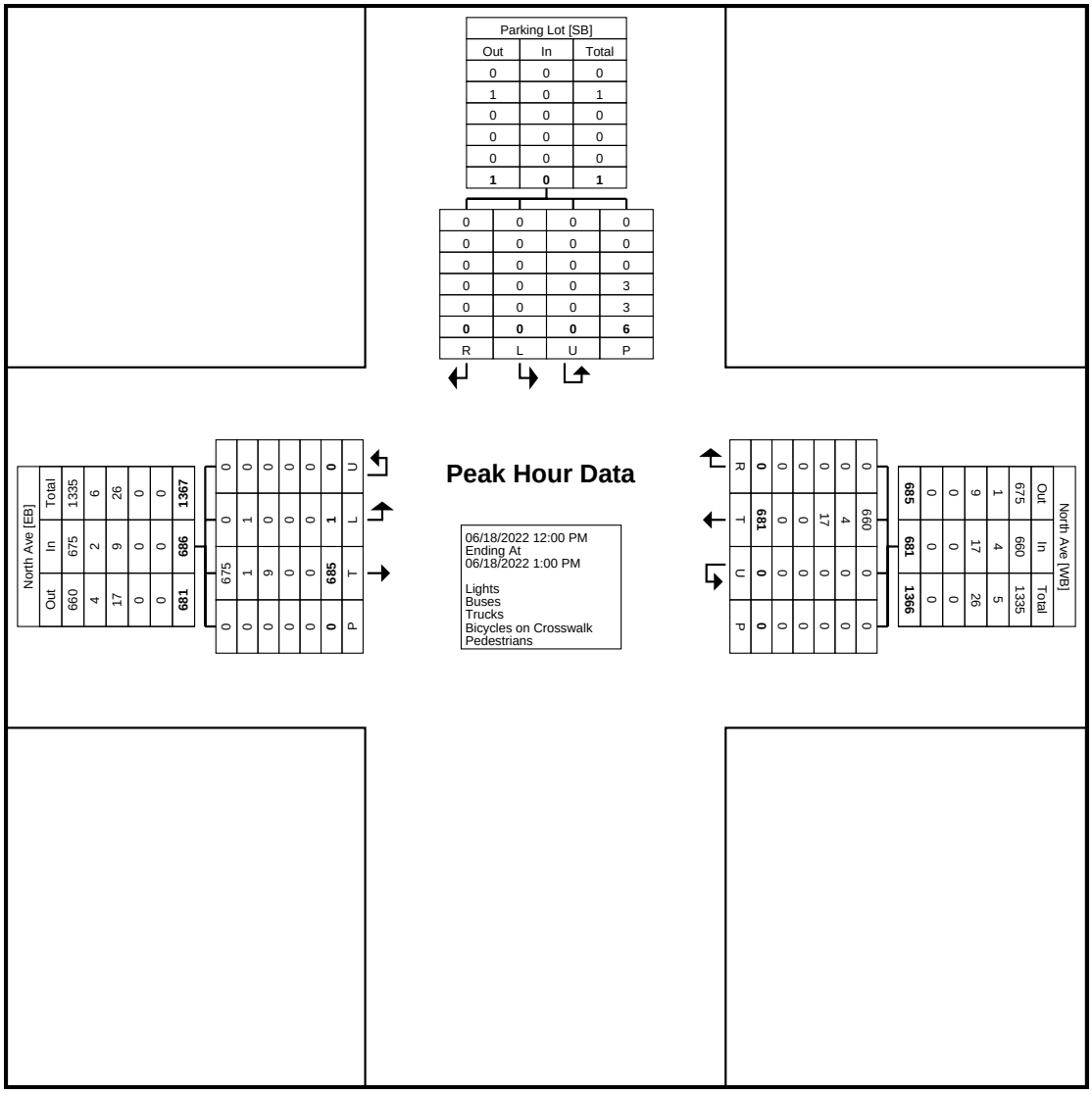
North Ave & Parking Lot (west of Broad)
Saturday, June 18, 2022
Location: 40.649789, -74.351097

Count Name: North Avenue & Parking Lot (west of Broad Street)
Site Code:
Start Date: 06/18/2022



Turning Movement Peak Hour Data Plot (12:00 PM)

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Westfield, NJ
North Ave & Parking Lot (west of Clark)
Saturday, June 18, 2022
Location: 40.649489, -74.353204

Count Name: North Avenue & Parking Lot (west of Clark Street)
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Ave Eastbound					North Ave Westbound					Parking Lot Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
11:00 AM	0	116	0	0	116	130	0	0	0	130	0	0	0	1	0	246
11:15 AM	0	141	0	0	141	126	0	0	0	126	0	0	0	0	0	267
11:30 AM	0	110	0	0	110	115	0	0	1	115	0	0	0	0	0	225
11:45 AM	0	135	0	0	135	126	2	0	0	128	1	0	0	0	1	264
Hourly Total	0	502	0	0	502	497	2	0	1	499	1	0	0	1	1	1002
12:00 PM	0	138	0	0	138	121	0	0	0	121	0	1	0	1	1	260
12:15 PM	0	127	0	0	127	126	0	0	0	126	0	0	0	0	0	253
12:30 PM	0	100	0	0	100	166	1	0	0	167	0	0	0	0	0	267
12:45 PM	0	133	0	0	133	135	0	0	0	135	0	0	0	0	0	268
Hourly Total	0	498	0	0	498	548	1	0	0	549	0	1	0	1	1	1048
1:00 PM	0	122	0	0	122	131	0	0	0	131	0	0	0	6	0	253
1:15 PM	0	133	0	0	133	121	1	0	0	122	0	0	0	2	0	255
1:30 PM	0	102	0	0	102	131	0	1	0	132	0	0	0	2	0	234
1:45 PM	0	106	0	0	106	101	0	0	0	101	0	0	0	0	0	207
Hourly Total	0	463	0	0	463	484	1	1	0	486	0	0	0	10	0	949
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1463	0	0	1463	1529	4	1	1	1534	1	1	0	12	2	2999
Approach %	0.0	100.0	0.0	-	-	99.7	0.3	0.1	-	-	50.0	50.0	0.0	-	-	-
Total %	0.0	48.8	0.0	-	48.8	51.0	0.1	0.0	-	51.2	0.0	0.0	0.0	-	0.1	-
Lights	0	1448	0	-	1448	1512	4	1	-	1517	1	1	0	-	2	2967
% Lights	-	99.0	-	-	99.0	98.9	100.0	100.0	-	98.9	100.0	100.0	-	-	100.0	98.9
Buses	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Buses	-	0.1	-	-	0.1	0.1	0.0	0.0	-	0.1	0.0	0.0	-	-	0.0	0.1
Trucks	0	13	0	-	13	15	0	0	-	15	0	0	0	-	0	28
% Trucks	-	0.9	-	-	0.9	1.0	0.0	0.0	-	1.0	0.0	0.0	-	-	0.0	0.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

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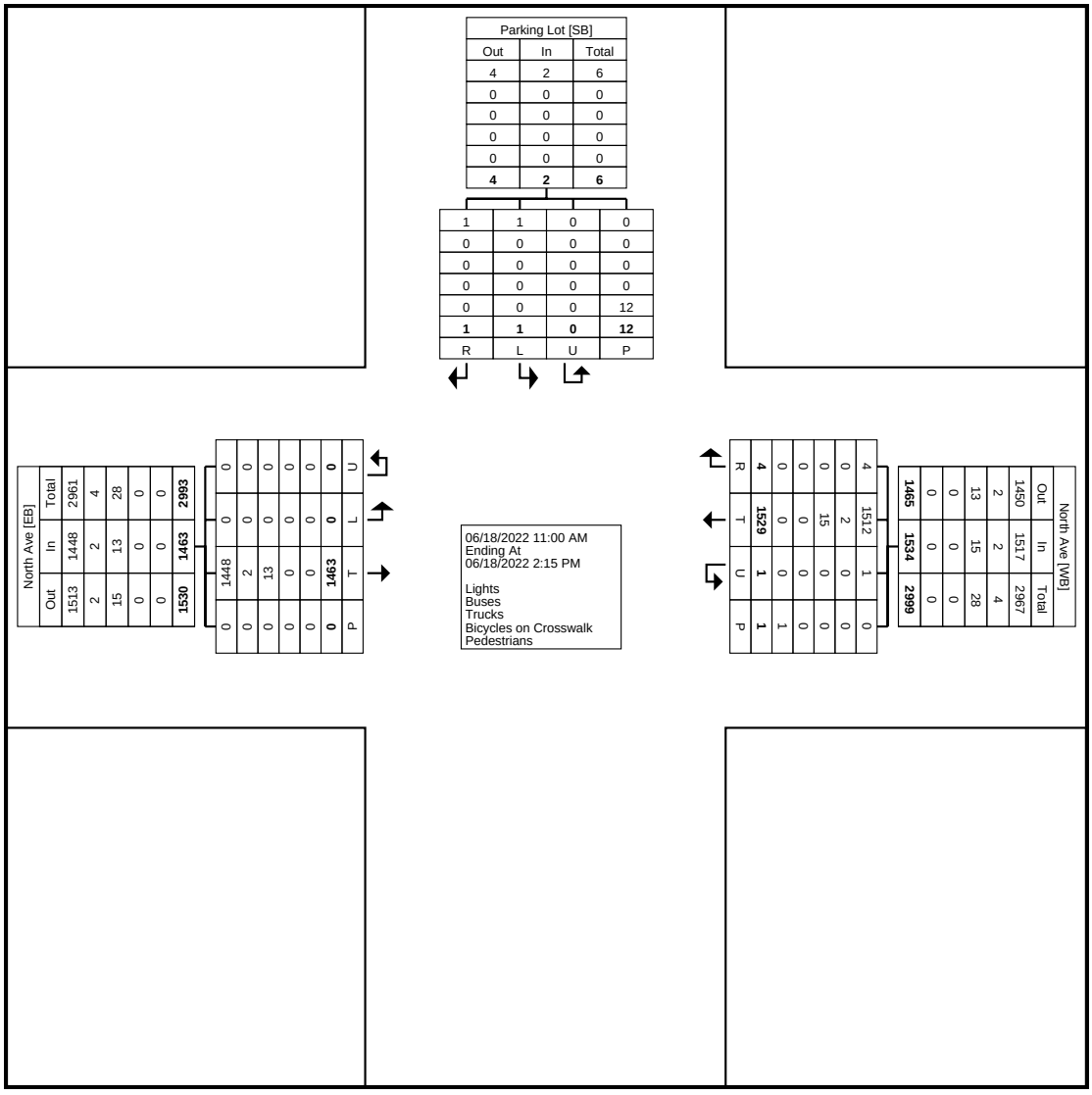
North Ave & Parking Lot (west of Clark)
Saturday, June 18, 2022
Location: 40.649489, -74.353204

Count Name: North Avenue & Parking Lot (west of Clark Street)
Site Code:
Start Date: 06/18/2022



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Westfield, NJ
North Ave & Parking Lot (west of Clark)
Saturday, June 18, 2022
Location: 40.649489, -74.353204

Count Name: North Avenue & Parking Lot (west of Clark Street)
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	North Ave Eastbound					North Ave Westbound					Parking Lot Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
12:00 PM	0	138	0	0	138	121	0	0	0	121	0	1	0	1	1	260
12:15 PM	0	127	0	0	127	126	0	0	0	126	0	0	0	0	0	253
12:30 PM	0	100	0	0	100	166	1	0	0	167	0	0	0	0	0	267
12:45 PM	0	133	0	0	133	135	0	0	0	135	0	0	0	0	0	268
Total	0	498	0	0	498	548	1	0	0	549	0	1	0	1	1	1048
Approach %	0.0	100.0	0.0	-	-	99.8	0.2	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	0.0	47.5	0.0	-	47.5	52.3	0.1	0.0	-	52.4	0.0	0.1	0.0	-	0.1	-
PHF	0.000	0.902	0.000	-	0.902	0.825	0.250	0.000	-	0.822	0.000	0.250	0.000	-	0.250	0.978
Lights	0	491	0	-	491	536	1	0	-	537	0	1	0	-	1	1029
% Lights	-	98.6	-	-	98.6	97.8	100.0	-	-	97.8	-	100.0	-	-	100.0	98.2
Buses	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Buses	-	0.2	-	-	0.2	0.2	0.0	-	-	0.2	-	0.0	-	-	0.0	0.2
Trucks	0	6	0	-	6	11	0	0	-	11	0	0	0	-	0	17
% Trucks	-	1.2	-	-	1.2	2.0	0.0	-	-	2.0	-	0.0	-	-	0.0	1.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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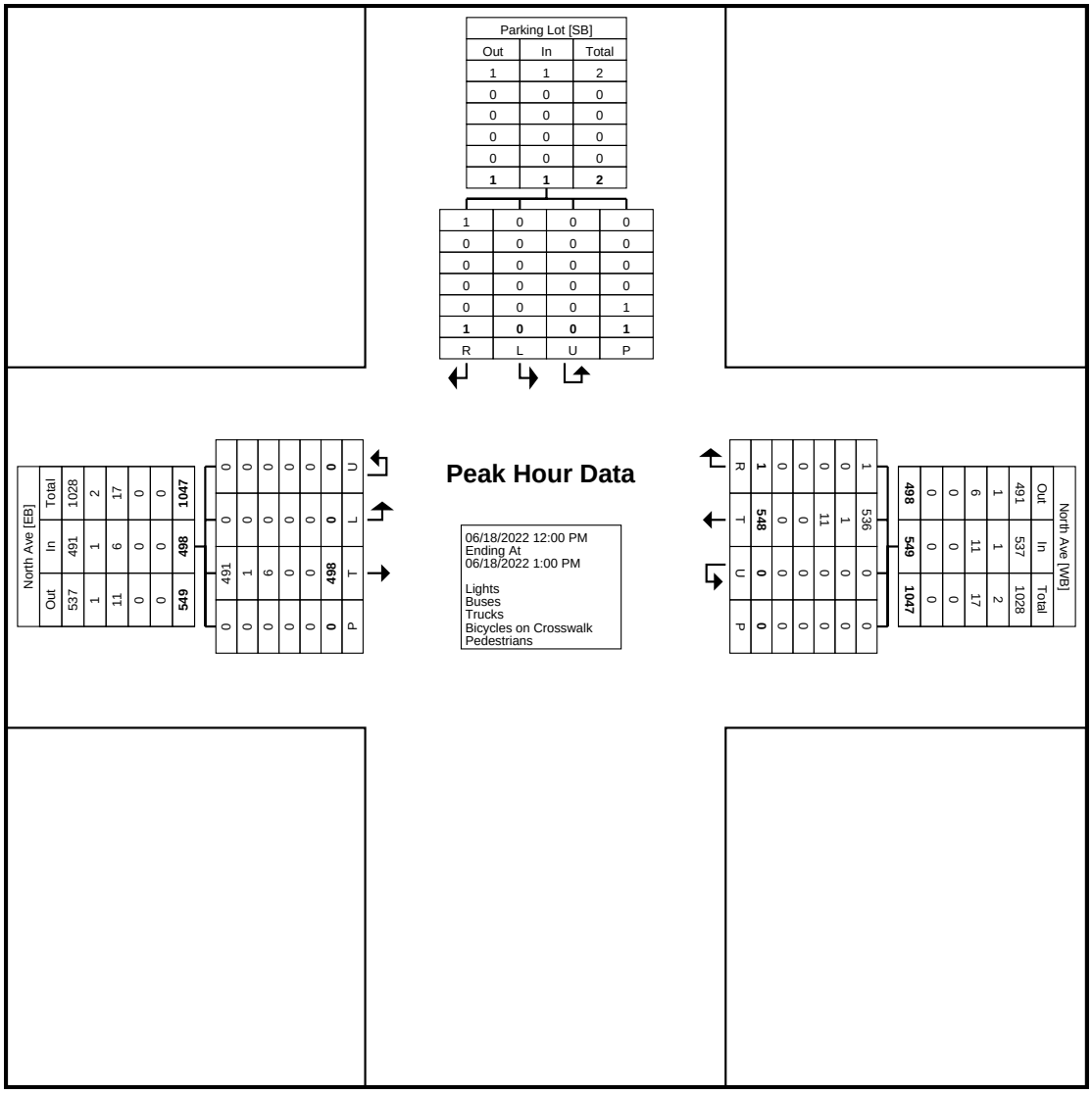
Westfield, NJ
North Ave & Parking Lot (west of Clark)
Saturday, June 18, 2022
Location: 40.649489, -74.353204

Count Name: North Avenue & Parking Lot (west of Clark Street)
Site Code:
Start Date: 06/18/2022
Page No: 4



Turning Movement Peak Hour Data Plot (12:00 PM)

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Westfield, NJ
Prospect St & Broad St
Saturday, June 18, 2022
Location: 40.650662, -74.349383

Count Name: Prospect Street & Broad Street
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	Broad St Eastbound						Broad St Westbound						Prospect St Northbound						Prospect St 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	26	99	0	0	4	125	0	71	16	0	29	87	4	10	16	0	12	30	1	0	21	0	17	22	264
11:15 AM	36	111	0	0	1	147	0	84	20	0	45	104	1	8	12	0	4	21	1	0	19	0	17	20	292
11:30 AM	25	112	0	0	5	137	0	70	15	0	42	85	5	4	13	0	7	22	0	0	36	0	18	36	280
11:45 AM	32	109	0	0	7	141	0	84	14	0	68	98	3	14	17	0	9	34	0	0	37	0	17	37	310
Hourly Total	119	431	0	0	17	550	0	309	65	0	184	374	13	36	58	0	32	107	2	0	113	0	69	115	1146
12:00 PM	40	101	0	0	4	141	0	87	20	0	55	107	2	11	24	0	0	37	2	0	39	0	16	41	326
12:15 PM	36	117	1	0	1	154	0	88	18	0	34	106	9	11	10	0	6	30	3	0	50	0	24	53	343
12:30 PM	26	99	0	0	3	125	0	84	14	0	39	98	3	9	24	0	5	36	1	0	38	0	21	39	298
12:45 PM	32	86	0	0	3	118	0	79	15	0	51	94	5	13	22	0	5	40	2	0	34	0	18	36	288
Hourly Total	134	403	1	0	11	538	0	338	67	0	179	405	19	44	80	0	16	143	8	0	161	0	79	169	1255
1:00 PM	31	91	0	0	2	122	0	96	22	0	32	118	3	9	23	0	13	35	2	0	25	0	21	27	302
1:15 PM	24	89	0	0	5	113	0	67	22	0	53	89	2	9	16	0	12	27	0	0	49	0	20	49	278
1:30 PM	21	104	0	0	1	125	0	66	15	0	42	81	2	15	7	0	7	24	0	0	24	0	12	24	254
1:45 PM	19	98	0	0	0	117	0	78	19	0	36	97	5	12	16	0	8	33	0	0	42	0	37	42	289
Hourly Total	95	382	0	0	8	477	0	307	78	0	163	385	12	45	62	0	40	119	2	0	140	0	90	142	1123
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	348	1216	1	0	36	1565	0	954	210	0	526	1164	44	125	200	0	88	369	12	0	414	0	238	426	3524
Approach %	22.2	77.7	0.1	0.0	-	-	0.0	82.0	18.0	0.0	-	-	11.9	33.9	54.2	0.0	-	-	2.8	0.0	97.2	0.0	-	-	-
Total %	9.9	34.5	0.0	0.0	-	44.4	0.0	27.1	6.0	0.0	-	33.0	1.2	3.5	5.7	0.0	-	10.5	0.3	0.0	11.7	0.0	-	12.1	-
Lights	344	1196	1	0	-	1541	0	943	208	0	-	1151	43	124	195	0	-	362	12	0	411	0	-	423	3477
% Lights	98.9	98.4	100.0	-	-	98.5	-	98.8	99.0	-	-	98.9	97.7	99.2	97.5	-	-	98.1	100.0	-	99.3	-	-	99.3	98.7
Buses	0	8	0	0	-	8	0	6	0	0	-	6	0	0	2	0	-	2	0	0	1	0	-	1	17
% Buses	0.0	0.7	0.0	-	-	0.5	-	0.6	0.0	-	-	0.5	0.0	0.0	1.0	-	-	0.5	0.0	-	0.2	-	-	0.2	0.5
Trucks	4	12	0	0	-	16	0	5	2	0	-	7	1	1	3	0	-	5	0	0	2	0	-	2	30
% Trucks	1.1	1.0	0.0	-	-	1.0	-	0.5	1.0	-	-	0.6	2.3	0.8	1.5	-	-	1.4	0.0	-	0.5	-	-	0.5	0.9
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	5.6	-	-	-	-	-	0.6	-	-	-	-	-	2.3	-	-	-	-	-	1.7	-	-
Pedestrians	-	-	-	-	34	-	-	-	-	-	523	-	-	-	-	-	86	-	-	-	-	-	234	-	-
% Pedestrians	-	-	-	-	94.4	-	-	-	-	-	99.4	-	-	-	-	-	97.7	-	-	-	-	-	98.3	-	-

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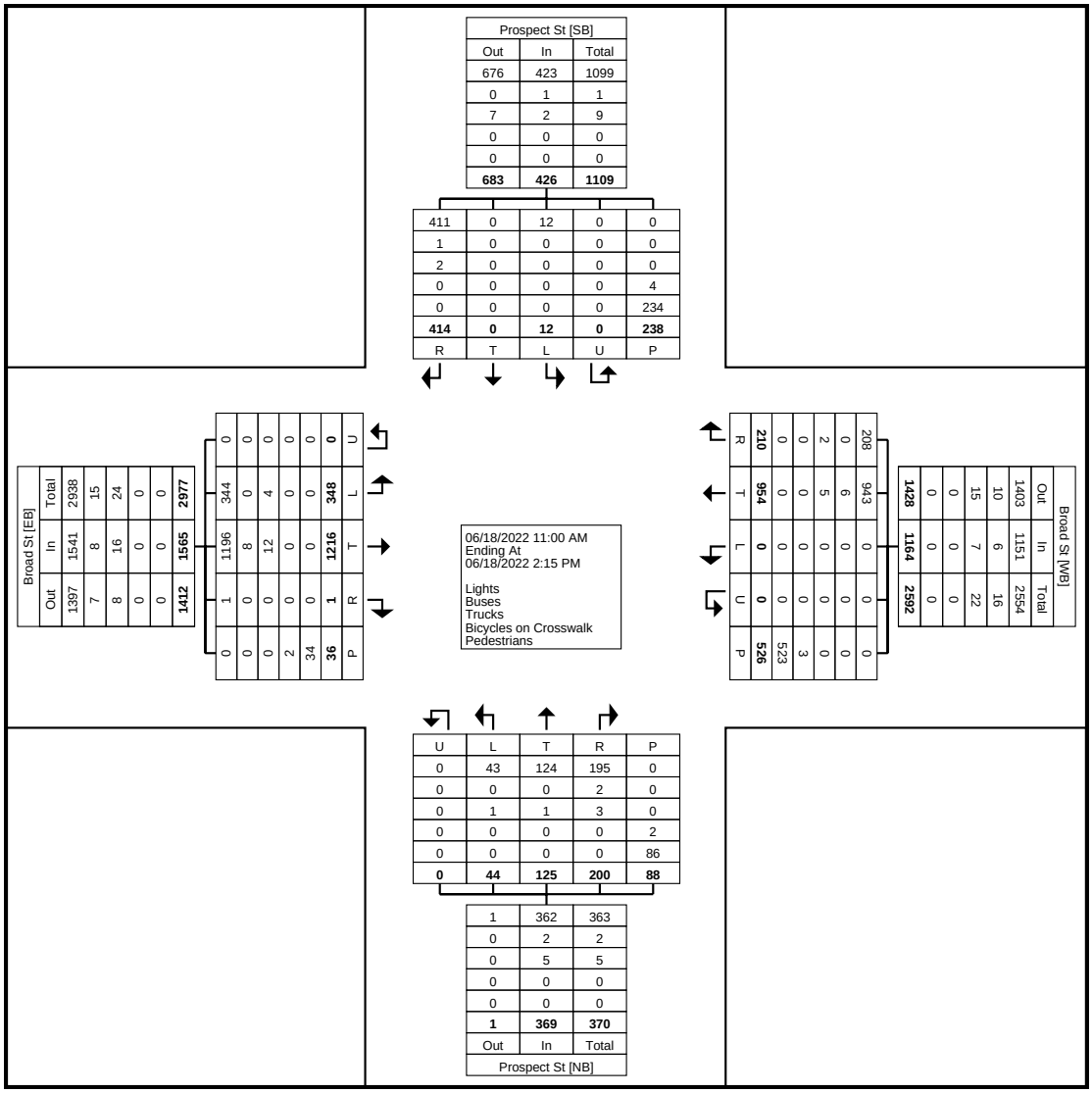
Prospect St & Broad St
Saturday, June 18, 2022
Location: 40.650662, -74.349383

Count Name: Prospect Street & Broad Street
Site Code:
Start Date: 06/18/2022
Page No: 2



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Prospect St & Broad St
Saturday, June 18, 2022
Location: 40.650662, -74.349383

Count Name: Prospect Street & Broad Street
Site Code:
Start Date: 06/18/2022

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Broad St Eastbound						Broad St Westbound						Prospect St Northbound						Prospect St 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	
11:45 AM	32	109	0	0	7	141	0	84	14	0	68	98	3	14	17	0	9	34	0	0	37	0	17	37	310
12:00 PM	40	101	0	0	4	141	0	87	20	0	55	107	2	11	24	0	0	37	2	0	39	0	16	41	326
12:15 PM	36	117	1	0	1	154	0	88	18	0	34	106	9	11	10	0	6	30	3	0	50	0	24	53	343
12:30 PM	26	99	0	0	3	125	0	84	14	0	39	98	3	9	24	0	5	36	1	0	38	0	21	39	298
Total	134	426	1	0	15	561	0	343	66	0	196	409	17	45	75	0	20	137	6	0	164	0	78	170	1277
Approach %	23.9	75.9	0.2	0.0	-	-	0.0	83.9	16.1	0.0	-	-	12.4	32.8	54.7	0.0	-	-	3.5	0.0	96.5	0.0	-	-	-
Total %	10.5	33.4	0.1	0.0	-	43.9	0.0	26.9	5.2	0.0	-	32.0	1.3	3.5	5.9	0.0	-	10.7	0.5	0.0	12.8	0.0	-	13.3	-
PHF	0.838	0.910	0.250	0.000	-	0.911	0.000	0.974	0.825	0.000	-	0.956	0.472	0.804	0.781	0.000	-	0.926	0.500	0.000	0.820	0.000	-	0.802	0.931
Lights	133	419	1	0	-	553	0	340	64	0	-	404	17	45	74	0	-	136	6	0	161	0	-	167	1260
% Lights	99.3	98.4	100.0	-	-	98.6	-	99.1	97.0	-	-	98.8	100.0	100.0	98.7	-	-	99.3	100.0	-	98.2	-	-	98.2	98.7
Buses	0	2	0	0	-	2	0	2	0	0	-	2	0	0	1	0	-	1	0	0	1	0	-	1	6
% Buses	0.0	0.5	0.0	-	-	0.4	-	0.6	0.0	-	-	0.5	0.0	0.0	1.3	-	-	0.7	0.0	-	0.6	-	-	0.6	0.5
Trucks	1	5	0	0	-	6	0	1	2	0	-	3	0	0	0	0	-	0	0	0	2	0	-	2	11
% Trucks	0.7	1.2	0.0	-	-	1.1	-	0.3	3.0	-	-	0.7	0.0	0.0	0.0	-	-	0.0	0.0	-	1.2	-	-	1.2	0.9
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	13.3	-	-	-	-	-	0.5	-	-	-	-	-	5.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	13	-	-	-	-	-	195	-	-	-	-	-	19	-	-	-	-	-	78	-	-
% Pedestrians	-	-	-	-	86.7	-	-	-	-	-	99.5	-	-	-	-	-	95.0	-	-	-	-	-	100.0	-	-

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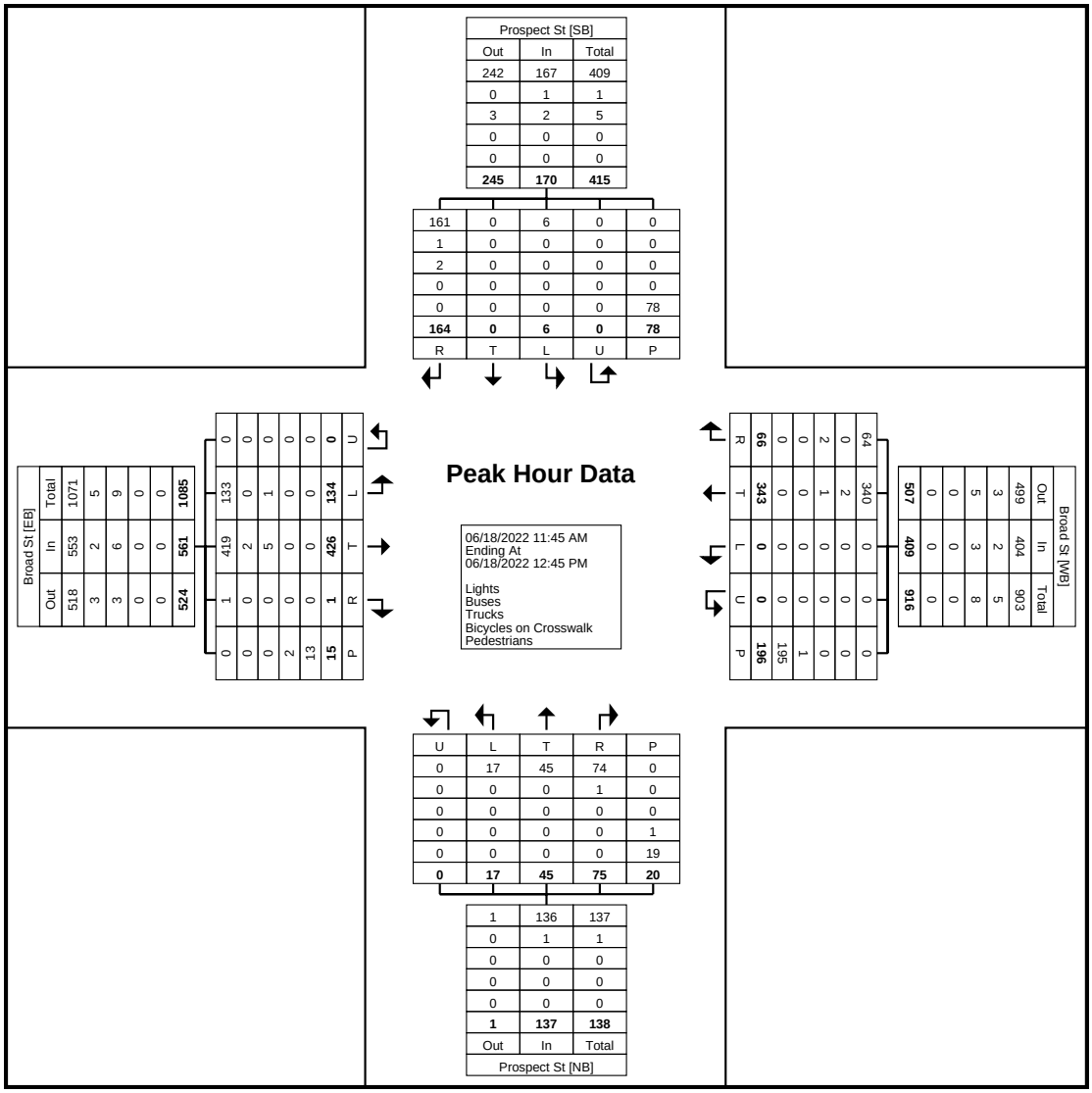

Turning Movement Peak Hour Data Plot (11:45 AM)

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Westfield, NJ
Route 28/Broad St & North Ave
Saturday, June 18, 2022
Location: 40.649862, -74.350241

Count Name: Route 28/Broad Street & North Avenue
Site Code:
Start Date: 06/18/2022
Page No: 1

Turning Movement Data

Start Time	North Ave Eastbound							North Ave Westbound							Route 28 Northbound							Broad St 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	33	60	68	0	0	9	161	43	98	6	0	0	10	147	52	91	41	0	0	1	184	11	67	18	3	0	3	99	591
11:15 AM	24	72	84	0	0	5	180	38	83	6	0	0	1	127	46	124	48	0	0	1	218	8	80	16	1	0	2	105	630
11:30 AM	33	54	52	0	0	5	139	44	86	6	0	0	3	136	47	100	36	0	0	2	183	11	70	20	4	0	1	105	563
11:45 AM	33	85	64	0	0	6	182	37	86	5	0	0	10	128	53	104	35	0	0	2	192	14	87	15	3	0	2	119	621
Hourly Total	123	271	268	0	0	25	662	162	353	23	0	0	24	538	198	419	160	0	0	6	777	44	304	69	11	0	8	428	2405
12:00 PM	22	76	86	0	0	6	184	36	88	3	0	0	5	127	49	114	44	0	0	0	207	17	91	20	1	0	1	129	647
12:15 PM	29	71	71	0	0	6	171	60	80	5	0	0	4	145	53	115	37	0	0	0	205	12	102	22	0	0	5	136	657
12:30 PM	22	50	64	0	0	6	136	42	118	3	0	0	5	163	54	98	38	1	0	1	191	9	93	22	2	0	2	126	616
12:45 PM	35	71	92	0	0	4	198	49	95	1	0	0	2	145	55	80	38	0	0	3	173	8	85	17	2	0	0	112	628
Hourly Total	108	268	313	0	0	22	689	187	381	12	0	0	16	580	211	407	157	1	0	4	776	46	371	81	5	0	8	503	2548
1:00 PM	20	62	77	0	0	6	159	58	83	3	0	0	6	144	58	104	33	0	0	1	195	17	93	10	0	0	2	120	618
1:15 PM	28	70	82	0	0	7	180	36	76	7	0	0	8	119	59	80	25	0	0	0	164	14	82	14	5	0	3	115	578
1:30 PM	24	55	63	0	0	6	142	49	108	2	0	0	2	159	45	93	32	0	0	0	170	11	69	12	5	0	1	97	568
1:45 PM	18	56	60	0	0	8	134	36	81	2	2	0	6	121	37	92	29	0	0	2	158	7	94	15	0	0	2	116	529
Hourly Total	90	243	282	0	0	27	615	179	348	14	2	0	22	543	199	369	119	0	0	3	687	49	338	51	10	0	8	448	2293
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	2
Grand Total	321	782	863	0	0	74	1966	528	1082	49	2	0	62	1661	608	1196	436	1	0	13	2241	139	1014	201	26	0	24	1380	7248
Approach %	16.3	39.8	43.9	0.0	0.0	-	-	31.8	65.1	3.0	0.1	0.0	-	-	27.1	53.4	19.5	0.0	0.0	-	-	10.1	73.5	14.6	1.9	0.0	-	-	-
Total %	4.4	10.8	11.9	0.0	0.0	-	27.1	7.3	14.9	0.7	0.0	0.0	-	22.9	8.4	16.5	6.0	0.0	0.0	-	30.9	1.9	14.0	2.8	0.4	0.0	-	19.0	-
Lights	316	775	855	0	0	-	1946	519	1057	49	2	0	-	1627	604	1183	432	1	0	-	2220	139	1001	198	26	0	-	1364	7157
% Lights	98.4	99.1	99.1	-	-	-	99.0	98.3	97.7	100.0	100.0	-	-	98.0	99.3	98.9	99.1	100.0	-	-	99.1	100.0	98.7	98.5	100.0	-	-	98.8	98.7
Buses	0	2	0	0	0	-	2	3	0	0	0	0	-	3	1	5	2	0	0	-	8	0	6	0	0	0	-	6	19
% Buses	0.0	0.3	0.0	-	-	-	0.1	0.6	0.0	0.0	0.0	-	-	0.2	0.2	0.4	0.5	0.0	-	-	0.4	0.0	0.6	0.0	0.0	-	-	0.4	0.3
Trucks	5	5	8	0	0	-	18	6	25	0	0	0	-	31	3	8	2	0	0	-	13	0	7	3	0	0	-	10	72
% Trucks	1.6	0.6	0.9	-	-	-	0.9	1.1	2.3	0.0	0.0	-	-	1.9	0.5	0.7	0.5	0.0	-	-	0.6	0.0	0.7	1.5	0.0	-	-	0.7	1.0
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-	4	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	4.1	-	-	-	-	-	-	1.6	-	-	-	-	-	-	30.8	-	-	-	-	-	-	4.2	-	-
Pedestrians	-	-	-	-	-	71	-	-	-	-	-	-	61	-	-	-	-	-	-	9	-	-	-	-	-	-	23	-	-
% Pedestrians	-	-	-	-	-	95.9	-	-	-	-	-	-	98.4	-	-	-	-	-	-	69.2	-	-	-	-	-	-	95.8	-	-

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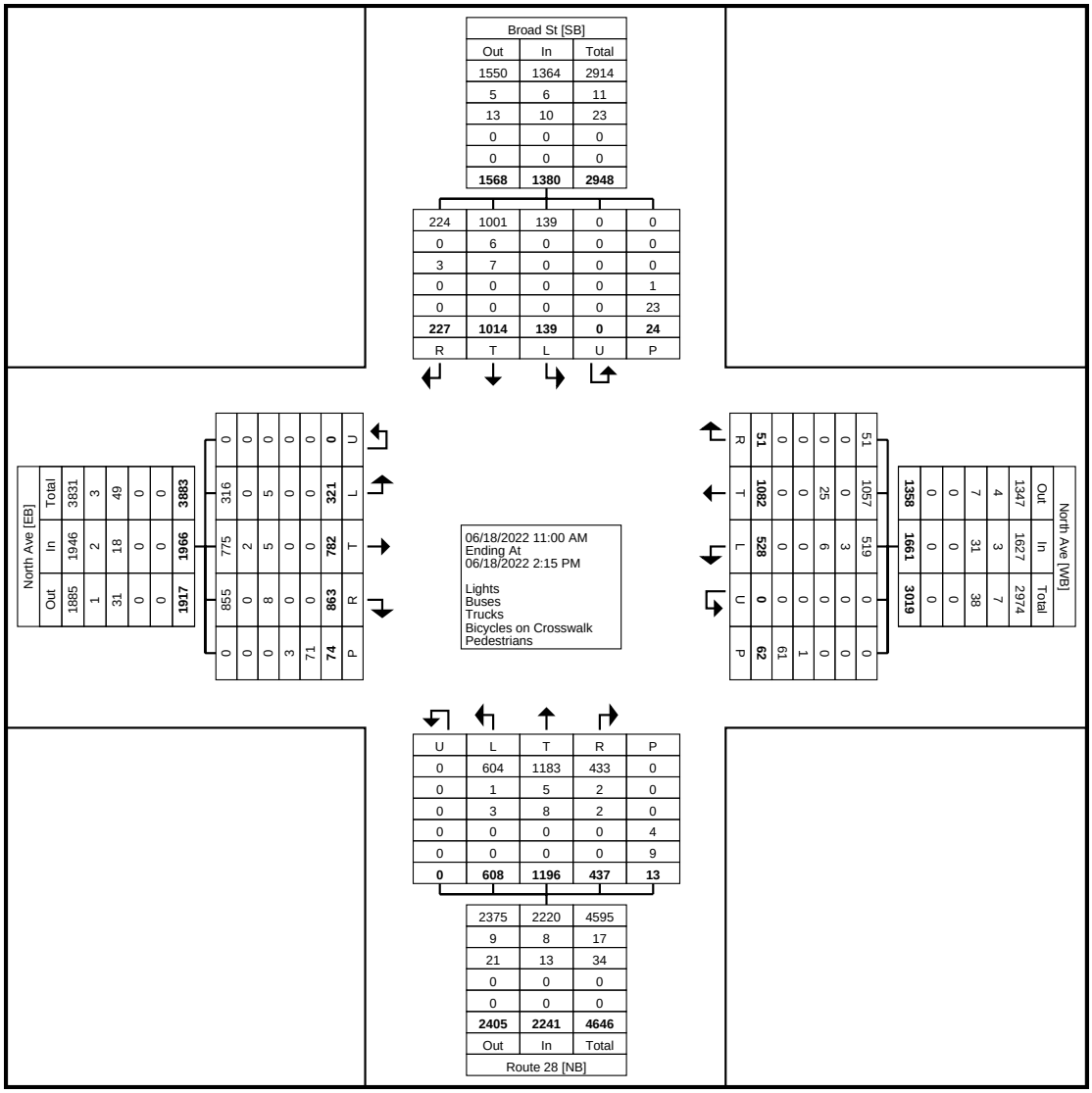

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Count Name: Route 28/Broad Street & North Avenue
Site Code:
Start Date: 06/18/2022
Page No: 3

Turning Movement Peak Hour Data (12:00 PM)

Start Time	North Ave Eastbound							North Ave Westbound							Route 28 Northbound							Broad St 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	
12:00 PM	22	76	86	0	0	6	184	36	88	3	0	0	5	127	49	114	44	0	0	0	207	17	91	20	1	0	1	129	647
12:15 PM	29	71	71	0	0	6	171	60	80	5	0	0	4	145	53	115	37	0	0	0	205	12	102	22	0	0	5	136	657
12:30 PM	22	50	64	0	0	6	136	42	118	3	0	0	5	163	54	98	38	1	0	1	191	9	93	22	2	0	2	126	616
12:45 PM	35	71	92	0	0	4	198	49	95	1	0	0	2	145	55	80	38	0	0	3	173	8	85	17	2	0	0	112	628
Total	108	268	313	0	0	22	689	187	381	12	0	0	16	580	211	407	157	1	0	4	776	46	371	81	5	0	8	503	2548
Approach %	15.7	38.9	45.4	0.0	0.0	-	-	32.2	65.7	2.1	0.0	0.0	-	-	27.2	52.4	20.2	0.1	0.0	-	-	9.1	73.8	16.1	1.0	0.0	-	-	-
Total %	4.2	10.5	12.3	0.0	0.0	-	27.0	7.3	15.0	0.5	0.0	0.0	-	22.8	8.3	16.0	6.2	0.0	0.0	-	30.5	1.8	14.6	3.2	0.2	0.0	-	19.7	-
PHF	0.771	0.882	0.851	0.000	0.000	-	0.870	0.779	0.807	0.600	0.000	0.000	-	0.890	0.959	0.885	0.892	0.250	0.000	-	0.937	0.676	0.909	0.920	0.625	0.000	-	0.925	0.970
Lights	106	265	308	0	0	-	679	183	365	12	0	0	-	560	208	403	155	1	0	-	767	46	364	80	5	0	-	495	2501
% Lights	98.1	98.9	98.4	-	-	-	98.5	97.9	95.8	100.0	-	-	-	96.6	98.6	99.0	98.7	100.0	-	-	98.8	100.0	98.1	98.8	100.0	-	-	98.4	98.2
Buses	0	1	0	0	0	-	1	0	0	0	0	0	-	0	1	2	1	0	0	-	4	0	3	0	0	0	-	3	8
% Buses	0.0	0.4	0.0	-	-	-	0.1	0.0	0.0	0.0	-	-	-	0.0	0.5	0.5	0.6	0.0	-	-	0.5	0.0	0.8	0.0	0.0	-	-	0.6	0.3
Trucks	2	2	5	0	0	-	9	4	16	0	0	0	-	20	2	2	1	0	0	-	5	0	4	1	0	0	-	5	39
% Trucks	1.9	0.7	1.6	-	-	-	1.3	2.1	4.2	0.0	-	-	-	3.4	0.9	0.5	0.6	0.0	-	-	0.6	0.0	1.1	1.2	0.0	-	-	1.0	1.5
Bicycles on Crosswalk	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	9.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	25.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	20	-	-	-	-	-	-	16	-	-	-	-	-	-	3	-	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	-	90.9	-	-	-	-	-	-	100.0	-	-	-	-	-	-	75.0	-	-	-	-	-	-	100.0	-	-

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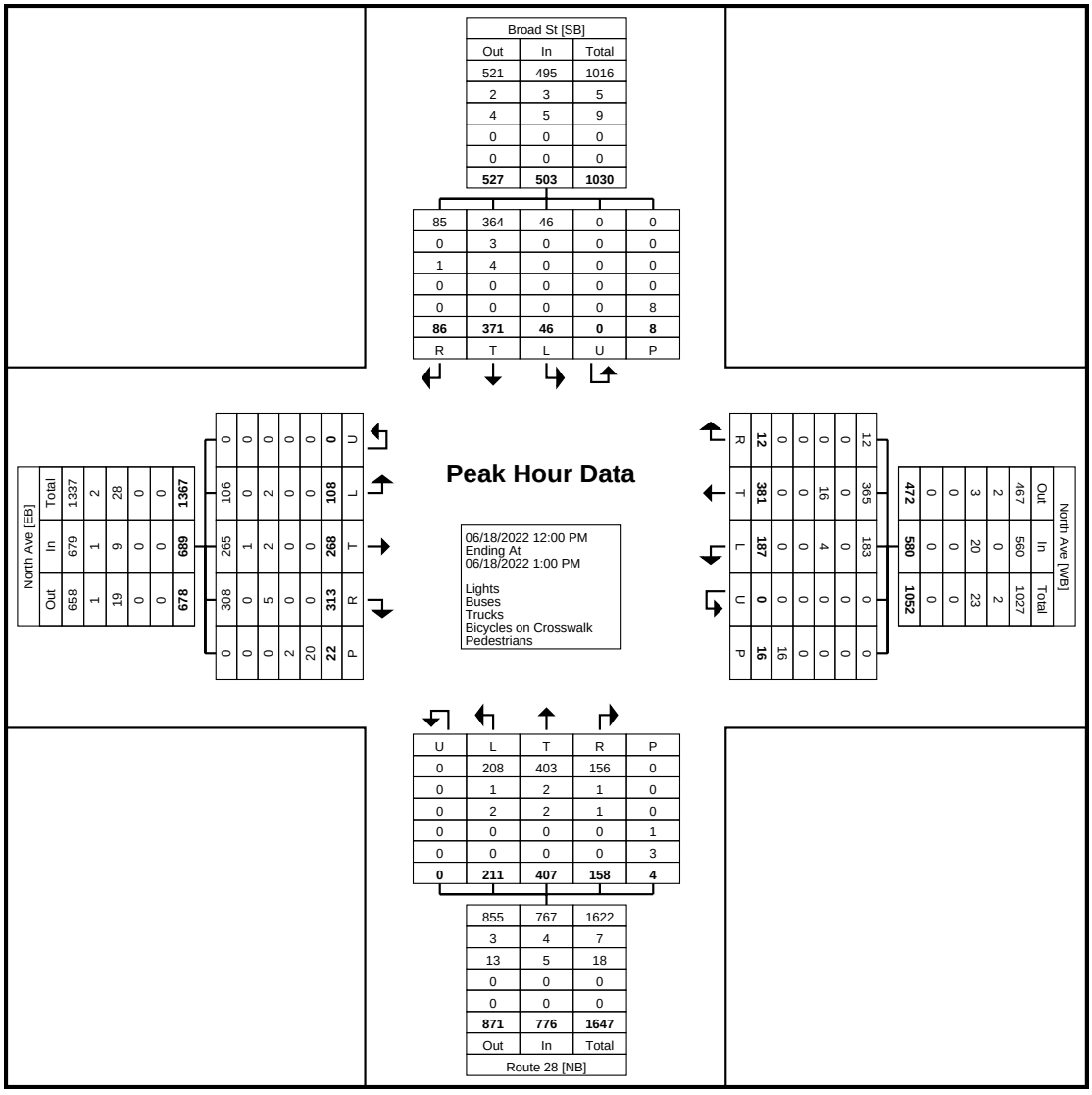


Turning Movement Peak Hour Data Plot (12:00 PM)

Kimley»Horn

DRAFT

APPENDIX C

Volume Development

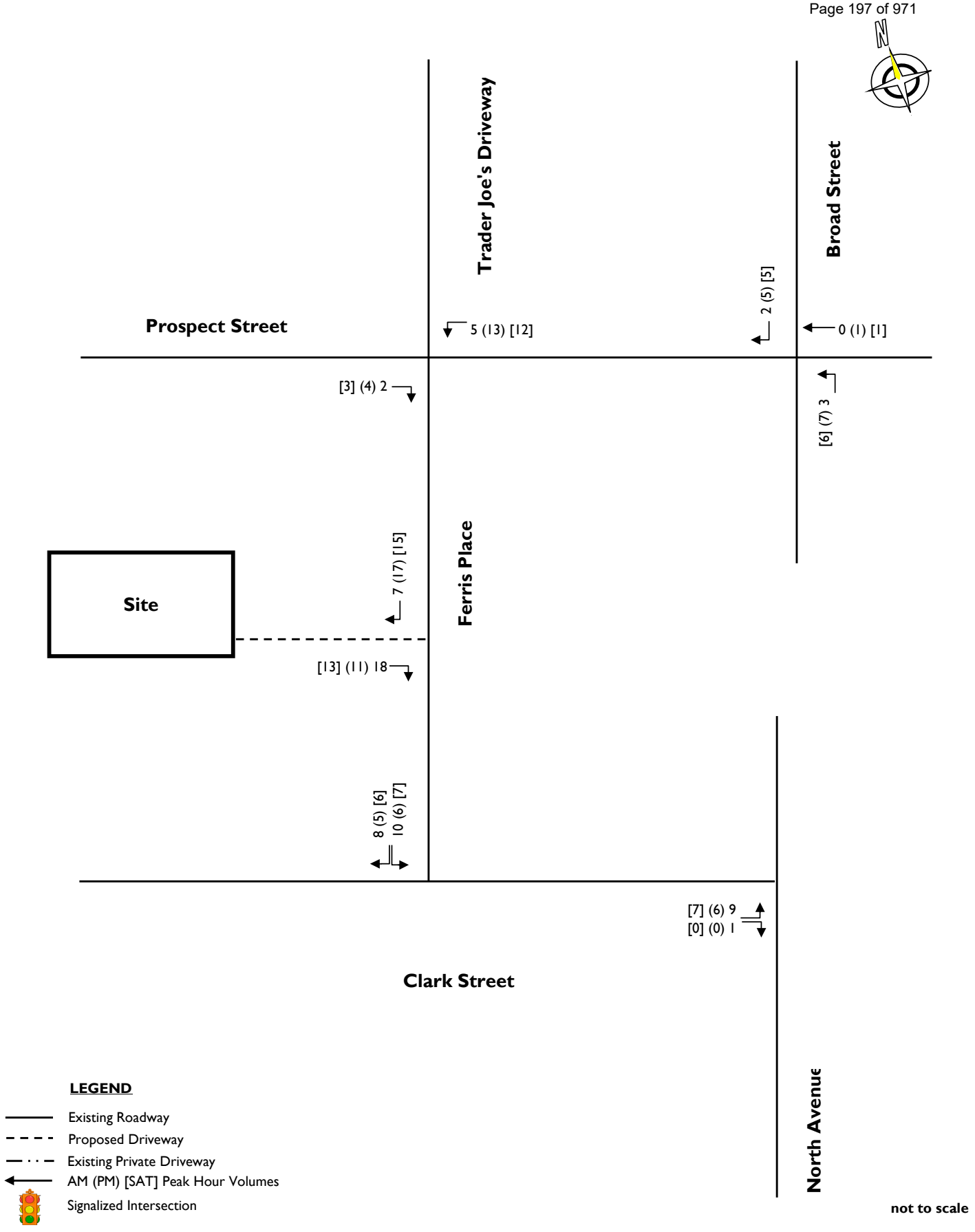
Kimley»Horn

DRAFT

Committed Developments

	ITE 10th Edition (Peak Hour of Adjacent Street)												
	LU Code	Land Use Category	Units	AM Trip Rate	In	Out	PM Trip Rate	In	Out	SAT Trip Rate	In	Out	
Multi-Family	221	Multifamily Housing (Mid-Rise)	DU	0.36	26%	74%	0.44	61%	39%	0.44	49%	51%	
Multi-Family	220	Multifamily Housing (Low-Rise)	DU	0.46	23%	77%	0.56	63%	37%	0.7	54%	46%	
Restaurant	932	High-Turnover (Sit-Down) Restaurant	KSF	9.94	55%	45%	9.77	62%	38%	11.19	51%	49%	
Non-Medical	710	General Office Building	KSF	1.16	86%	14%	1.15	16%	84%	0.53	54%	46%	
Medical	720	Medical-Dental Office Building'	KSF	2.78	78%	22%	3.46	28%	72%	3.1	57%	43%	
General Retail	820	Shopping Center	KSF	0.94	62%	38%	3.81	48%	52%	4.5	52%	48%	
		Trip Reduction (USEPA Mixed Use Trip Generation) %		17.00%			19.00%			18.00%			
	Adjusted Trip Rates (USEPA Mixed Use Trip Generation)												
	LU Code	Land Use Category		AM Trip Rate	In	Out	PM Trip Rate	In	Out	SAT Trip Rate	In	Out	
Retail/ Restaurant - 25/75				6.38	55%	45%	6.71	60%	40%	7.80	51%	49%	
Retail/ Restaurant - 50/50				4.52	56%	44%	5.50	58%	42%	6.43	51%	49%	
Multi-Family	221	Multifamily Housing (Mid-Rise)		0.30	26%	74%	0.36	61%	39%	0.36	49%	51%	
Multi-Family	220	Multifamily Housing (Low-Rise)		0.38	23%	77%	0.45	63%	37%	0.57	54%	46%	
Restaurant	932	High-Turnover (Sit-Down) Restaurant		8.25	55%	45%	7.91	62%	38%	9.18	51%	49%	
Non-Medical	710	General Office Building		0.96	86%	14%	0.93	16%	84%	0.43	54%	46%	
Medical	720	Medical-Dental Office Building'		2.31	78%	22%	2.80	28%	72%	2.54	57%	43%	
General Retail	820	Shopping Center		0.78	62%	38%	3.09	48%	52%	3.69	52%	48%	

Build Out - H2M							Trip Generation															
							4	5	6	7												
Land Use			Development Quantity				Retail						Residential						Total Trips			
Blk_Lot	BlkLot	Land Use Combination	Retail	Retail (SF)	Residential (Rounded # of Units)	Name	AM In	AM Out	PM In	PM Out	SAT In	SAT Out	AM In	AM Out	PM In	PM Out	SAT In	SAT Out	AM In	AM Out	PM In	PM Out	SAT In	SAT Out
3001-1	30011	Residential			22	Parker (CONSTRUCTED)	-	-	-	-			2	5	5	3			2	5	5	3		
3001-6	30016	Residential			9	Parker (CONSTRUCTED)	-	-	-	-			1	2	2	1			1	2	2	1		
3002-5	30025	Split Retail/Dining/ Residential	Retail/ Restaurant - 25/75	3,472	15	Bentley (CONSTRUCTED)	12	10	14	9			1	3	3	2			13	13	17	11		
3002-6	30026	Split Retail/Dining/ Residential	Retail/ Restaurant - 25/75	649	3	Bentley (CONSTRUCTED)	2	2	3	2			0	1	1	0			3	3	3	2		
3002-12	300212	Split Retail/Dining/ Residential	Retail/ Restaurant - 25/75	1,396	6	Bentley (CONSTRUCTED)	5	4	6	4			0	1	1	1			5	5	7	5		
3002-13	300213	Split Retail/Dining/ Residential	Retail/ Restaurant - 25/75	1,539	6	Bentley (CONSTRUCTED)	5	4	6	4			0	1	1	1			6	6	8	5		
2504-13	250413	Residential			20	Savannah (CONSTRUCTED)	-	-	-	-			2	4	4	3			2	4	4	3		
2504-14	250414	Residential			33	Savannah (CONSTRUCTED)	-	-	-	-			3	7	7	5			3	7	7	5		
		Ward Proposed		-	66	Ward (PROPOSED - APPROVED)	-	-	-	-			5	15	14	9	20	17	5	15	14	9	20	17
3207-4	32074	Residential			27	333 Central (CONSTRUCTED)	-	-	-	-			2	6	6	4			2	6	6	4		
3208-1.02	32081.02	Residential			35	333 Central (CONSTRUCTED)	-	-	-	-			3	8	8	5			3	8	8	5		
3207-1	32071	Residential			8	333 Central (CONSTRUCTED)	-	-	-	-			1	2	2	1			1	2	2	1		
33071	33071	Split Retail/ Residential	Retail/ Restaurant - 25/75	4,000	52	SW-AHO (PROPOSED - APPROVED)	14	11	16	11	16	15	5	15	15	9	16	14	19	27	31	19	32	29
33072	33072	Split Retail/ Residential	Retail/ Restaurant - 25/75	8,000	104	SW-AHO (PROPOSED - APPROVED)	28	23	32	21	32	31	9	31	30	17	32	27	37	53	62	39	64	58
400417	400417	Split Retail/ Residential	Retail/ Restaurant - 25/75	-	-	SW-AHO (PROPOSED - APPROVED)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40053	40053	Split Retail/ Residential	Retail/ Restaurant - 25/75	3,554	24	SW-AHO (PROPOSED - APPROVED)	13	10	14	9	14	14	2	7	7	4	7	6	15	17	21	13	22	20
40054	40054	Split Retail/ Residential	Retail/ Restaurant - 25/75	1,446	10	SW-AHO (PROPOSED - APPROVED)	5	4	6	4	6	6	1	3	3	2	3	3	6	7	9	6	9	8
Both are along the south side		Residential			30	"Adonis" Development							**3**	**9**	**9**	**5**	9	8	3	9	9	5	9	8
Both are along the south side		Residential			15	"Steam Needle" Development							**1**	**4**	**4**	**3**	5	4	1	4	4	3	5	4



STONEFIELD	**Proposed Mixed-Use Development** **Township of Westfield, Union County, New Jersey** **Traffic Impact Study**	**FIGURE 6** **"New" Site-Generated Traffic Volumes**

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Excerpt of Town of Westfield Unified Land Use + Circulation Element (ULUC), June 2021

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Buildout Analysis

As a part of the Community Form Analysis, the ULUC team created a buildout analysis to project the potential development that may occur under a development scenario that included existing and potential redevelopment designations and potential regulatory changes to the zoning code to spur development at higher densities than what is currently allowed.

A Buildout Analysis is a planning tool utilized to estimate the amount of development that can occur in a specified area according to existing or proposed land development regulations. Buildout analysis gives the ability to "see into the future" as follows:

- Provides an understanding of the potential future growth that can occur and can have an affect on local policy decisions such as housing, economic development, and transportation
- Helps local decision makers make more informed decisions

A buildout analysis for downtown Westfield can project a potential pattern of future growth. Concerns from the community as identified in the 2019 Master Plan Reexamination Report process, including a need for redevelopment in the downtown while recognizing the area's traffic and parking conditions can be addressed. The buildout simulates or projects how much development would occur under different zoning scenarios. Utlimately, the buildout analysis will provide an answer to the following:

- "How much future development can the downtown sustainably support in terms of added population and employees?"

The results of the buildout will then answer the following questions:

- "What zoning changes are needed to support downtown revitalization while still preserving community character?"
- "How will the circulation and parking needs of the community change based on the projected buildout?"
- "What circulation and parking-related changes need to occur to improve existing and potential conditons?"

The Buildout Analysis conducted as part of this ULUC for the downtown core evaluated a development scenario that resulted in an estimate number of added residents and employees. Taking into consideration the development constraints and retaining the Town's existing character, the buildout estimates the likely maximum feasible projected development that can potential occur over the ten-year time frame of the ULUC Plan.

These zoning changes are based upon the discussions of potentially increasing the allowable height and number of stories throughout the downtown and potentially greater heights and stories along the rail line.

By projecting for this scenario, the Town can assess regulatory and streetscape changes that can help to mitigate any perceived adverse effects of development while enhancing the positive impacts of new downtown development. The ULUC Steering Committee was presented this scenario and the results. The buildout took into consideration recent approved developments, including the following, and as shown on the map on page 55:

- The Parker (439 West Broad St)
- The Bentley (501 South Ave West)
- 409 Westfield Avenue (adjacent to "Roots Building")
- Former Jolly Trolley (411 North Ave West)
- Flatiron Building (44 Elm St)
- 226 North Avenue West
- 333 Central Avenue
- Elite Properties (421-429, 418-448 South Ave W; 338 Windsor Ave)
- Savannah Condos (111 Prospect St)*

**While not recently approved, Savannah Condos is the most recent development to occur in the downtown study area prior to 2015 and is unlikely to change*

The scenario took into consideration the opportunity areas discussed above including redevelopment sites and properties in common ownership. Input from the developer/landowner meetings were also considered. In the 10-year projection of the buildout, some sites were recognized as areas of potential change, while others were likely to remain the same. It is important to point out that buildout analysis do not predict when or at what rate buildout will occur or where it will first

Methodology

Due to dramatic changes in travel patterns imposed by the COVID-19 pandemic, the study team was not able to collect new traffic counts during the study period. Instead, existing traffic counts for all intersections within the modeling area were generated using a third-party data vendor (StreetLight Data) based on pre-COVID traffic patterns from 2019 and calibrated using historical traffic counts provided by NJDOT, Union County, and the Town of Westfield. This process was performed through a collaborative process with another engineering firm, Kimley-Horn. Signal timings and plans were obtained from NJDOT, Union County, and/or the Town based on ownership and availability. Field verifications were conducted at two intersections along South Avenue (Summit Avenue and Central Avenue) to supplement and/or confirm data from the signal plans. Collectively, this information was used to develop the three traffic modeling scenarios described below.

Existing Conditions (2020) Scenario

Based on the traffic volumes derived using historical count and StreetLight Data, an existing conditions traffic model for the year 2020 was developed by Kimley-Horn using Synchro 10 software. WSP reviewed the model and worked closely with Kimley-Horn to troubleshoot the model prior to initiating any traffic analysis. The analysis was conducted for both the AM and PM peak hours to evaluate operations during times with the heaviest traffic (7:00-8:00 AM and 5:00-6:00 PM, respectively).

Future (2031) No-Build Scenario

This scenario was used solely as a basis of comparison for the Future 2031 Build scenario, as it accounts for background traffic growth within the region but does not include local traffic generated by proposed downtown redevelopment. A background growth rate was applied to existing traffic volumes to estimate traffic volumes for a 2031 “No Build” condition. The growth rate was developed based on the latest sociodemographic projections from NJTPA for 2035 along with NJTPA’s regional travel model (North Jersey Regional Transportation Model Enhanced). A Compound Annual Growth Rate (CAGR) between 2020 and 2031 of 0.26% was computed for the study area, which compounded results in a total growth of 3% over the 11-year period.

Future (2031) Build Scenario

The 2031 Build scenario models future traffic operations based on (a) regional traffic growth combined with (b) traffic generated from the hypothetical Buildout Scenario described in the earlier section. The Buildout Scenario’s developable footprint was used as the basis for determining the number of peak hour trips generated in the future condition.

To account for the mixed-use nature of Westfield’s downtown, which enables walking, biking, and transit trips, a hybrid approach to trip generation was utilized. WSP first used the ITE Trip Generation Manual, 10th Edition, to determine peak hour trips for each land use in the build-out scenario. Trip reduction factors were then developed based on ITE/EPA’s Mixed-Use Trip Generation Model to account for internal, walking, and transit trips expected within the study area. These factors were 17.5% in the AM peak and 18.5% in the PM peak. The final step was to distribute the peak hour trips to the intersections contained in the model. To perform this exercise, Origin and Destination (OD) studies were conducted using the StreetLight platform. The results of this analysis were used to expand trip generation estimates and distribute to the traffic network.

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APPENDIX D

Commuter Parking Lots

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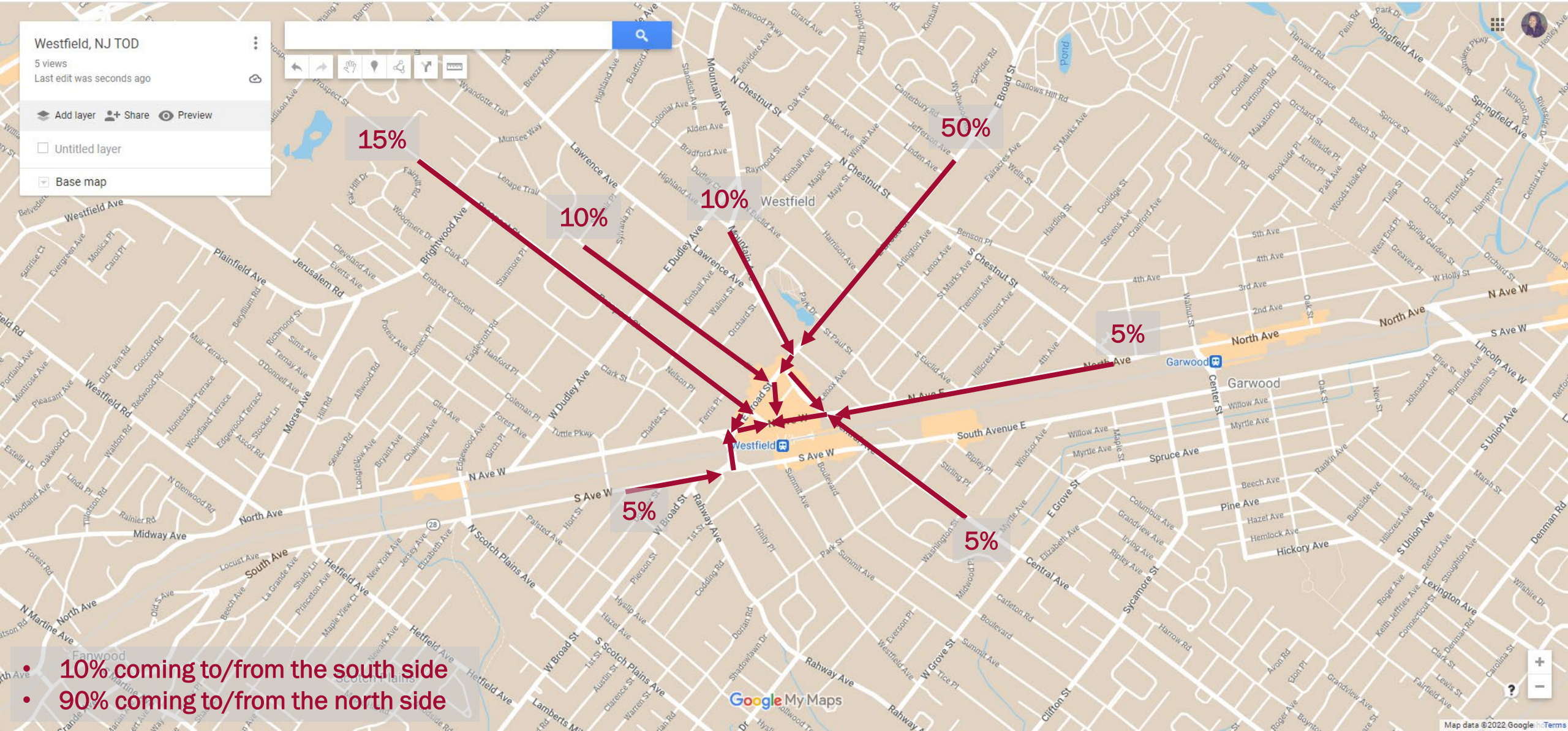
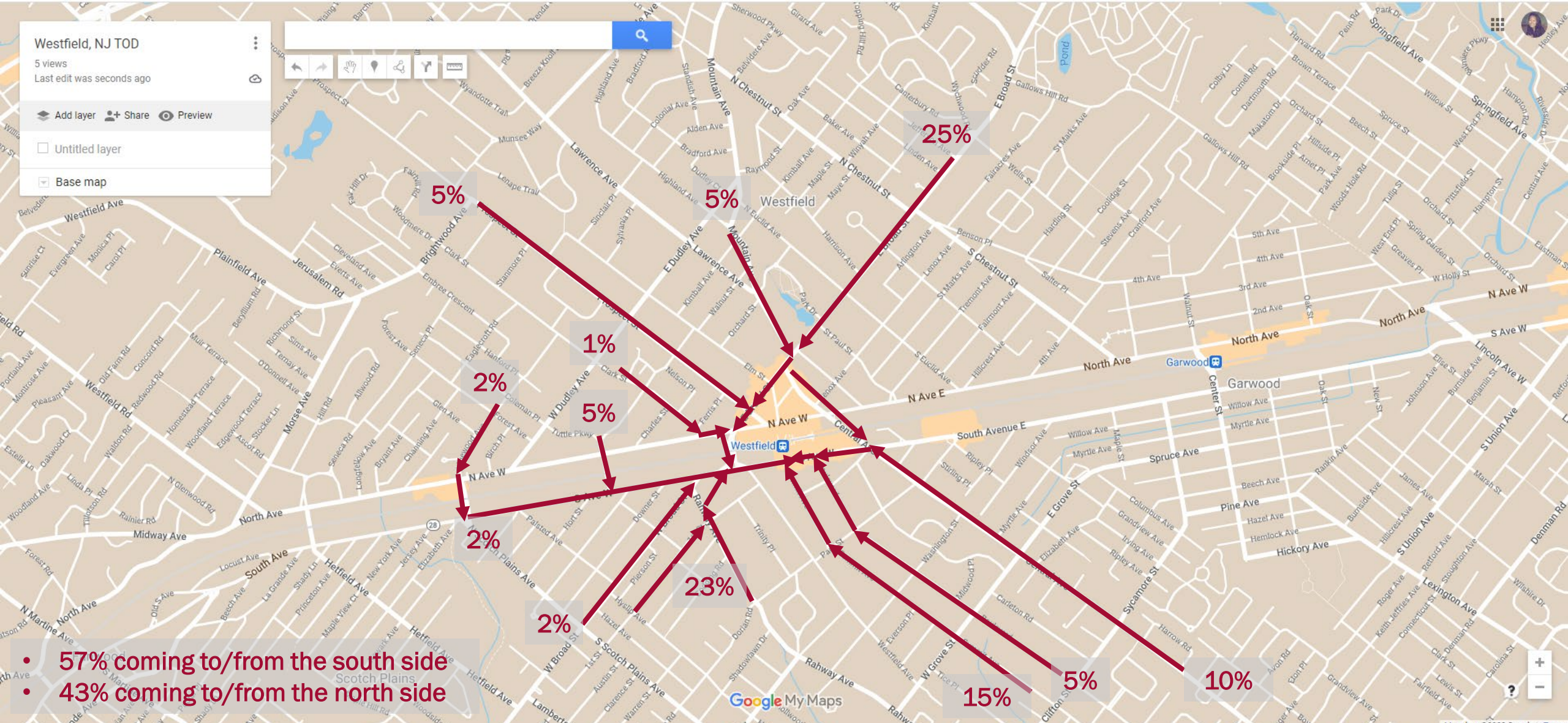
Distribution

North Zone – Current Distribution
Lot 8 (south of North Avenue) – commuter lot



- 10% coming to/from the south side
- 90% coming to/from the north side

South Zone – Current Distribution
Lot 3 (north of South Avenue) – commuter lot



- 57% coming to/from the south side
- 43% coming to/from the north side

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Parking Supply

Pre-Development - Public Parking Facilities	Commuters		Employees		Shoppers	
	# of spaces	Distance to Station	# of spaces	Distance to Broad/Elm	# of spaces	Distance to Broad/Elm
Lot 2 (North)					68	600 ft
Lot 3 (South)	546	100 ft				
Lot 6 (South)	122	1,400 ft				
Lot 8 (North)	75	200 ft	106	1,000 ft		
Total	**743**		**106**		**68**	
Post-Development - Public Parking Facilities						
North District						
North District Public Garage	300	500 ft				
Reserved for Residential	(35)					
North District Public Surface Parking (Lot 8)	30	200 ft	30	900 ft		
Modify Plaza Design & Include Firehouse Parking (Lot 2)					28	700 ft
Sub Total	**295**		**30**		**28**	
South District						
South District Public Garage	200	100 ft				
South District Public Surface Parking (Lot 3)	100	100 ft				
South District (Lot 6)	122	1,400 ft				
Sub Total	**422**		**0**		**0**	
Total	**717**		**30**		**28**	
Post-Development - Primary Strategies						
Available Employee Parking (Lot 4)			30	500 ft		
Available On-Street Employee Parking			40	900 ft		
Available Commuter Spaces (Lot 6)	20	1,400 ft				
TNC Subsidy Program	50	N/A				
Sub Total	**70**		**70**		**0**	
Total Post-Development Facilities & Primary Strategies	**787**		**100**		**28**	
Post-Development - Contingency Strategies						
Available Supply in the West District Parking Garage	40	1,800 ft				
1 Level Vertical Expansion of North Garage			60	1,200 ft		
1 Level Vertical Expansion of South Garage	40	100 ft				
Lord and Taylor Lot	15	1,200 ft				
Lease Private Parking	50	N/A	20	N/A		
Alternative Mode Pilot Program (bike, e-scooter, etc.)	TBD		TBD		TBD	
Sub Total	**145**		**80**		**0**	

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Data Collection – TMC's

Commuter Parking Lots with Adjustments (increase of 11%)

		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
ID	Location	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
1	Elm St/Westfield Public Parking Lot #2 & N Ave W	49	22	71	61	48	109	69	43	112	79	134	213	North Zone
2	Columbia Bank Dwy & N Ave W (egress only)	0	18	18	0	44	44							
3	Verizon and Limani Seafood Grill Dwy & N Ave W	20	3	23	18	42	60							
4	Lot #3 East Entrance & S Ave W	110	38	148	19	40	59	252	122	374	79	160	239	South Zone
5	Boulevard/ Lot #3 Center Entrance & S Ave W	0	36	36	0	40	40							
6	Summit Ave and Entrance to Westfield Train Station & S Ave W	123	47	170	56	74	130							
7	Parking lot Driveways next to BP Gas & S Ave W	19	2	21	4	6	10							
	Total	321	165	486	158	294	452	321	165	486	158	294	452	

Commuter Parking Lots with Adjustments (increase in the North Zone and decrease in the South Zone)

		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			
ID	Location	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
1	Elm St/Westfield Public Parking Lot #2 & N Ave W	66	30	95	82	64	146	92	58	150	106	180	286	North Zone
2	Columbia Bank Dwy & N Ave W (egress only)	0	24	24	0	60	60							
3	Verizon and Limani Seafood Grill Dwy & N Ave W	27	4	31	24	57	80							
4	Lot #3 East Entrance & S Ave W	61	21	82	10	22	32	139	67	207	44	88	132	South Zone
5	Boulevard/ Lot #3 Center Entrance & S Ave W	0	20	20	0	22	22							
6	Summit Ave and Entrance to Westfield Train Station & S Ave W	68	26	94	31	41	72							
7	Parking lot Driveways next to BP Gas & S Ave W	10	1	12	2	3	6							
	Total	231	125	357	149	268	418	231	125	357	149	268	418	

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Data Collection – Parking Analysis

Parking Study

Project: 22-340036
City: Westfield, NJ

Date: 4/5/2022
Day: Tuesday

Lot	Description	Space Type	Space	10:00 AM	12:00 AM	2:00 PM	4:00 PM	6:00 PM	8:00 PM
PKG-001	Pay Station Parking: Maximum of 4 Hrs	Regular	95	76	73	78	77	61	58
		Handicap	4	1	0	0	1	0	0
PKG-002	Pay Station Parking: Maximum of 4 Hrs	Regular	61	38	41	33	36	28	21
		Handicap	5	2	2	2	2	0	0
		Electric Vehicle Charging (2 Hrs Limit)	2	0	0	0	0	0	0
PKG-003	Employee Parking by Permit Only	Regular	61	42	47	44	38	36	37
		Handicap	4	3	3	4	2	2	2
PKG-004	Employee Parking by Permit Only	Regular	58	46	44	41	37	30	26
PKG-005	Permit Parking Only (Commuter)	Regular (Permit Parking Only)	60	56	56	51	49	43	38
PKG-006	Permit Parking Only (Commuter)	Regular (Permit Parking Only)	50	33	28	31	22	16	12
PKG-007	12 Hour Parking: Numbered Spaces	Regular	51	40	42	42	34	31	31
		Handicap	8	8	8	8	8	6	4
PKG-008	Permit Parking Only (Commuter)	Regular	413	395	396	391	384	313	278
PKG-009	12 Hour Parking: Numbered Spaces	Regular	22	19	19	17	16	12	8
		Handicap	2	1	1	1	0	0	0
PKG-010		Regular	21	17	16	16	14	13	13
		Handicap	2	0	0	0	0	0	0
		UBS	25	13	13	9	11	10	10
		Patient Parking	10	5	5	4	5	3	0
		Berkshire	6	3	3	2	2	0	0

Prepared by National Data & Surveying Services

Central Ave & AT&T NE Parking Lot Dwy

Peak Hour Turning Movement Count

ID: 22-340035-001
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	6:00 AM - 10:00 AM
NONE	NONE
05:15 PM - 06:15 PM	3:00 PM - 07:00 PM

SOUTHBOUND (Central Ave)

AM	9	430	0	0	538	AM
NOON	0	0	0	0	0	NOON
PM	34	496	0	0	565	PM

EASTBOUND (AT&T NE Parking Lot Dwy)

AM	NOON	PM	
12	0	45	
0	0	0	0
3	0	10	0
0	0	0	1
6	0	22	0

WESTBOUND (AT&T NE Parking Lot Dwy)

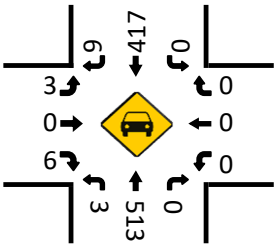
PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	

NORTHBOUND (Central Ave)

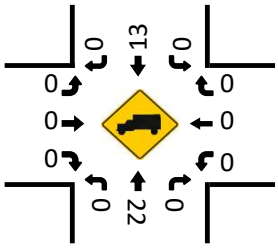
PM	519	1	11	555	0	PM
NOON	0	0	0	0	0	NOON
AM	436	0	3	535	0	AM

CONTROL			
No Control			
TEV	986	0	1129
	AM	NOON	PM
PHF	0.92		0.97

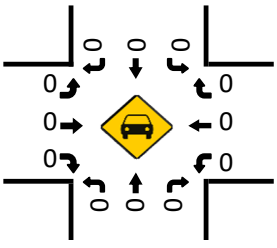
Cars (AM)



HT (AM)



Cars (NOON)



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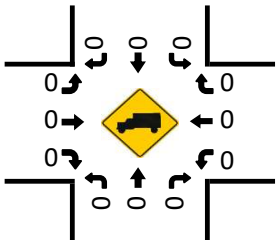
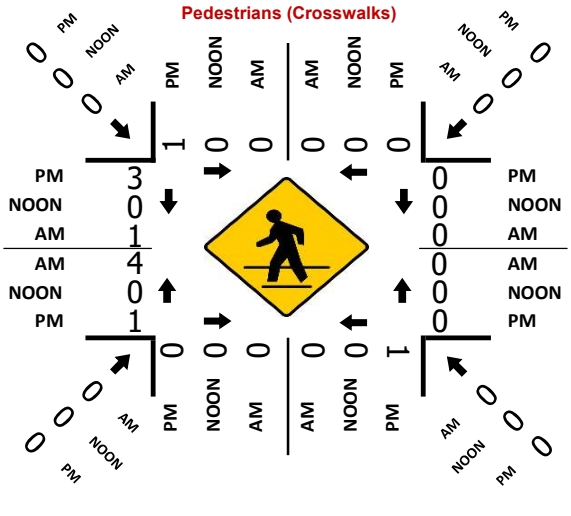


Pedestrians (Crosswalks)


PM
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Prepared by National Data & Surveying Services

Verizon and Limani Seafood Grill Dwy & N Ave W

Peak Hour Turning Movement Count

ID: 22-340035-002
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	6:00 AM - 10:00 AM
NONE	NONE
04:45 PM - 05:45 PM	3:00 PM - 07:00 PM

SOUTHBOUND — Verizon and Limani Seafood Grill Dwy

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — N Ave W

AM	NOON	PM	
700	0	787	⇦
0	0	0	↰ 0
0	0	0	↱ 0
557	0	568	→ 2
4	0	5	↳ 0

WESTBOUND — N Ave W

PM	NOON	AM	
0	0	0	↰ 0
786	0	700	← 2
5	0	20	↰ 0
0	0	0	↳ 0
598	0	564	⇨

CONTROL

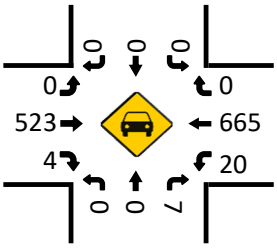
No Control

TEV	1288 AM	0 NOON	1395 PM
PHF	0.94		0.97

NORTHBOUND — Verizon and Limani Seafood Grill Dwy

PM	10	0	1	0	30	PM
NOON	0	0	0	0	0	NOON
AM	24	0	0	0	7	AM

Cars (AM)



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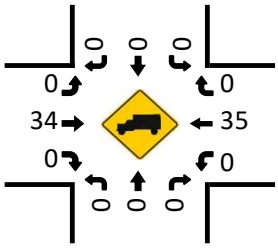
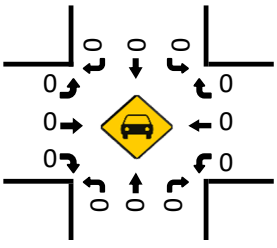


Cars (NOON)



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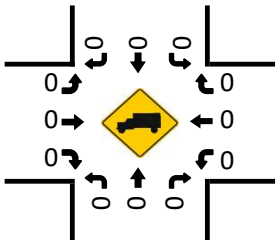
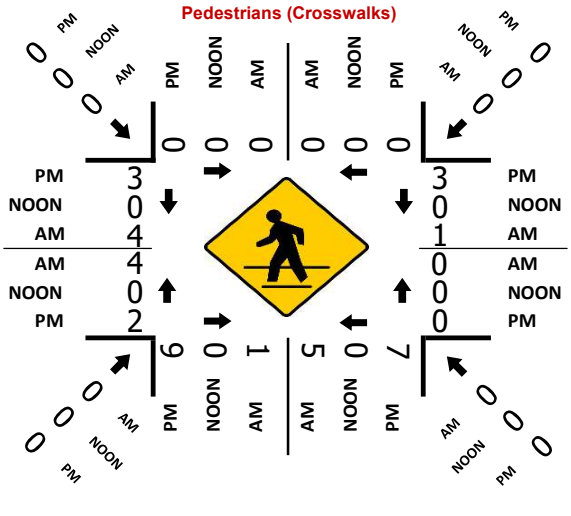
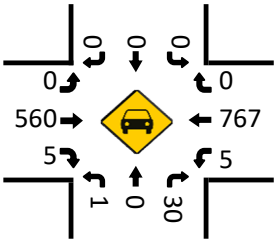


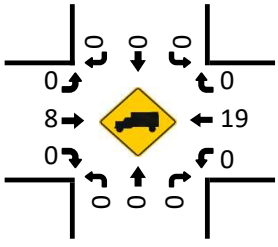
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Westfield Health & Rehabilitation Dwy & N Ave W

Peak Hour Turning Movement Count

ID: 22-340035-003
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	6:00 AM - 10:00 AM
NONE	NONE
04:45 PM - 05:45 PM	3:00 PM - 07:00 PM

SOUTHBOUND — Westfield Health & Rehabilitation Dwy

AM	3	0	0	1	8	AM
NOON	0	0	0	0	0	NOON
PM	35	0	10	0	35	PM

EASTBOUND — N Ave W

AM	NOON	PM		
700	0	803	⇦	
0	0	0	↩	0
3	0	15	↱	0
566	0	567	→	2
0	0	0	↴	0
AM	NOON	PM		

WESTBOUND — N Ave W

PM	NOON	AM		
20	0	4	↰	0
768	0	697	←	2
0	0	0	↰	0
0	0	0	↩	0
577	0	566	⇨	
PM	NOON	AM		

NORTHBOUND — Westfield Health & Rehabilitation Dwy

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

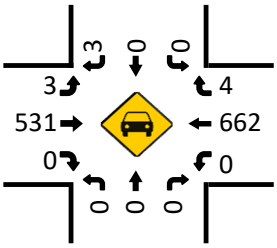
⇩	0	0	0	0
	↰	↰	↑	↱

CONTROL

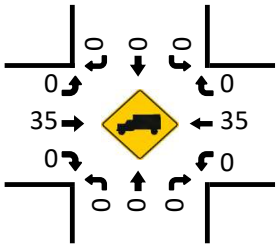
No Control

TEV	1274 AM	0 NOON	1415 PM
PHF	0.93		0.95

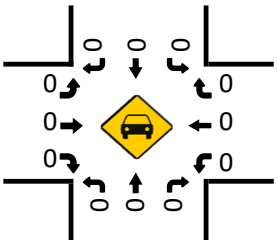
Cars (AM)



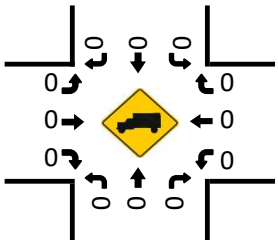
HT (AM)



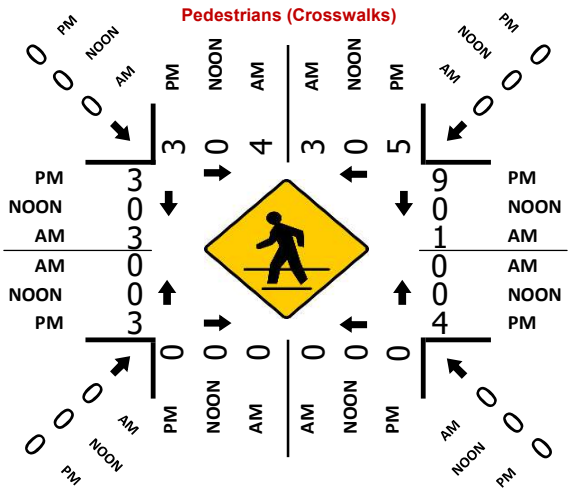
Cars (NOON)



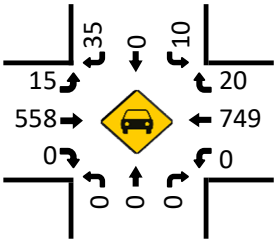
HT (NOON)



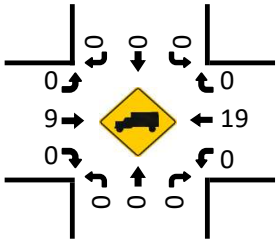
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Columbia Bank Dwy & N Ave W

Peak Hour Turning Movement Count

ID: 22-340035-004
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS		COUNT PERIODS
07:45 AM - 08:45 AM	AM	6:00 AM - 10:00 AM
NONE	NOON	NONE
04:45 PM - 05:45 PM	PM	3:00 PM - 07:00 PM

Columbia Bank Dwy

SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM
	0	0	0	0		

EASTBOUND (N Ave W)

AM	NOON	PM	
698	0	804	
0	0	0	0
0	0	0	0
555	0	556	2
0	0	0	0
AM	NOON	PM	

WESTBOUND (N Ave W)

	PM	NOON	AM
0	0	0	0
2	802	0	698
0	0	0	0
0	0	0	0
	582	0	568
	PM	NOON	AM

CONTROL

No Control

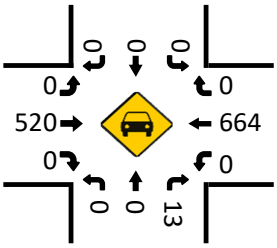
	AM	NOON	PM
TEV	1266	0	1386
PHF	0.92		0.95

		0	0	0	1	
PM	0	0	2	0	26	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	13	AM

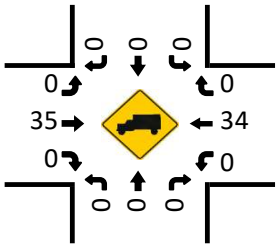
NORTHBOUND

Columbia Bank Dwy

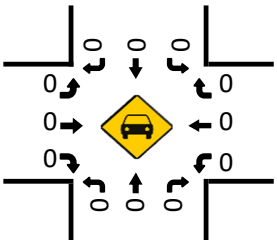
Cars (AM)



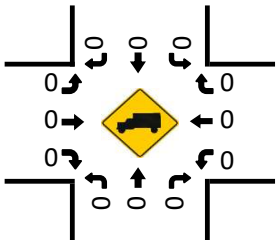
HT (AM)



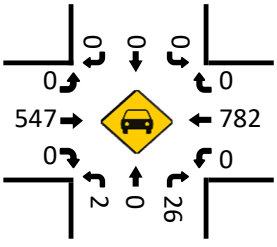
Cars (NOON)



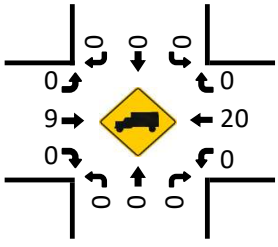
HT (NOON)



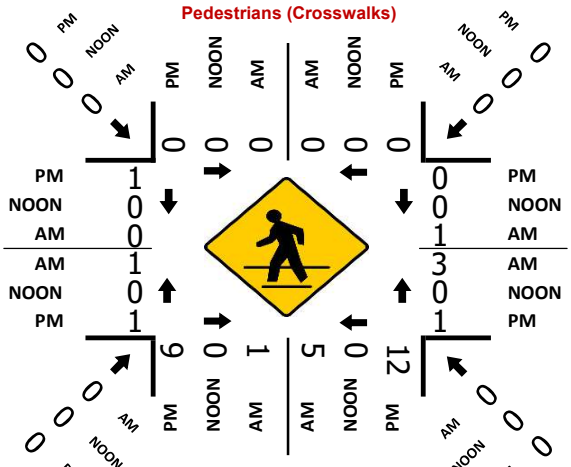
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Elm St/Westfield Public Parking Lot #2 & N Ave W

Peak Hour Turning Movement Count

ID: 22-340035-005
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	6:00 AM - 10:00 AM
NONE	NONE
05:15 PM - 06:15 PM	3:00 PM - 07:00 PM

SOUTHBOUND — Elm St/Westfield Public Parking Lot #2

AM	23	13	73	0	116	AM
NOON	0	0	0	0	0	NOON
PM	115	19	103	0	149	PM

EASTBOUND — N Ave W

AM	NOON	PM	
634	0	801	⇦
0	0	0	↶ 0
23	0	29	↱ 0
480	0	402	→ 2
22	0	21	↳ 0

WESTBOUND — N Ave W

PM	NOON	AM	
104	0	84	0 ↰
670	0	609	2 ←
21	0	4	0 ↙
0	0	0	0 ↶
514	0	553	⇨

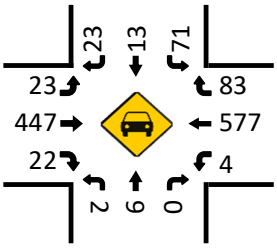
NORTHBOUND — Elm St/Westfield Public Parking Lot #2

PM	61	0	16	16	9	PM
NOON	0	0	0	0	0	NOON
AM	39	0	2	9	0	AM

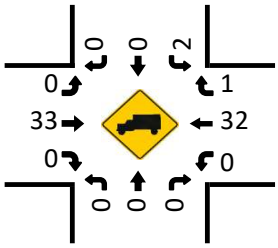
CONTROL: Signalized

TEV	1342 AM	0 NOON	1525 PM
PHF	0.90		0.96

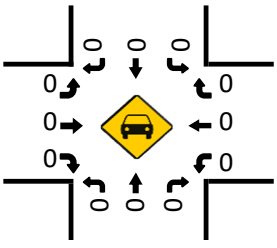
Cars (AM)



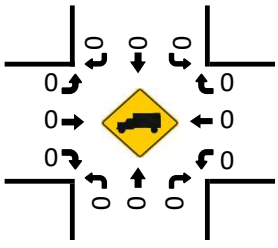
HT (AM)



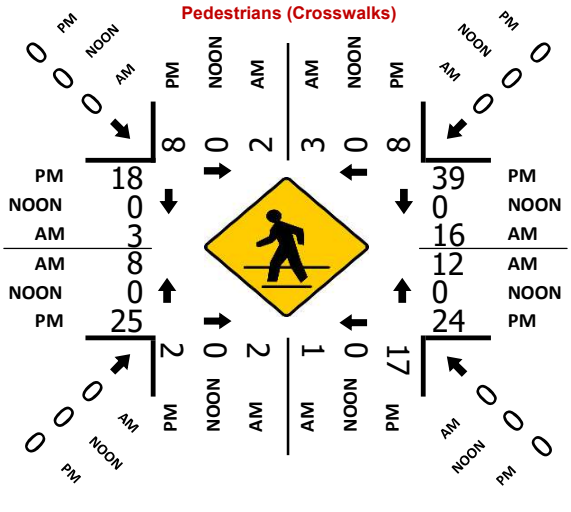
Cars (NOON)



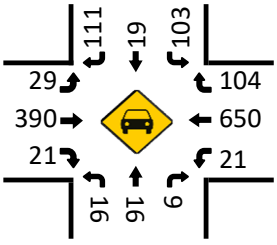
HT (NOON)



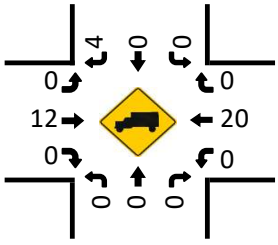
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Lot #3 East Entrance & S Ave W

Peak Hour Turning Movement Count

ID: 22-340035-006
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS		COUNT PERIODS
08:00 AM - 09:00 AM	AM	6:00 AM - 10:00 AM
NONE	NOON	NONE
05:15 PM - 06:15 PM	PM	3:00 PM - 07:00 PM

SOUTHBOUND — Lot #3 East Entrance

AM	21	0	13	0	46	AM
NOON	0	0	0	0	0	NOON
PM	28	0	18	0	19	PM
	0	1	0	0		

EASTBOUND — S Ave W

AM	NOON	PM	
459	0	560	
0	0	0	0
23	0	5	0
736	0	693	1
0	0	0	0
AM	NOON	PM	

WESTBOUND — S Ave W

	PM	NOON	AM
0	14	0	23
2	532	0	438
0	0	0	0
0	0	0	0
	711	0	749
	PM	NOON	AM

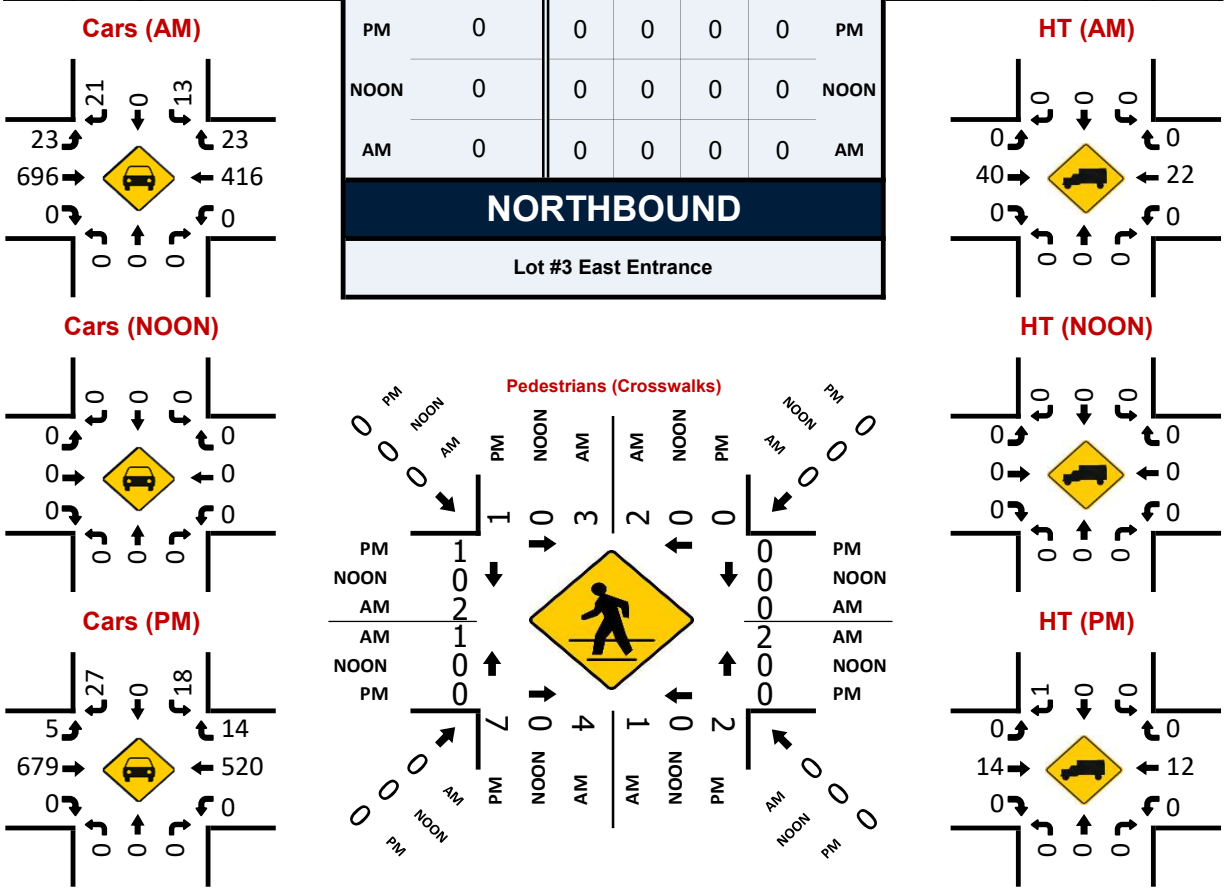
CONTROL

No Control

	AM	NOON	PM
TEV	1254	0	1290
PHF	0.94		0.97

NORTHBOUND — Lot #3 East Entrance

		0	0	0	0	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM



Prepared by National Data & Surveying Services

Boulevard/ Lot #3 Center Entrance & S Ave W

Peak Hour Turning Movement Count

ID: 22-340035-007
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	6:00 AM - 10:00 AM
NONE	NONE
05:15 PM - 06:15 PM	3:00 PM - 07:00 PM

SOUTHBOUND — Boulevard/ Lot #3 Center Entrance

	Left	Thru	Right	U-Turn	
AM	14	1	0	0	0 AM
NOON	0	0	0	0	0 NOON
PM	44	6	0	0	0 PM

EASTBOUND — S Ave W

AM	NOON	PM		
501	0	610	⇦	1
0	0	0	↶	0
0	0	0	↱	0
607	0	613	→	1
52	0	46	↴	0
AM	NOON	PM		

WESTBOUND — S Ave W

PM	NOON	AM		
0	0	0	↰	0
532	0	440	←	2
29	0	19	↰	0
0	0	0	↰	0
701	0	759	⇨	
PM	NOON	AM		

NORTHBOUND — Boulevard/ Lot #3 Center Entrance

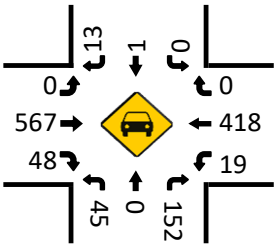
	Left	Thru	Right	U-Turn	
PM	82	1	34	0	88 PM
NOON	0	0	0	0	0 NOON
AM	72	0	47	0	152 AM

CONTROL

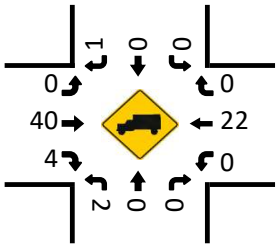
1-Way Stop (NB)

	AM	NOON	PM
TEV	1332	0	1393
PHF	0.94		0.99

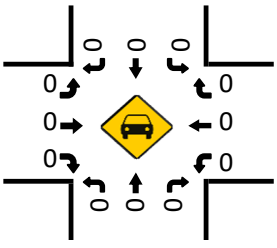
Cars (AM)



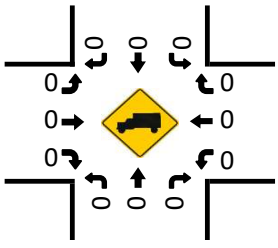
HT (AM)



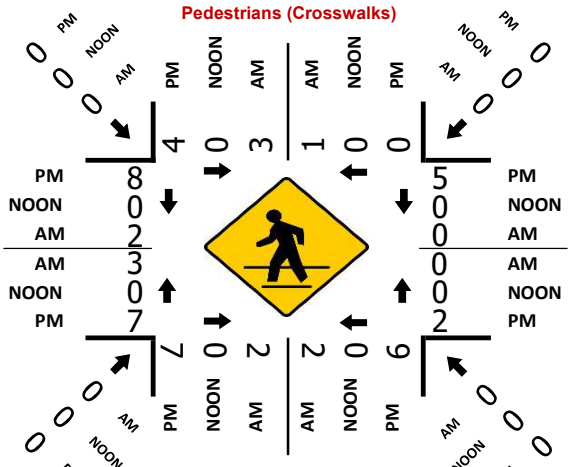
Cars (NOON)



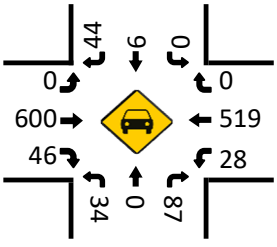
HT (NOON)



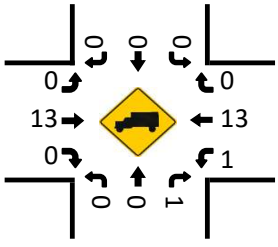
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Summit Ave and Entrance to Westfield Train Station & S Ave W

Peak Hour Turning Movement Count

ID: 22-340035-008
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	05:15 PM - 06:15 PM

COUNT PERIODS

AM	6:00 AM - 10:00 AM
NOON	NONE
PM	3:00 PM - 07:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	1424	0	1478
PHF	0.96		0.96

SOUTHBOUND — Summit Ave and Entrance to Westfield Train Station

	Left	Thru	Right	U-Turn	
AM	14	5	5	0	61
NOON	0	0	0	0	0
PM	38	21	25	0	47
	0.5	0.5	1	0	

EASTBOUND — S Ave W

	Left	Thru	Right	U-Turn
AM	0	24	613	38
NOON	0	0	0	0
PM	0	21	588	30
	0	0	1	0

AM	NOON	PM
655	0	701

WESTBOUND — S Ave W

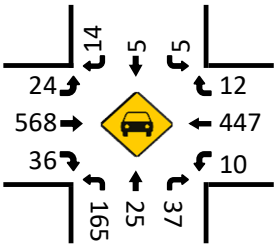
	Left	Thru	Right	U-Turn
AM	0	573	25	0
NOON	0	0	0	0
PM	13	472	10	0
	0	2	0	0

AM	NOON	PM
654	0	655

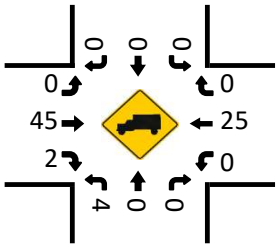
NORTHBOUND — Summit Ave and Entrance to Westfield Train Station

	Left	Thru	Right	U-Turn	
AM	53	0	169	25	37
NOON	0	0	0	0	0
PM	76	0	90	13	41
		0	1	0	1

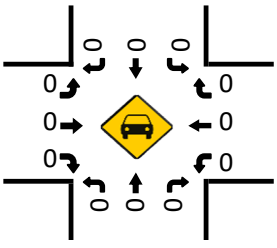
Cars (AM)



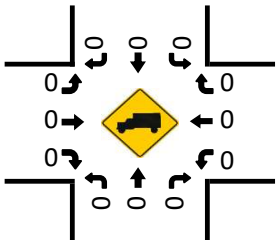
HT (AM)



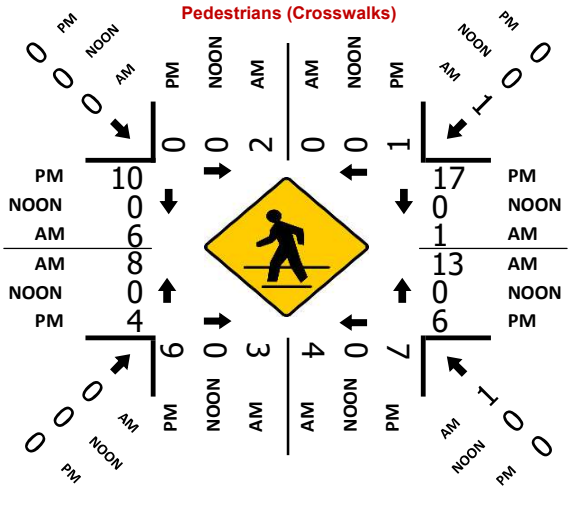
Cars (NOON)



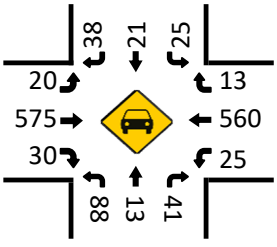
HT (NOON)



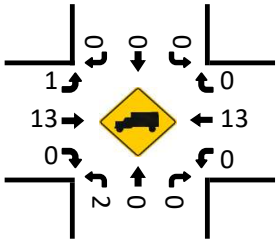
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Parking lot Driveways next to BP Gas & S Ave W

Peak Hour Turning Movement Count

ID: 22-340035-009
City: Westfield

Day: Tuesday
Date: 4/5/2022

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	6:00 AM - 10:00 AM
NONE	NONE
05:15 PM - 06:15 PM	3:00 PM - 07:00 PM

SOUTHBOUND — Parking lot Driveways next to BP Gas

AM	3	0	1	0	6	AM
NOON	0	0	0	0	0	NOON
PM	5	0	0	0	5	PM

EASTBOUND — S Ave W

AM	NOON	PM	
654	0	707	⇦
0	0	0	↶ 0
2	0	3	↱ 0
675	0	641	→ 1
0	0	0	↴ 0

WESTBOUND — S Ave W

PM	NOON	AM	
2	0	4	↰ 0
702	0	651	← 2
0	0	0	↙ 0
0	0	0	↶ 0
641	0	676	⇨

NORTHBOUND — Parking lot Driveways next to BP Gas

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL

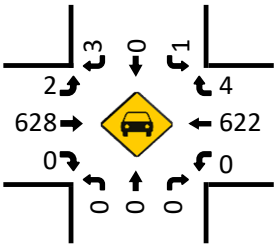
No Control

TEV	1336 AM	0 NOON	1353 PM
PHF	0.97		0.96

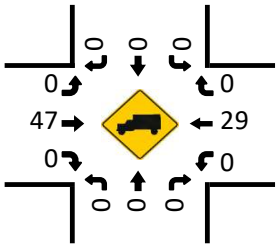
0 1 0 0

0 0 0 0

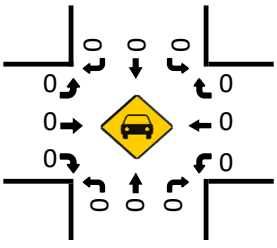
Cars (AM)



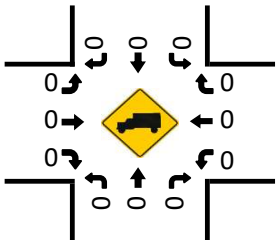
HT (AM)



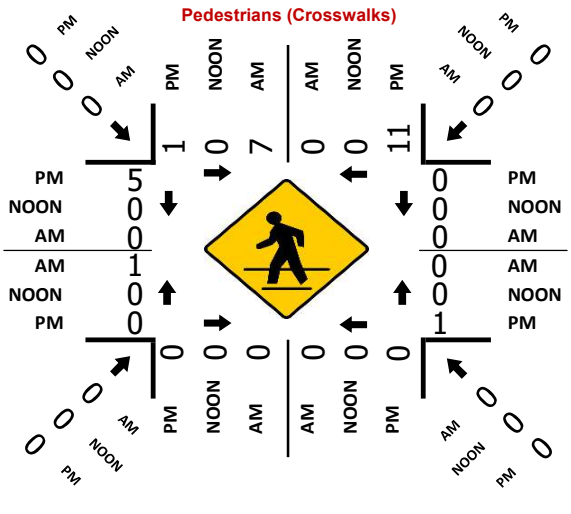
Cars (NOON)



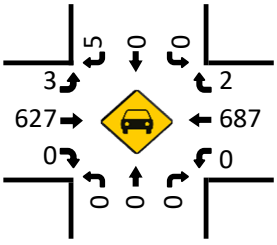
HT (NOON)



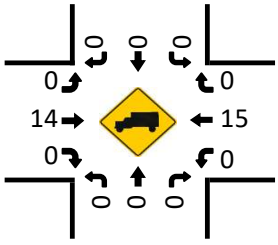
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Kimley»Horn

DRAFT

APPENDIX E

Trip Generation

	Census Tract 366, Union County, New Jersey	
	Estimate	Percent
Car – drove alone + carpooled	1,361	65.3%
Public Transportation (excluding taxicab)	538	25.8%
Walked	46	2.2%
Bicycle	-	0.0%
Taxicab, motorcycle, or other means	13	0.6%
Worked at home	125	6.0%
Total	2,083	
Multimodal Reduction		34.0%

ACS 2019 5-Year Estimates

AM PEAK HOUR TRIP GENERATION

EXISTING WEEKDAY AM PEAK HOUR TRIP GENERATION (L&T WEST ZONE)

ITE TRIP GENERATION CHARACTERISTICS						DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
Land Use	Land Use Type	ITE Edition	ITE Code	Scale	ITE Units	Percent In	Percent Out	In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	CC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
Department Store	Retail	11	875	143.836	KSF	64%	36%	53	30	83	17.2%	14	44	25	69	0.0%	0	44	25	69	6.07%	5	41	23	64	0.0%	0	41	23	64
ITE Land Use Code			Rate or Equation			Total:		53	30	83	16.9%	14	44	25	69	0.0%	0	44	25	69	7.3%	5	41	23	64	0.0%	0	41	23	64
875			Y=0.58(X)																										

PM PEAK HOUR TRIP GENERATION

EXISTING WEEKDAY PM PEAK HOUR TRIP GENERATION (L&T WEST ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent In	Percent Out	In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	CC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
Department Store	11	875	143.836	KSF	50%	50%	140	140	280	17.2%	48	116	116	232	0.0%	0	116	116	232	7.37%	21	106	106	211	0.0%	0	106	106	211
ITE Land Use Code		Rate or Equation				**Total:**	**140**	**140**	**280**	**17.1%**	**48**	**116**	**116**	**232**	**0.0%**	**0**	**116**	**116**	**232**	**8.9%**	**21**	**106**	**106**	**211**	**0.0%**	**0**	**106**	**106**	**211**
875		Y=1.95(X)																											

SATURDAY MIDDAY PEAK HOUR TRIP GENERATION

EXISTING SATURDAY MIDDAY PEAK HOUR TRIP GENERATION (L&T WEST ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
					Percent																								
Land Use	ITE Edition	ITE Code	Scale	ITE Units	In	Out	In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	CC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
Department Store	11	875	143.836	KSF	53%	47%	263	233	496	17.2%	85	218	193	411	0.0%	0	218	193	411	6.72%	33	200	178	378	0.0%	0	200	178	378
ITE Land Use Code		Rate or Equation				**Total:**	**263**	**233**	**496**	**17.1%**	**85**	**218**	**193**	**411**	**0.0%**	**0**	**218**	**193**	**411**	**8.1%**	**33**	**200**	**178**	**378**	**0.0%**	**0**	**200**	**178**	**378**
875		Y=3.45(X)																											

215 - Single-Family Attached Housing

General Urban/Suburban

AM	0.48	AMT/AM	0.81
PM	0.57	PMT/PM	0.51
SAT	0.57		

Dense Multi-Use Urban AVG 0.66

AMT	0.39
PMT	0.29

SATT = SAT * AVG of Dense Multi-Use Urban over General Urban/Suburban	0.38

221 - Multifamily Housing (Mid-Rise)

General Urban/Suburban

AM	0.37	AMT/AM	0.68
PM	0.39	PMT/PM	0.64
SAT	0.39		

Dense Multi-Use Urban AVG 0.66

AMT	0.25
PMT	0.25

SATT = SAT * AVG of Dense Multi-Use Urban over General Urban/Suburban	0.26

223 - Affordable Housing - Income Limits

General Urban/Suburban

AM	0.36
PM	0.46
SAT	1.28

Dense Multi-Use Urban

AMT	0.5
PMT	0.36

SATT	0.46	per ITE

Source: ITE Trip Generation Manual, 11th Edition

AM PEAK HOUR TRIP GENERATION

PROPOSED WEEKDAY AM PEAK HOUR TRIP GENERATION (WEST ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent In	Percent Out	In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	CC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
Single-Family Attached Housing	11	215	16	DU	33%	67%	2	4	6	0.0%	0	2	4	6	4.0%	0	2	4	6	6.07%	0	2	4	6	0.0%	0	2	4	6
Multifamily Housing (Mid-Rise)	11	221	138	DU	15%	85%	5	30	35	0.0%	0	5	30	35	4.0%	1	5	29	34	6.07%	2	5	27	32	0.0%	0	5	27	32
Multifamily Housing (Mid-Rise)	11	221	34	DU	15%	85%	1	8	9	0.0%	0	1	8	9	4.0%	0	1	8	9	6.07%	1	1	7	8	0.0%	0	1	7	8
General Office Building	11	710	40	ksf	87%	13%	47	7	54	0.0%	0	47	7	54	3.7%	2	46	6	52	6.07%	3	43	6	49	0.0%	0	43	6	49
Medical-Dental Office Building	11	720	60	ksf	79%	21%	120	32	152	28.2%	43	86	23	109	3.7%	4	84	21	105	6.07%	9	77	19	96	0.0%	0	77	19	96
Strip Retail Plaza	11	822	2.5	ksf	60%	40%	7	5	12	17.2%	2	6	4	10	40.0%	4	4	2	6	6.07%	1	3	2	5	34.0%	2	2	1	3
Fine Dining Restaurant	11	931	10.8	ksf	80%	20%	6	2	8	17.2%	1	5	2	7	40.0%	3	2	2	4	6.07%	0	2	2	4	10.0%	0	2	2	4
ITE Land Use Code		Rate or Equation				**Total:**	**188**	**88**	**276**	**16.7%**	**46**	**152**	**78**	**230**	**7.0%**	**14**	**144**	**72**	**216**	**7.3%**	**16**	**134**	**67**	**200**	**1.0%**	**2**	**132**	**66**	**198**
215		Y=0.39(X)			From ITE Web-based App (Dense Multi-Use Urban)																								
221		Y=0.25(X)			From ITE Web-based App (Close to Rail Transit/Dense Multi-Use Urban)																								
710		Y=0.72(X) + 25.14			From ITE Web-based App (Dense Multi-Use Urban)																								
720		LN(Y) = 0.9*LN(X)+1.34																											
822		LN(Y) = 0.66*LN(X)+1.84																											
931		Y=0.73(X)																											

PM PEAK HOUR TRIP GENERATION

PROPOSED WEEKDAY PM PEAK HOUR TRIP GENERATION (WEST ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent In	Percent Out	In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	CC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
Single-Family Attached Housing	11	215	16	DU	63%	37%	3	2	5	0.0%	0	3	2	5	26.0%	1	2	1	4	7.37%	0	2	2	4	0.0%	0	2	2	4
Multifamily Housing (Mid-Rise)	11	221	138	DU	74%	26%	26	9	35	0.0%	0	26	9	35	26.0%	9	20	6	26	7.37%	3	18	5	23	0.0%	0	18	5	23
Multifamily Housing (Mid-Rise)	11	221	34	DU	74%	26%	7	3	10	0.0%	0	7	3	10	26.0%	3	5	2	7	7.37%	1	4	2	6	0.0%	0	4	2	6
General Office Building	11	710	40	ksf	16%	84%	7	34	41	0.0%	0	7	34	41	2.3%	1	7	33	40	7.37%	3	6	31	37	0.0%	0	6	31	37
Medical-Dental Office Building	11	720	60	ksf	30%	70%	72	169	241	28.2%	68	52	121	173	2.3%	4	50	119	169	7.37%	18	45	106	151	0.0%	0	45	106	151
Strip Retail Plaza	11	822	2.5	ksf	50%	50%	15	15	30	17.2%	5	12	13	25	45.0%	11	6	8	14	7.37%	2	5	7	12	34.0%	4	4	4	8
Fine Dining Restaurant	11	931	10.8	ksf	67%	33%	56	28	84	17.2%	14	46	24	70	27.1%	19	38	13	51	7.37%	6	33	12	45	10.0%	4	30	11	41
						Total:	**186**	**260**	**446**	**19.5%**	**87**	**153**	**206**	**359**	**14.5%**	**48**	**128**	**182**	**311**	**10.6%**	**33**	**113**	**165**	**278**	**2.9%**	**8**	**109**	**161**	**270**

ITE Land Use Code	Rate or Equation	
215	Y=0.29(X)	From ITE Web-based App (Dense Multi-Use Urban)
221	Y=0.24(X) + 2.00	From ITE Web-based App (Close to Rail Transit/Dense Multi-Use Urban)
710	Y=0.83(X) + 7.46	From ITE Web-based App (Dense Multi-Use Urban)
720	Y=4.07*(X)+-3.17	
822	LN(Y) = 0.71*LN(X)+2.72	
931	Y=7.8(X)	

SATURDAY MIDDAY PEAK HOUR TRIP GENERATION

PROPOSED SATURDAY MIDDAY PEAK HOUR TRIP GENERATION (WEST ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent In	Percent Out	In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	CC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
Single-Family Attached Housing	11	215	16	DU	48%	52%	3	3	6	0.0%	0	3	3	6	27.5%	2	2	2	4	6.72%	0	2	2	4	0.0%	0	2	2	4
Multifamily Housing (Mid-Rise)	11	221	138	DU	51%	49%	18	18	36	0.0%	0	18	18	36	27.5%	10	13	13	26	6.72%	2	12	12	24	0.0%	0	12	12	24
Multifamily Housing (Mid-Rise)	11	221	34	DU	51%	49%	5	4	9	0.0%	0	5	4	9	27.5%	2	4	3	7	6.72%	1	4	2	6	0.0%	0	4	2	6
General Office Building	11	710	40	ksf	8%	92%	1	6	7	0.0%	0	1	6	7	3.6%	0	1	6	7	6.72%	0	1	6	7	0.0%	0	1	6	7
Medical-Dental Office Building	11	720	60	ksf	57%	43%	103	78	181	28.2%	51	74	56	130	3.6%	5	72	53	125	6.72%	12	65	48	113	0.0%	0	65	48	113
Strip Retail Plaza	11	822	2.5	ksf	51%	49%	8	8	16	17.2%	3	7	6	13	50.0%	7	4	2	6	6.72%	1	3	2	5	34.0%	2	2	1	3
Fine Dining Restaurant	11	931	10.8	ksf	59%	41%	45	32	77	17.2%	13	38	26	64	26.6%	17	30	17	47	6.72%	5	27	15	42	10.0%	4	24	14	38
						Total:	**183**	**149**	**332**	**20.2%**	**67**	**146**	**119**	**265**	**17.4%**	**43**	**126**	**96**	**222**	**10.0%**	**22**	**113**	**86**	**200**	**3.0%**	**6**	**110**	**85**	**195**

ITE Land Use Code	Rate or Equation	
215	Y=0.38(X)	Calculated Rate, which accounts for Transit/Multimodal Reduction
221	Y=0.26(X)	Calculated Rate, which accounts for Transit/Multimodal Reduction
710	Y=0.17(X)	Calculated Rate, which accounts for Transit/Multimodal Reduction
720	Y=3.02(X)	
822	Y=6.57(X)	
931	Y=7.16(X)	

AM PEAK HOUR TRIP GENERATION

PROPOSED WEEKDAY AM PEAK HOUR TRIP GENERATION (NORTH ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	ITE	ITE		ITE	Percent						MR					IC					CC					PB			
Land Use	Edition	Code	Scale	Units	In	Out	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total
Multifamily (Mid-Rise)	10	221	35	DU	26%	74%	3	10	13	38.2%	5	2	6	8	20.0%	2	2	4	6	6.07%	1	2	3	5	0.0%	0	2	3	5
Quality Restaurant	10	931	2.11	KSF	56%	44%	5	4	9	17.2%	2	4	3	7	14.3%	1	3	3	6	6.07%	1	3	2	5	10.0%	1	2	2	4
ITE Land Use Code		Rate or Equation			**Total:**		**8**	**14**	**22**	**31.8%**	**7**	**6**	**9**	**15**	**13.3%**	**3**	**5**	**7**	**12**	**19.5%**	**2**	**5**	**5**	**10**	**10.3%**	**1**	**4**	**5**	**9**
221		Y=0.36(X)			Based upon NJDOT's HAPS																								
931		Y=4.47(X)			Based upon NJDOT's HAPS																								

PM PEAK HOUR TRIP GENERATION

PROPOSED WEEKDAY PM PEAK HOUR TRIP GENERATION (NORTH ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	ITE	ITE		ITE	Percent						MR					IC					CC					PB			
Land Use	Edition	Code	Scale	Units	In	Out	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total
Multifamily (Mid-Rise)	10	221	35	DU	61%	39%	9	6	15	38.2%	6	6	4	9	20.0%	2	4	3	7	7.37%	1	3	3	6	0.0%	0	3	3	6
Quality Restaurant	10	931	2.11	KSF	58%	42%	10	7	17	17.2%	3	8	6	14	14.3%	2	7	5	12	7.37%	1	6	5	11	10.0%	1	5	5	10
						Total:	**19**	**13**	**32**	**28.1%**	**9**	**14**	**10**	**23**	**16.7%**	**4**	**11**	**8**	**19**	**12.4%**	**2**	**9**	**8**	**17**	**6.0%**	**1**	**8**	**8**	**16**

ITE Land Use Code	Rate or Equation	
221	Y=0.44(X)	Based upon NJDOT's HAPS
931	Y=8.28(X)	Based upon NJDOT's HAPS

SATURDAY MIDDAY PEAK HOUR TRIP GENERATION

PROPOSED SATURDAY MIDDAY PEAK HOUR TRIP GENERATION (NORTH ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
					Percent																								
Land Use	ITE Edition	ITE Code	Scale	ITE Units	In	Out	In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	CC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
Multifamily (Mid-Rise)	10	221	35	DU	51%	49%	8	7	15	38.2%	6	5	4	9	22.2%	2	4	3	7	6.72%	1	3	3	6	0.0%	0	3	3	6
Quality Restaurant	10	931	2.11	KSF	59%	41%	14	9	23	17.2%	4	12	7	19	10.5%	2	11	6	17	6.72%	2	10	5	15	10.0%	2	8	5	13
					Total:		**22**	**16**	**38**	**26.3%**	**10**	**17**	**11**	**28**	**14.3%**	**4**	**15**	**9**	**24**	**10.6%**	**3**	**13**	**8**	**21**	**9.3%**	**2**	**11**	**8**	**19**

ITE Land Use Code	Rate or Equation	
221	Y=0.44(X)	Based upon NJDOT's HAPS
931	Y=10.68(X)	Based upon NJDOT's HAPS

AM PEAK HOUR TRIP GENERATION

PROPOSED WEEKDAY AM PEAK HOUR TRIP GENERATION (SOUTH ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	ITE	ITE		ITE	Percent						MR					IC					CC					PB			
Land Use	Edition	Code	Scale	Units	In	Out	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total
General Office Building	11	710	210	ksf	87%	13%	153	23	176	0.0%	0	153	23	176	4.0%	7	150	19	169	6.07%	11	141	17	158	0.0%	0	141	17	158
Strip Retail Plaza	11	822	9	ksf	60%	40%	16	11	27	17.2%	5	13	9	22	36.4%	8	9	5	14	6.07%	2	8	4	12	34.0%	4	5	3	8
Fine Dining Restaurant	11	931	3	ksf	80%	20%	2	0	2	17.2%	0	2	0	2	50.0%	1	1	0	1	6.07%	0	1	0	1	10.0%	0	1	0	1
ITE Land Use Code		Rate or Equation				**Total:**	**171**	**34**	**205**	**2.4%**	**5**	**168**	**32**	**200**	**8.0%**	**16**	**160**	**24**	**184**	**7.3%**	**13**	**150**	**21**	**171**	**2.3%**	**4**	**147**	**20**	**167**
710		Y=0.72(X) + 25.14			From ITE Web-based App (Dense Multi-Use Urban)																								
822		LN(Y) = 0.66*LN(X)+1.84																											
931		Y=0.73(X)																											

PM PEAK HOUR TRIP GENERATION

PROPOSED WEEKDAY PM PEAK HOUR TRIP GENERATION (SOUTH ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	ITE	ITE		ITE	Percent						MR					IC					CC					PB			
Land Use	Edition	Code	Scale	Units	In	Out	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total
General Office Building	11	710	210	ksf	16%	84%	29	153	182	0.0%	0	29	153	182	1.6%	3	28	151	179	7.37%	13	26	140	166	0.0%	0	26	140	166
Strip Retail Plaza	11	822	9	ksf	50%	50%	36	36	72	17.2%	12	30	30	60	15.0%	9	25	26	51	7.37%	5	23	23	46	34.0%	16	15	15	30
Fine Dining Restaurant	11	931	3	ksf	67%	33%	15	8	23	17.2%	4	12	7	19	31.6%	6	9	4	13	7.37%	2	8	3	11	10.0%	1	7	3	10
ITE Land Use Code		Rate or Equation				**Total:**	**80**	**197**	**277**	**5.8%**	**16**	**71**	**190**	**261**	**6.9%**	**18**	**62**	**181**	**243**	**8.4%**	**20**	**57**	**166**	**223**	**7.6%**	**17**	**48**	**158**	**206**
710		Y=0.83(X) + 7.46			From ITE Web-based App (Dense Multi-Use Urban)																								
822		LN(Y) = 0.71*LN(X)+2.72																											
931		Y=7.8(X)																											

SATURDAY MIDDAY PEAK HOUR TRIP GENERATION

PROPOSED SATURDAY MIDDAY PEAK HOUR TRIP GENERATION (SOUTH ZONE)

ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS			MULTIMODAL REDUCTION		GROSS TRIPS			INTERNAL CAPTURE		EXTERNAL VEHICLE TRIPS			COMMUNITY CAPTURE		EXTERNAL VEHICLE TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	ITE	ITE		ITE	Percent						MR					IC					CC					PB			
Land Use	Edition	Code	Scale	Units	In	Out	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total	Percent	Trips	In	Out	Total
General Office Building	11	710	210	ksf	8%	92%	3	33	36	0.0%	0	3	33	36	5.6%	2	2	32	34	6.72%	2	2	30	32	0.0%	0	2	30	32
Strip Retail Plaza	11	822	9	ksf	51%	49%	30	29	59	17.2%	10	25	24	49	16.3%	8	20	21	41	6.72%	4	18	19	37	34.0%	13	12	12	24
Fine Dining Restaurant	11	931	3	ksf	59%	41%	12	9	21	17.2%	4	10	7	17	35.3%	6	7	4	11	6.72%	1	7	3	10	10.0%	1	6	3	9
						Total:	**45**	**71**	**116**	**12.1%**	**14**	**38**	**64**	**102**	**15.7%**	**16**	**29**	**57**	**86**	**7.9%**	**7**	**27**	**52**	**79**	**17.7%**	**14**	**20**	**45**	**65**

ITE Land Use Code	Rate or Equation
710	Y=0.17(X)
822	Y=6.57(X)
931	Y=7.16(X)

From ITE Web-based App (Dense Multi-Use Urban)

Kimley»Horn

DRAFT

APPENDIX F

Intersection Capacity Analysis Worksheets

Kimley»Horn

DRAFT

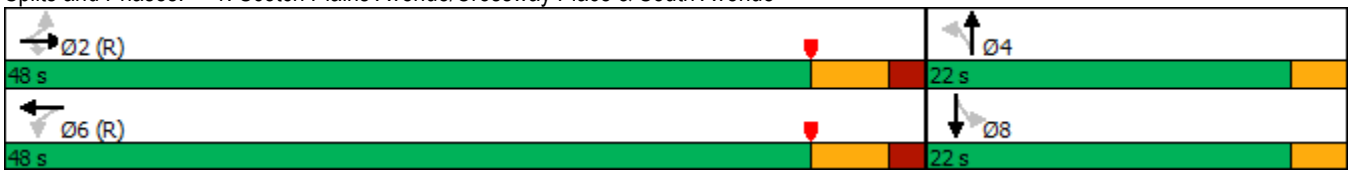
Existing AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	170	45	0	155	40	45	285	10	90	180	40
Future Volume (vph)	280	170	45	0	155	40	45	285	10	90	180	40
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972			0.995			0.973	
Flt Protected		0.970					0.950			0.950		
Satd. Flow (prot)	0	1940	1700	0	1944	0	1900	1990	0	1900	1946	0
Flt Permitted		0.691					0.406			0.253		
Satd. Flow (perm)	0	1382	1700	0	1944	0	812	1990	0	506	1946	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			49		33			3			15	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	489	49	0	211	0	49	321	0	98	239	0
Turn Type	Perm	NA	Perm		NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		45.2	45.2		45.2		15.8	15.8		15.8	15.8	
Actuated g/C Ratio		0.65	0.65		0.65		0.23	0.23		0.23	0.23	
v/c Ratio		0.55	0.04		0.17		0.27	0.71		0.86	0.53	
Control Delay		16.8	4.7		5.1		25.0	33.6		82.2	26.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		16.8	4.7		5.1		25.0	33.6		82.2	26.1	
LOS		B	A		A		C	C		F	C	
Approach Delay		15.7			5.1			32.4			42.4	
Approach LOS		B			A			C			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	489	49	211	49	321	98	239
v/c Ratio	0.55	0.04	0.17	0.27	0.71	0.86	0.53
Control Delay	16.8	4.7	5.1	25.0	33.6	82.2	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	4.7	5.1	25.0	33.6	82.2	26.1
Queue Length 50th (ft)	192	5	26	17	126	40	84
Queue Length 95th (ft)	295	m12	57	44	196	#115	141
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	892	1115	1267	220	542	137	539
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	0.55	0.04	0.17	0.22	0.59	0.72	0.44

Intersection Summary

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.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	340	90	725	180	90	345
Future Volume (vph)	340	90	725	180	90	345
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.972					0.850
Flt Protected				0.962	0.950	
Satd. Flow (prot)	1944	0	0	3656	1900	1700
Flt Permitted				0.550	0.950	
Satd. Flow (perm)	1944	0	0	2090	1900	1700
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	0	0	984	98	375
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	10.0		9.0	9.0	7.0	9.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	37.8			52.9	8.5	23.2
Actuated g/C Ratio	0.54			0.76	0.12	0.33
v/c Ratio	0.45			1.08dl	0.42	0.66
Control Delay	13.2			4.9	33.8	25.1
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	13.2			4.9	33.8	25.1
LOS	B			A	C	C
Approach Delay	13.2			4.9	26.9	
Approach LOS	B			A	C	

Intersection Summary

Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 12.3		Intersection LOS: B	
Intersection Capacity Utilization 77.5%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad Street & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	468	984	98	375
v/c Ratio	0.45	1.08dl	0.42	0.66
Control Delay	13.2	4.9	33.8	25.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	4.9	33.8	25.1
Queue Length 50th (ft)	114	63	40	135
Queue Length 95th (ft)	231	109	79	183
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1049	1782	461	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	0.45	0.55	0.21	0.66

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Existing_AM (Site Folder: Existing Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	18	0.0	19	0.0	0.609	14.3	LOS B	5.1	132.0	0.76	0.95	1.31	21.4
6	T1	301	4.0	320	4.0	0.609	14.4	LOS B	5.1	132.0	0.76	0.95	1.31	19.6
16	R2	311	4.0	331	4.0	0.609	10.3	LOS B	5.1	132.0	0.66	0.74	0.89	22.1
Approach		630	3.9	670	3.9	0.609	12.4	LOS B	5.1	132.0	0.71	0.85	1.10	20.8
North: SB - SR 28														
7	L2	483	5.0	514	5.0	0.596	11.8	LOS B	5.6	146.1	0.65	0.72	0.97	20.6
14	R2	492	5.0	523	5.0	0.596	9.1	LOS A	5.6	146.1	0.56	0.51	0.61	19.4
Approach		975	5.0	1037	5.0	0.596	10.4	LOS B	5.6	146.1	0.60	0.62	0.79	20.1
West: EB - South Ave														
5u	U	2	0.0	2	0.0	0.991	50.3	LOS F	32.8	844.3	1.00	2.19	4.25	8.0
5	L2	554	3.0	589	3.0	0.991	50.4	LOS F	32.8	844.3	1.00	2.19	4.25	8.2
2	T1	439	5.0	467	5.0	0.991	31.3	LOS D	32.8	844.3	0.80	1.45	2.62	14.2
Approach		995	3.9	1059	3.9	0.991	42.0	LOS E	32.8	844.3	0.91	1.86	3.53	10.3
All Vehicles		2600	4.3	2766	4.3	0.991	23.0	LOS C	32.8	844.3	0.75	1.15	1.92	14.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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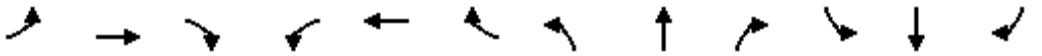
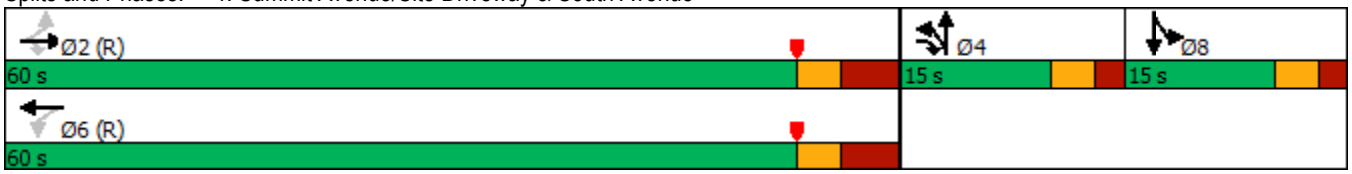


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	613	38	10	472	12	169	25	37	5	5	14
Future Volume (vph)	24	613	38	10	472	12	169	25	37	5	5	14
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		65	0		0	60		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.996			0.910			0.887	
Flt Protected		0.998			0.999		0.950			0.950		
Satd. Flow (prot)	0	1964	1700	0	3789	0	1956	1911	0	1995	1863	0
Flt Permitted		0.971			0.942		0.950			0.950		
Satd. Flow (perm)	0	1910	1700	0	3573	0	1956	1911	0	1995	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			39		5			39			15	
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		511			111			500			138	
Travel Time (s)		13.9			2.5			13.6			3.1	
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%	7%	5%	0%	5%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	664	40	0	515	0	176	65	0	5	20	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		63.2	83.1		63.2		9.9	9.9		7.1	7.1	
Actuated g/C Ratio		0.70	0.92		0.70		0.11	0.11		0.08	0.08	
v/c Ratio		0.50	0.03		0.21		0.82	0.27		0.03	0.12	
Control Delay		8.8	0.6		5.6		68.9	21.9		38.8	23.6	
Queue Delay		0.3	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		9.0	0.6		5.6		68.9	21.9		38.8	23.6	
LOS		A	A		A		E	C		D	C	
Approach Delay		8.6			5.6			56.2			26.7	
Approach LOS		A			A			E			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	664	40	515	176	65	5	20
v/c Ratio	0.50	0.03	0.21	0.82	0.27	0.03	0.12
Control Delay	8.8	0.6	5.6	68.9	21.9	38.8	23.6
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	0.6	5.6	68.9	21.9	38.8	23.6
Queue Length 50th (ft)	113	0	34	99	14	3	3
Queue Length 95th (ft)	295	5	85	#208	51	13	25
Internal Link Dist (ft)	431		31		420		58
Turn Bay Length (ft)		65		60			
Base Capacity (vph)	1341	1556	2510	217	247	221	220
Starvation Cap Reductn	205	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	0.58	0.03	0.21	0.81	0.26	0.02	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	607	52	19	440	47	152
Future Vol, veh/h	607	52	19	440	47	152
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	7	8	0	5	4	0
Mvmt Flow	646	55	20	468	50	162

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	701	0	948	674
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	274	-
Critical Hdwy	-	-	4.1	-	6.66	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.2	-	3.538	3.3
Pot Cap-1 Maneuver	-	-	905	-	271	458
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	905	-	263	458
Mov Cap-2 Maneuver	-	-	-	-	263	-
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	721	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	24.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	390	-	-	905	-
HCM Lane V/C Ratio	0.543	-	-	0.022	-
HCM Control Delay (s)	24.7	-	-	9.1	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	736	438	23	13	21
Future Vol, veh/h	23	736	438	23	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	5	5	0	0	5
Mvmt Flow	24	783	466	24	14	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	490	0	-	0	1309	245
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	831	-
Critical Hdwy	4.1	-	-	-	6.6	6.975
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3475
Pot Cap-1 Maneuver	1084	-	-	-	165	748
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1084	-	-	-	159	748
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	431	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1084	-	-	-	310
HCM Lane V/C Ratio	0.023	-	-	-	0.117
HCM Control Delay (s)	8.4	0	-	-	18.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4



Lane Group	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	210	350	150	5	35	275	95	10	150	585	10	80
Future Volume (vph)	210	350	150	5	35	275	95	10	150	585	10	80
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0		0		115		100		0	105
Storage Lanes	1		0		1		1		1		0	1
Taper Length (ft)	25				25				25			25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.954					0.850			0.997		
Flt Protected	0.950				0.950				0.950			0.950
Satd. Flow (prot)	1900	3625	0	0	1900	2000	1700	0	1900	1994	0	1900
Flt Permitted	0.450				0.429				0.705			0.133
Satd. Flow (perm)	900	3625	0	0	858	2000	1700	0	1410	1994	0	266
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)		1					126			1		
Link Speed (mph)		30				35				25		
Link Distance (ft)		446				926				398		
Travel Time (s)		10.1				18.0				10.9		
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	548	0	0	38	299	103	0	174	647	0	87
Turn Type	pm+pt	NA			pm+pt	NA	Perm	custom	pm+pt	NA		pm+pt
Protected Phases	5	2			1	6			7	4		3
Permitted Phases	2				6		6	7	4			8
Detector Phase	5	2			1	6	6	7	7	4		3
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	10.0	10.0	5.0	5.0	7.0		5.0
Minimum Split (s)	8.0	18.0			8.0	38.0	38.0	8.0	8.0	15.0		8.0
Total Split (s)	8.0	38.0			8.0	38.0	38.0	8.0	8.0	41.0		8.0
Total Split (%)	8.4%	40.0%			8.4%	40.0%	40.0%	8.4%	8.4%	43.2%		8.4%
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	0.0	5.0			0.0	5.0	5.0	0.0	0.0	5.0		0.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	3.0	8.0			3.0	8.0	8.0		3.0	8.0		3.0
Lead/Lag	Lead	Lag			Lead	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max			None	None	None	None	None	None		None
Act Effct Green (s)	38.3	30.4			36.9	26.8	26.8		40.3	31.4		39.5
Actuated g/C Ratio	0.43	0.34			0.42	0.30	0.30		0.45	0.35		0.45
v/c Ratio	0.51	0.44			0.09	0.50	0.17		0.26	0.92		0.41
Control Delay	22.2	25.4			15.3	29.4	3.7		15.1	48.1		19.0
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	22.2	25.4			15.3	29.4	3.7		15.1	48.1		19.0
LOS	C	C			B	C	A		B	D		B
Approach Delay		24.5				22.1				41.1		
Approach LOS		C				C				D		

Intersection Summary

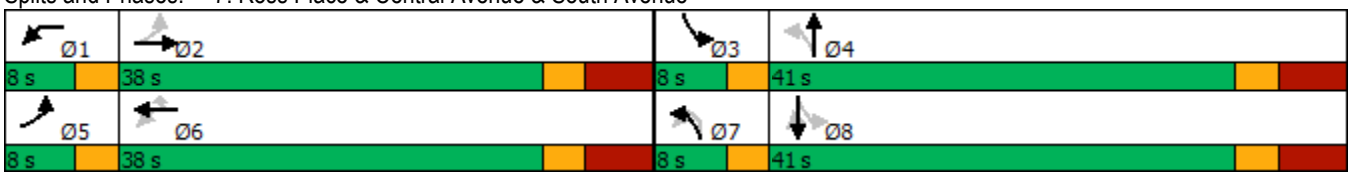


Lane Group	SBT	SBR	SBR2
Lane Configurations			
Traffic Volume (vph)	30	140	80
Future Volume (vph)	30	140	80
Ideal Flow (vphpl)	2100	2100	2100
Storage Length (ft)		0	
Storage Lanes		1	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	1.00
Frt		0.850	
Flt Protected			
Satd. Flow (prot)	2000	1700	0
Flt Permitted			
Satd. Flow (perm)	2000	1700	0
Right Turn on Red			Yes
Satd. Flow (RTOR)		126	
Link Speed (mph)	25		
Link Distance (ft)	792		
Travel Time (s)	21.6		
Peak Hour Factor	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%
Shared Lane Traffic (%)			
Lane Group Flow (vph)	33	239	0
Turn Type	NA	Perm	
Protected Phases	8		
Permitted Phases		8	
Detector Phase	8	8	
Switch Phase			
Minimum Initial (s)	7.0	7.0	
Minimum Split (s)	41.0	41.0	
Total Split (s)	41.0	41.0	
Total Split (%)	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	
All-Red Time (s)	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	8.0	8.0	
Lead/Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	
Act Effct Green (s)	29.4	29.4	
Actuated g/C Ratio	0.33	0.33	
v/c Ratio	0.05	0.37	
Control Delay	20.7	12.5	
Queue Delay	0.0	0.0	
Total Delay	20.7	12.5	
LOS	C	B	
Approach Delay	14.8		
Approach LOS	B		

Intersection Summary

Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 28.3		Intersection LOS: C	
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Ross Place & Central Avenue & South Avenue





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	228	548	38	299	103	174	647	87	33	239
v/c Ratio	0.51	0.44	0.09	0.50	0.17	0.26	0.92	0.41	0.05	0.37
Control Delay	22.2	25.4	15.3	29.4	3.7	15.1	48.1	19.0	20.7	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	25.4	15.3	29.4	3.7	15.1	48.1	19.0	20.7	12.5
Queue Length 50th (ft)	83	138	12	144	0	57	372	27	13	47
Queue Length 95th (ft)	134	189	30	223	25	97	#595	53	33	107
Internal Link Dist (ft)		366		846			318		712	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	445	1244	417	686	666	669	753	212	754	720
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	0.51	0.44	0.09	0.44	0.15	0.26	0.86	0.41	0.04	0.33

Intersection Summary

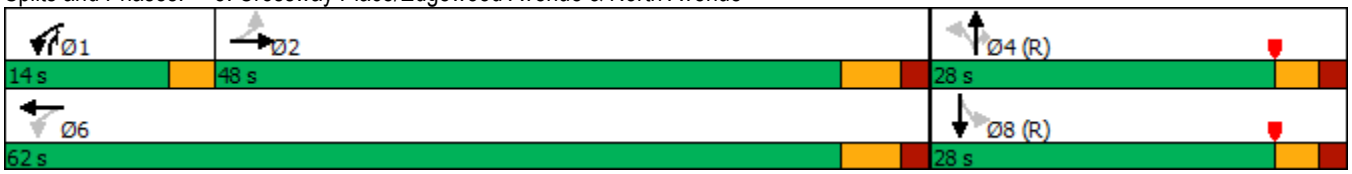
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

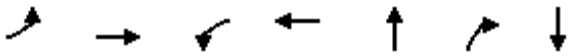
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	595	25	115	325	0	130	55	390	25	160	5
Future Volume (vph)	5	595	25	115	325	0	130	55	390	25	160	5
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994							0.850		0.997	
Flt Protected	0.950			0.950				0.966			0.993	
Satd. Flow (prot)	1900	1988	0	1900	2000	0	0	1932	1700	0	1980	0
Flt Permitted	0.550			0.206				0.579			0.941	
Satd. Flow (perm)	1100	1988	0	412	2000	0	0	1158	1700	0	1876	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3							177		1	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	674	0	125	353	0	0	201	424	0	206	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	48.0	48.0		14.0	62.0		28.0	28.0	14.0	28.0	28.0	
Total Split (%)	53.3%	53.3%		15.6%	68.9%		31.1%	31.1%	15.6%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	45.1	45.1		59.0	56.0			23.0	35.9		23.0	
Actuated g/C Ratio	0.50	0.50		0.66	0.62			0.26	0.40		0.26	
v/c Ratio	0.01	0.68		0.31	0.28			0.68	0.54		0.43	
Control Delay	12.2	21.5		7.8	8.5			43.7	14.2		31.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.2	21.5		7.8	8.5			43.7	14.2		31.2	
LOS	B	C		A	A			D	B		C	
Approach Delay		21.4			8.4			23.7			31.2	
Approach LOS		C			A			C			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 20.0		Intersection LOS: B	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	674	125	353	201	424	206
v/c Ratio	0.01	0.68	0.31	0.28	0.68	0.54	0.43
Control Delay	12.2	21.5	7.8	8.5	43.7	14.2	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	21.5	7.8	8.5	43.7	14.2	31.2
Queue Length 50th (ft)	1	272	23	83	103	101	98
Queue Length 95th (ft)	7	426	43	128	#198	179	163
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	551	998	451	1244	295	836	480
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	0.01	0.68	0.28	0.28	0.68	0.51	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	676	529	152	185	11
Future Vol, veh/h	7	676	529	152	185	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	4	4	3	4	0
Mvmt Flow	7	704	551	158	193	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	709	0	-	0	1348	630
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	718	-
Critical Hdwy	4.1	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.536	3.3
Pot Cap-1 Maneuver	899	-	-	-	354	677
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	479	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	899	-	-	-	349	677
Mov Cap-2 Maneuver	-	-	-	-	349	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	26.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	899	-	-	-	349	677
HCM Lane V/C Ratio	0.008	-	-	-	0.552	0.017
HCM Control Delay (s)	9	0	-	-	27.3	10.4
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	3.2	0.1

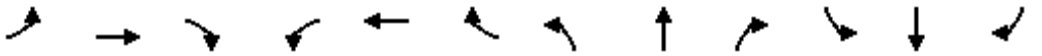
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	164	176	0	41	43
Future Vol, veh/h	0	164	176	0	41	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	1	3	0	6	0
Mvmt Flow	0	231	248	0	58	61

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	479	248
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	231	-
Critical Hdwy	-	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	0	-	-	0	538	796
Stage 1	0	-	-	0	784	-
Stage 2	0	-	-	0	798	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	538	796
Mov Cap-2 Maneuver	-	-	-	-	538	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	798	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	645
HCM Lane V/C Ratio	-	-	0.183
HCM Control Delay (s)	-	-	11.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

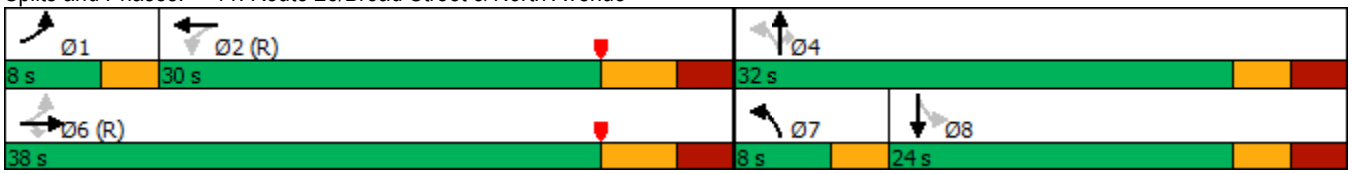


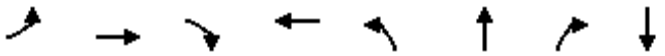
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	348	320	197	409	5	210	543	111	6	456	73
Future Volume (vph)	170	348	320	197	409	5	210	543	111	6	456	73
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.999				0.850		0.980	
Flt Protected	0.950				0.984		0.950				0.999	
Satd. Flow (prot)	1847	1509	1700	0	3761	0	1956	2039	1684	0	3732	0
Flt Permitted	0.295				0.728		0.252				0.908	
Satd. Flow (perm)	574	1509	1700	0	2782	0	519	2039	1684	0	3392	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			303		1						24	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		267			555			498			430	
Travel Time (s)		5.2			15.1			13.6			11.7	
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 (%)	8%	6%	5%	5%	4%	0%	2%	3%	6%	0%	5%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	185	378	348	0	664	0	228	590	121	0	582	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	36.8	32.8	32.8		23.9		27.2	24.2	24.2		16.2	
Actuated g/C Ratio	0.53	0.47	0.47		0.34		0.39	0.35	0.35		0.23	
v/c Ratio	0.45	0.54	0.36		0.70		0.75	0.84	0.21		0.72	
Control Delay	13.5	17.4	3.7		28.9		32.9	32.9	16.5		29.2	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	13.5	17.4	3.7		28.9		32.9	32.9	16.5		29.2	
LOS	B	B	A		C		C	C	B		C	
Approach Delay		11.4			28.9			30.8			29.2	
Approach LOS		B			C			C			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 98.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	185	378	348	664	228	590	121	582
v/c Ratio	0.45	0.54	0.36	0.70	0.75	0.84	0.21	0.72
Control Delay	13.5	17.4	3.7	28.9	32.9	32.9	16.5	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	17.4	3.7	28.9	32.9	32.9	16.5	29.2
Queue Length 50th (ft)	41	116	11	157	63	219	34	112
Queue Length 95th (ft)	76	196	54	212	#133	#376	69	164
Internal Link Dist (ft)		187		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	407	706	956	951	304	757	625	890
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	0.45	0.54	0.36	0.70	0.75	0.78	0.19	0.65

Intersection Summary

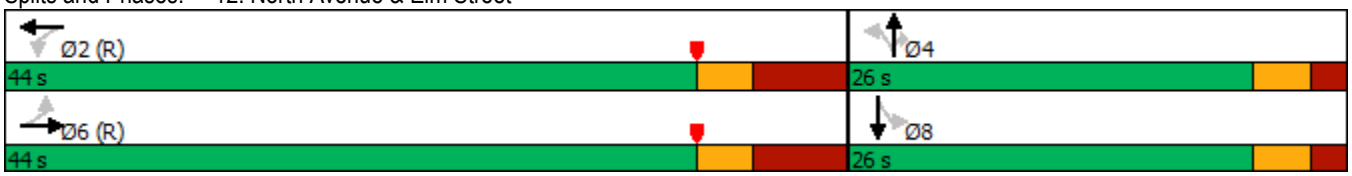
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

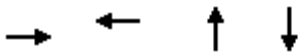
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	480	22	4	609	84	2	9	0	73	13	23
Future Volume (vph)	23	480	22	4	609	84	2	9	0	73	13	23
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.994			0.982						0.971	
Flt Protected		0.998						0.992			0.968	
Satd. Flow (prot)	0	3720	0	0	3750	0	0	1885	2000	0	1751	0
Flt Permitted		0.900			0.952			0.952			0.791	
Satd. Flow (perm)	0	3355	0	0	3570	0	0	1809	2000	0	1431	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			31						20	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			460			167			176	
Travel Time (s)		4.4			12.5			3.8			4.0	
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%	7%	0%	0%	5%	1%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	583	0	0	774	0	0	12	0	0	121	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		10.0	10.0	10.0	10.0	10.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			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	None	
Act Effct Green (s)		50.5			50.5			10.2			10.2	
Actuated g/C Ratio		0.72			0.72			0.15			0.15	
v/c Ratio		0.24			0.30			0.05			0.54	
Control Delay		7.4			5.7			23.6			30.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.4			5.7			23.6			30.9	
LOS		A			A			C			C	
Approach Delay		7.4			5.7			23.6			30.9	
Approach LOS		A			A			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 51.4%	ICU Level of Service A
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 12: North Avenue & Elm Street

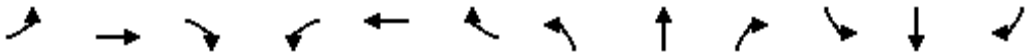




Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	583	774	12	121
v/c Ratio	0.24	0.30	0.05	0.54
Control Delay	7.4	5.7	23.6	30.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.4	5.7	23.6	30.9
Queue Length 50th (ft)	56	49	5	43
Queue Length 95th (ft)	101	m106	17	86
Internal Link Dist (ft)	83	380	87	96
Turn Bay Length (ft)				
Base Capacity (vph)	2421	2582	542	443
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	0.24	0.30	0.02	0.27

Intersection Summary

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

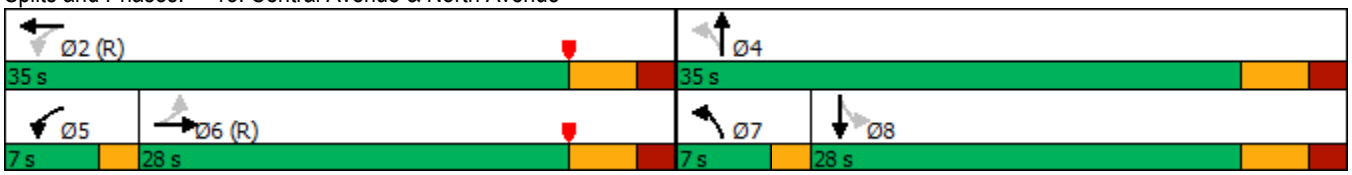


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	375	100	150	465	15	185	585	120	15	415	10
Future Volume (vph)	10	375	100	150	465	15	185	585	120	15	415	10
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.969			0.996			0.980			0.997	
Flt Protected		0.999			0.988			0.990			0.998	
Satd. Flow (prot)	0	3679	0	0	3739	0	0	3687	0	0	3781	0
Flt Permitted		0.936			0.652			0.684			0.904	
Satd. Flow (perm)	0	3447	0	0	2468	0	0	2547	0	0	3425	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					4			30				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		221			706			792			210	
Travel Time (s)		6.0			13.8			21.6			5.7	
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	528	0	0	684	0	0	967	0	0	478	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		4.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		23.0			30.1			28.7			21.7	
Actuated g/C Ratio		0.33			0.43			0.41			0.31	
v/c Ratio		0.47			0.63			0.89			0.45	
Control Delay		18.5			18.5			30.7			20.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.5			18.5			30.7			20.8	
LOS		B			B			C			C	
Approach Delay		18.5			18.5			30.7			20.8	
Approach LOS		B			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	

Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 23.3 Intersection LOS: C
Intersection Capacity Utilization 81.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	528	684	967	478
v/c Ratio	0.47	0.63	0.89	0.45
Control Delay	18.5	18.5	30.7	20.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.5	18.5	30.7	20.8
Queue Length 50th (ft)	113	105	159	84
Queue Length 95th (ft)	65	147	#253	124
Internal Link Dist (ft)	141	626	712	130
Turn Bay Length (ft)				
Base Capacity (vph)	1133	1092	1109	1096
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	0.47	0.63	0.87	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

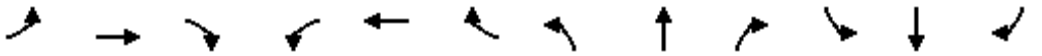
Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	490	0	0	525	30	5	40	10	20	0	115
Future Vol, veh/h	55	490	0	0	525	30	5	40	10	20	0	115
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	60	533	0	0	571	33	5	43	11	22	0	125

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	604	0	-	-	-	0	1303	1257	533	1268	1241	588
Stage 1	-	-	-	-	-	-	653	653	-	588	588	-
Stage 2	-	-	-	-	-	-	650	604	-	680	653	-
Critical Hdwy	4.15	-	-	-	-	-	7.15	6.55	6.25	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.545	4.045	3.345	3.545	4.045	3.345
Pot Cap-1 Maneuver	959	-	0	0	-	-	136	169	541	143	173	503
Stage 1	-	-	0	0	-	-	451	459	-	490	491	-
Stage 2	-	-	0	0	-	-	453	483	-	436	459	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	959	-	-	-	-	-	97	158	541	105	162	503
Mov Cap-2 Maneuver	-	-	-	-	-	-	97	158	-	105	162	-
Stage 1	-	-	-	-	-	-	423	430	-	459	491	-
Stage 2	-	-	-	-	-	-	340	483	-	360	430	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	37.2	25.2
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	170	959	-	-	-	322
HCM Lane V/C Ratio	0.352	0.062	-	-	-	0.456
HCM Control Delay (s)	37.2	9	-	-	-	25.2
HCM Lane LOS	E	A	-	-	-	D
HCM 95th %tile Q(veh)	1.5	0.2	-	-	-	2.3

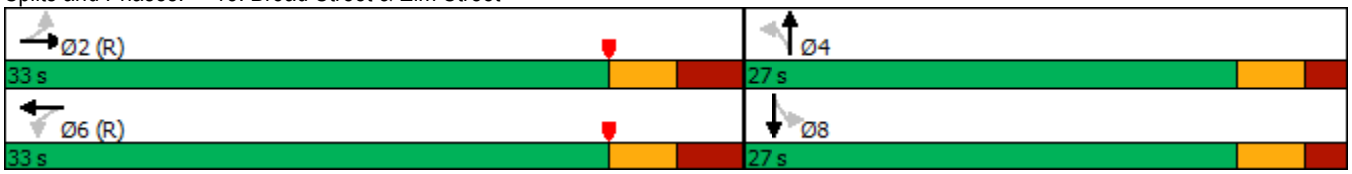


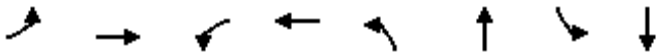
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	495	5	20	490	80	5	20	10	60	50	65
Future Volume (vph)	20	495	5	20	490	80	5	20	10	60	50	65
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.979			0.948			0.916	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1900	1998	0	1900	1958	0	1900	1896	0	1900	1832	0
Flt Permitted	0.406			0.453			0.679			0.736		
Satd. Flow (perm)	812	1998	0	906	1958	0	1358	1896	0	1472	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			18			11			68	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	526	0	21	600	0	5	32	0	63	121	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	44.2	44.2		44.2	44.2		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.14	0.14		0.14	0.14	
v/c Ratio	0.04	0.36		0.03	0.42		0.03	0.12		0.31	0.38	
Control Delay	4.0	5.1		2.9	5.8		21.2	17.4		26.6	15.4	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	4.0	5.1		2.9	6.1		21.2	17.4		26.6	15.4	
LOS	A	A		A	A		C	B		C	B	
Approach Delay		5.1			6.0			17.9			19.2	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	526	21	600	5	32	63	121
v/c Ratio	0.04	0.36	0.03	0.42	0.03	0.12	0.31	0.38
Control Delay	4.0	5.1	2.9	5.8	21.2	17.4	26.6	15.4
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	4.0	5.1	2.9	6.1	21.2	17.4	26.6	15.4
Queue Length 50th (ft)	2	64	1	133	2	7	21	18
Queue Length 95th (ft)	9	130	m6	218	9	26	49	55
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	597	1470	666	1445	497	702	539	714
Starvation Cap Reductn	0	0	0	307	0	0	0	0
Spillback Cap Reductn	0	69	0	0	0	7	5	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.38	0.03	0.53	0.01	0.05	0.12	0.17

Intersection Summary

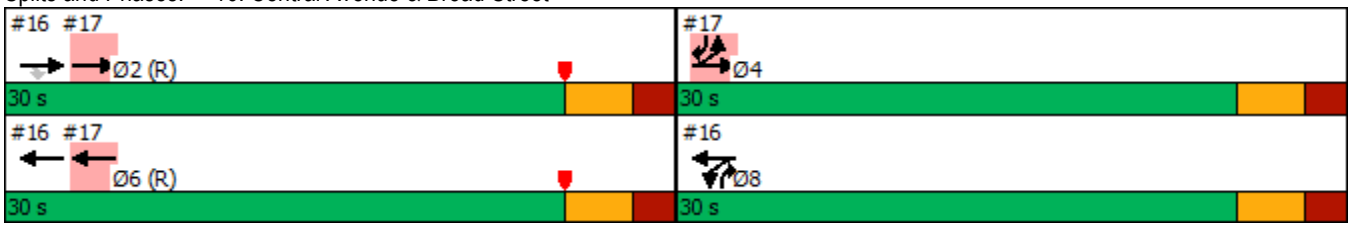
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	505	55	345	545	0	520		
Future Volume (vph)	505	55	345	545	0	520		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2000	1700	1900	2000	0	1730		
Flt Permitted			0.950					
Satd. Flow (perm)	2000	1700	1900	2000	0	1730		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		60				194		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	728			
Travel Time (s)	8.7			2.8	19.9			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	549	60	375	592	0	565		
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0			5.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	24.0	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	25.3	25.3	24.7	60.0		24.7		
Actuated g/C Ratio	0.42	0.42	0.41	1.00		0.41		
v/c Ratio	0.65	0.08	0.48	0.30		0.68		
Control Delay	24.3	9.2	20.0	0.7		14.2		
Queue Delay	14.8	0.0	5.6	0.0		0.6		
Total Delay	39.1	9.2	25.5	0.7		14.8		
LOS	D	A	C	A		B		
Approach Delay	36.2			10.3	14.8			
Approach LOS	D			B	B			

Intersection Summary

Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

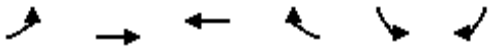
Splits and Phases: 16: Central Avenue & Broad Street





Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	549	60	375	592	565
v/c Ratio	0.65	0.08	0.48	0.30	0.68
Control Delay	24.3	9.2	20.0	0.7	14.2
Queue Delay	14.8	0.0	5.6	0.0	0.6
Total Delay	39.1	9.2	25.5	0.7	14.8
Queue Length 50th (ft)	200	1	124	0	99
Queue Length 95th (ft)	280	31	206	9	202
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	842	751	791	1976	834
Starvation Cap Reductn	197	0	348	0	0
Spillback Cap Reductn	280	0	0	67	68
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.98	0.08	0.85	0.31	0.74

Intersection Summary

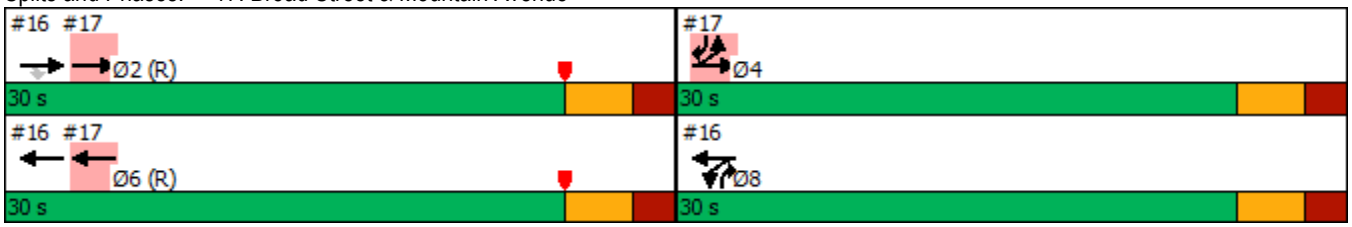


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	640	390	490	20	0	400		
Future Volume (vph)	640	390	490	20	0	400		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.994			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1900	2000	3777	0	0	2992		
Flt Permitted	0.950							
Satd. Flow (perm)	1900	2000	3777	0	0	2992		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			8			360		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	392		630			
Travel Time (s)		2.5	10.7		17.2			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	696	424	555	0	0	435		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	5.0
Minimum Split (s)	24.0		30.0			24.0	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.0		3.0			3.0	3.0	3.0
All-Red Time (s)	2.0		2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	5.0		5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	24.7	60.0	25.3			24.7		
Actuated g/C Ratio	0.41	1.00	0.42			0.41		
v/c Ratio	0.89	0.21	0.35			0.30		
Control Delay	30.5	0.2	12.5			3.2		
Queue Delay	49.4	0.0	0.9			0.1		
Total Delay	79.9	0.2	13.4			3.3		
LOS	E	A	B			A		
Approach Delay		49.7	13.4		3.3			
Approach LOS		D	B		A			

Intersection Summary

Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 30.6		Intersection LOS: C	
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	696	424	555	435
v/c Ratio	0.89	0.21	0.35	0.30
Control Delay	30.5	0.2	12.5	3.2
Queue Delay	49.4	0.0	0.9	0.1
Total Delay	79.9	0.2	13.4	3.3
Queue Length 50th (ft)	235	0	67	9
Queue Length 95th (ft)	#417	0	101	34
Internal Link Dist (ft)		13	312	
Turn Bay Length (ft)				150
Base Capacity (vph)	791	1976	1596	1456
Starvation Cap Reductn	241	0	0	0
Spillback Cap Reductn	0	0	732	208
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.27	0.21	0.64	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Kimley»Horn

DRAFT

Existing PM Peak

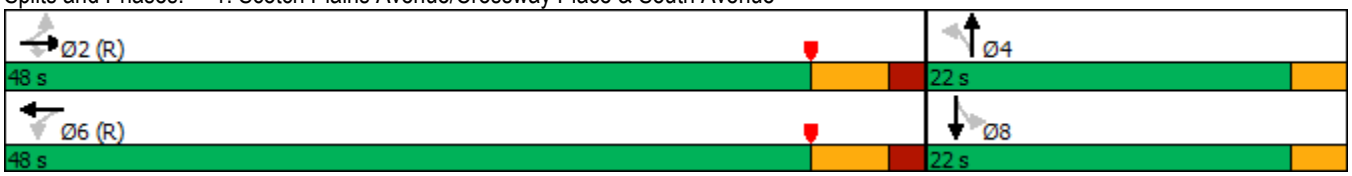
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	255	55	15	240	90	35	195	10	50	215	135
Future Volume (vph)	75	255	55	15	240	90	35	195	10	50	215	135
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.965			0.993			0.942	
Flt Protected		0.989			0.998		0.950			0.950		
Satd. Flow (prot)	0	2036	1750	0	1983	0	1956	2044	0	1956	1939	0
Flt Permitted		0.844			0.981		0.245			0.445		
Satd. Flow (perm)	0	1738	1750	0	1949	0	504	2044	0	916	1939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			60		45			4			44	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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%	2%	2%	2%	2%	2%
Adj. Flow (vph)	82	277	60	16	261	98	38	212	11	54	234	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	359	60	0	375	0	38	223	0	54	381	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		44.7	44.7		44.7		16.3	16.3		16.3	16.3	
Actuated g/C Ratio		0.64	0.64		0.64		0.23	0.23		0.23	0.23	
v/c Ratio		0.32	0.05		0.30		0.32	0.47		0.25	0.79	
Control Delay		11.0	4.6		6.2		29.3	25.4		24.0	34.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		11.0	4.6		6.2		29.3	25.4		24.0	34.1	
LOS		B	A		A		C	C		C	C	
Approach Delay		10.1			6.2			25.9			32.8	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		110	5		57		13	79		19	133	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		187	m16		103		39	134		46	218	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		1109	1139		1260		136	557		248	558	
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		0.32	0.05		0.30		0.28	0.40		0.22	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	359	60	375	38	223	54	381
v/c Ratio	0.32	0.05	0.30	0.32	0.47	0.25	0.79
Control Delay	11.0	4.6	6.2	29.3	25.4	24.0	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	4.6	6.2	29.3	25.4	24.0	34.1
Queue Length 50th (ft)	110	5	57	13	79	19	133
Queue Length 95th (ft)	187	m16	103	39	134	46	218
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	1109	1139	1260	136	557	248	558
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	0.32	0.05	0.30	0.28	0.40	0.22	0.68

Intersection Summary

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	250	110	645	405	190	370
Future Volume (vph)	250	110	645	405	190	370
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.959					0.850
Flt Protected				0.970	0.950	
Satd. Flow (prot)	1974	0	0	3794	1956	1750
Flt Permitted				0.593	0.950	
Satd. Flow (perm)	1974	0	0	2320	1956	1750
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	272	120	701	440	207	402
Shared Lane Traffic (%)						
Lane Group Flow (vph)	392	0	0	1141	207	402
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	9.0		10.0	9.0	7.0	10.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	34.3			47.3	11.7	26.7
Actuated g/C Ratio	0.49			0.68	0.17	0.38
v/c Ratio	0.41			0.99dl	0.63	0.60
Control Delay	13.9			8.6	35.5	21.1
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	13.9			8.6	35.5	21.1
LOS	B			A	D	C
Approach Delay	13.9			8.6	26.0	
Approach LOS	B			A	C	
Queue Length 50th (ft)	101			100	84	135

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	188			170	136	195
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	967			1715	475	667
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	0.41			0.67	0.44	0.60

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad St & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	392	1141	207	402
v/c Ratio	0.41	0.99dl	0.63	0.60
Control Delay	13.9	8.6	35.5	21.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.9	8.6	35.5	21.1
Queue Length 50th (ft)	101	100	84	135
Queue Length 95th (ft)	188	170	136	195
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	967	1715	475	667
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	0.41	0.67	0.44	0.60

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

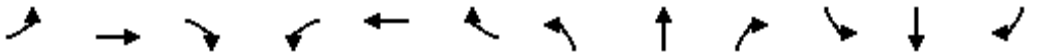
Site: 101 [Westfield RAB_Existing_PM (Site Folder: Existing Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.454	9.5	LOS A	2.8	70.3	0.64	0.69	0.80	24.4
6	T1	382	2.0	390	2.0	0.454	9.6	LOS A	2.8	70.3	0.64	0.69	0.80	22.8
16	R2	308	3.0	314	3.0	0.454	8.0	LOS A	2.8	70.3	0.59	0.56	0.59	23.6
Approach		704	2.4	719	2.4	0.454	8.9	LOS A	2.8	70.3	0.62	0.63	0.71	23.2
North: SB - SR 28														
7	L2	440	2.0	449	2.0	0.455	9.0	LOS A	2.6	66.6	0.58	0.57	0.67	22.0
14	R2	521	2.0	532	2.0	0.539	10.5	LOS B	4.2	106.8	0.63	0.70	0.89	18.8
Approach		961	2.0	981	2.0	0.539	9.8	LOS A	4.2	106.8	0.61	0.64	0.79	20.5
West: EB - South Ave														
5u	U	2	0.0	2	0.0	0.855	25.7	LOS D	18.4	466.7	0.97	1.55	2.46	11.6
5	L2	476	1.0	486	1.0	0.855	25.7	LOS D	18.4	466.7	0.97	1.55	2.46	11.8
2	T1	391	3.0	399	3.0	0.855	21.6	LOS C	18.4	466.7	0.87	1.31	2.07	17.1
Approach		869	1.9	887	1.9	0.855	23.9	LOS C	18.4	466.7	0.92	1.44	2.28	14.0
All Vehicles		2534	2.1	2586	2.1	0.855	14.4	LOS B	18.4	466.7	0.72	0.91	1.28	18.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

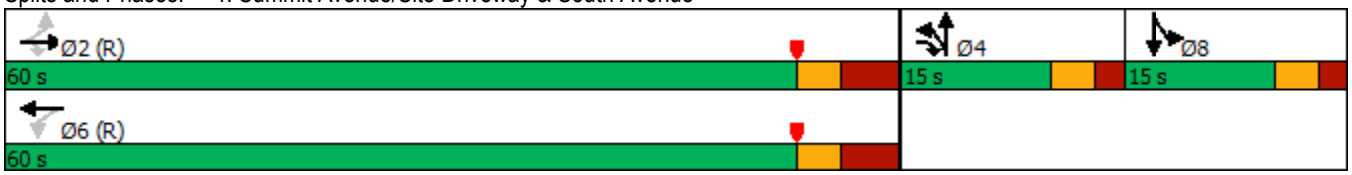


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	588	30	25	573	13	90	13	41	25	21	38
Future Volume (vph)	21	588	30	25	573	13	90	13	41	25	21	38
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	0		70	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997			0.887			0.903	
Flt Protected		0.998			0.998		0.950			0.950		
Satd. Flow (prot)	0	2053	1785	0	3897	0	1956	1863	0	1995	1872	0
Flt Permitted		0.968			0.914		0.950			0.950		
Satd. Flow (perm)	0	1991	1785	0	3569	0	1956	1863	0	1995	1872	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			31		4			43			40	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			156			500			138	
Travel Time (s)		13.9			3.5			13.6			3.8	
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 (%)	5%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Adj. Flow (vph)	22	613	31	26	597	14	94	14	43	26	22	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	635	31	0	637	0	94	57	0	26	62	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		62.6	75.8		62.6		9.0	9.0		7.6	7.6	
Actuated g/C Ratio		0.70	0.84		0.70		0.10	0.10		0.08	0.08	
v/c Ratio		0.46	0.02		0.26		0.48	0.25		0.15	0.32	
Control Delay		10.0	0.8		7.4		46.7	19.0		39.8	23.3	
Queue Delay		0.2	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		10.2	0.8		7.4		46.7	19.0		39.8	23.3	
LOS		B	A		A		D	B		D	C	
Approach Delay		9.8			7.4			36.3			28.2	
Approach LOS		A			A			D			C	
Queue Length 50th (ft)		179	0		77		51	7		14	12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		288	5		116		99	42		38	49	
Internal Link Dist (ft)		431			76			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)		1384	1516		2483		217	245		221	243	
Starvation Cap Reductn		197	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		0.53	0.02		0.26		0.43	0.23		0.12	0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	635	31	637	94	57	26	62
v/c Ratio	0.46	0.02	0.26	0.48	0.25	0.15	0.32
Control Delay	10.0	0.8	7.4	46.7	19.0	39.8	23.3
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	0.8	7.4	46.7	19.0	39.8	23.3
Queue Length 50th (ft)	179	0	77	51	7	14	12
Queue Length 95th (ft)	288	5	116	99	42	38	49
Internal Link Dist (ft)	431		76		420		58
Turn Bay Length (ft)							
Base Capacity (vph)	1384	1516	2483	217	245	221	243
Starvation Cap Reductn	197	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	0.53	0.02	0.26	0.43	0.23	0.12	0.26

Intersection Summary

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	613	46	29	532	35	88
Future Vol, veh/h	613	46	29	532	35	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	0	3	2	0	1
Mvmt Flow	619	46	29	537	35	89

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	665	0	969	642
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	4.145	-	6.6	6.215
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2285	-	3.5	3.3095
Pot Cap-1 Maneuver	-	-	916	-	269	475
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	709	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	916	-	257	475
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	-	-	916	-
HCM Lane V/C Ratio	0.324	-	-	0.032	-
HCM Control Delay (s)	18.8	-	-	9.1	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

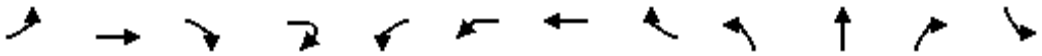
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	693	532	14	18	28
Future Vol, veh/h	5	693	532	14	18	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	5	714	548	14	19	29

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	562	0	-	0	1279	281
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	724	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1019	-	-	-	172	722
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1019	-	-	-	171	722
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	484	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1019	-	-	-	319
HCM Lane V/C Ratio	0.005	-	-	-	0.149
HCM Control Delay (s)	8.6	0	-	-	18.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	168	440	165	5	30	50	390	170	155	530	30	155
Future Volume (vph)	168	440	165	5	30	50	390	170	155	530	30	155
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115	100		0	105
Storage Lanes	1		0			1		1	1		0	1
Taper Length (ft)	25					25			25			25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958						0.850		0.992		
Flt Protected	0.950					0.950			0.950			0.950
Satd. Flow (prot)	1956	3747	0	0	0	1956	2059	1750	1956	2042	0	1956
Flt Permitted	0.302					0.321			0.129			0.129
Satd. Flow (perm)	622	3747	0	0	0	661	2059	1750	266	2042	0	266
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)		1						135		3		
Link Speed (mph)		30					30			25		
Link Distance (ft)		494					926			398		
Travel Time (s)		11.2					21.0			10.9		
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%	2%	2%	2%	2%	2%
Adj. Flow (vph)	183	478	179	5	33	54	424	185	168	576	33	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	183	662	0	0	0	87	424	185	168	609	0	168
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	pm+pt	NA		pm+pt
Protected Phases	5	2				1	6		7	4		3
Permitted Phases	2				1	6		6	4			8
Detector Phase	5	2			1	1	6	6	7	4		3
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	7.0		5.0
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	15.0		8.0
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	41.0		8.0
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	43.2%		8.4%
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	5.0		0.0
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0	3.0	8.0		3.0
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max			None	None	None	None	None	None		None
Act Effct Green (s)	39.1	30.2				38.4	28.3	28.3	41.0	30.9		41.0
Actuated g/C Ratio	0.43	0.33				0.42	0.31	0.31	0.45	0.34		0.45
v/c Ratio	0.54	0.53				0.25	0.67	0.29	0.79	0.88		0.79
Control Delay	23.3	27.7				16.9	33.7	9.2	44.0	44.5		44.0
Queue Delay	0.0	0.0				0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	23.3	27.7				16.9	33.7	9.2	44.0	44.5		44.0
LOS	C	C				B	C	A	D	D		D
Approach Delay		26.8					25.1			44.4		
Approach LOS		C					C			D		
Queue Length 50th (ft)	65	173				29	219	21	55	336		55



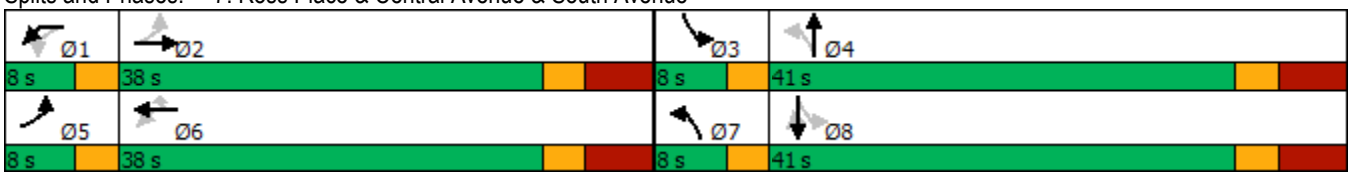
Lane Group	SBT	SBR	SBR2
Lane Configurations			
Traffic Volume (vph)	575	165	80
Future Volume (vph)	575	165	80
Ideal Flow (vphpl)	2100	2100	2100
Storage Length (ft)		0	
Storage Lanes		1	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	1.00
Frt		0.850	
Flt Protected			
Satd. Flow (prot)	2059	1750	0
Flt Permitted			
Satd. Flow (perm)	2059	1750	0
Right Turn on Red			Yes
Satd. Flow (RTOR)		126	
Link Speed (mph)	25		
Link Distance (ft)	809		
Travel Time (s)	22.1		
Peak Hour Factor	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%
Adj. Flow (vph)	625	179	87
Shared Lane Traffic (%)			
Lane Group Flow (vph)	625	266	0
Turn Type	NA	Perm	
Protected Phases	8		
Permitted Phases		8	
Detector Phase	8	8	
Switch Phase			
Minimum Initial (s)	7.0	7.0	
Minimum Split (s)	41.0	41.0	
Total Split (s)	41.0	41.0	
Total Split (%)	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	
All-Red Time (s)	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	8.0	8.0	
Lead/Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	
Act Effct Green (s)	30.9	30.9	
Actuated g/C Ratio	0.34	0.34	
v/c Ratio	0.90	0.39	
Control Delay	46.7	13.8	
Queue Delay	0.0	0.0	
Total Delay	46.7	13.8	
LOS	D	B	
Approach Delay	38.0		
Approach LOS	D		
Queue Length 50th (ft)	349	59	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Queue Length 95th (ft)	108	230				57	323	70	#133	#528		#133
Internal Link Dist (ft)		414					846			318		
Turn Bay Length (ft)	90							115	100			105
Base Capacity (vph)	339	1238				348	680	668	212	744		212
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	0.54	0.53				0.25	0.62	0.28	0.79	0.82		0.79

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 82.1%		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.

Splits and Phases: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBT	SBR	SBR2
Queue Length 95th (ft)	#547	124	
Internal Link Dist (ft)	729		
Turn Bay Length (ft)			
Base Capacity (vph)	748	716	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.84	0.37	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	183	662	87	424	185	168	609	168	625	266
v/c Ratio	0.54	0.53	0.25	0.67	0.29	0.79	0.88	0.79	0.90	0.39
Control Delay	23.3	27.7	16.9	33.7	9.2	44.0	44.5	44.0	46.7	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	27.7	16.9	33.7	9.2	44.0	44.5	44.0	46.7	13.8
Queue Length 50th (ft)	65	173	29	219	21	55	336	55	349	59
Queue Length 95th (ft)	108	230	57	323	70	#133	#528	#133	#547	124
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	339	1238	348	680	668	212	744	212	748	716
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	0.54	0.53	0.25	0.62	0.28	0.79	0.82	0.79	0.84	0.37

Intersection Summary

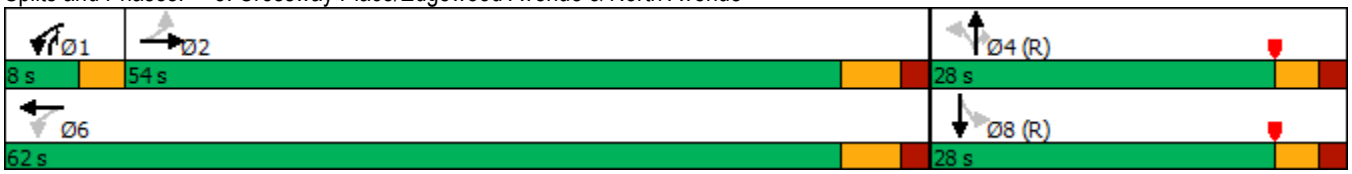
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

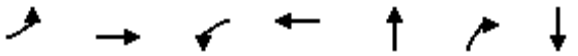
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	510	40	335	585	5	90	60	205	10	35	15
Future Volume (vph)	5	510	40	335	585	5	90	60	205	10	35	15
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.999				0.850		0.967	
Flt Protected	0.950			0.950				0.971			0.992	
Satd. Flow (prot)	1956	2036	0	1956	2057	0	0	1999	1750	0	1975	0
Flt Permitted	0.379			0.285				0.789			0.948	
Satd. Flow (perm)	780	2036	0	587	2057	0	0	1624	1750	0	1887	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			1				223		16	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	554	43	364	636	5	98	65	223	11	38	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	597	0	364	641	0	0	163	223	0	65	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		8.0	62.0		28.0	28.0	8.0	28.0	28.0	
Total Split (%)	60.0%	60.0%		8.9%	68.9%		31.1%	31.1%	8.9%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	48.0	48.0		59.0	56.0			23.0	33.0		23.0	
Actuated g/C Ratio	0.53	0.53		0.66	0.62			0.26	0.37		0.26	
v/c Ratio	0.01	0.55		0.79	0.50			0.39	0.29		0.13	
Control Delay	10.0	16.1		23.1	11.0			31.1	3.9		21.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.0	16.1		23.1	11.0			31.1	3.9		21.5	
LOS	A	B		C	B			C	A		C	
Approach Delay		16.0			15.4			15.4			21.5	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	1	208		78	181			77	0		21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	6	304		#150	262			135	44		53	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	416	1089		460	1280			415	782		494	
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	0.01	0.55		0.79	0.50			0.39	0.29		0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 69.8%		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: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	597	364	641	163	223	65
v/c Ratio	0.01	0.55	0.79	0.50	0.39	0.29	0.13
Control Delay	10.0	16.1	23.1	11.0	31.1	3.9	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	16.1	23.1	11.0	31.1	3.9	21.5
Queue Length 50th (ft)	1	208	78	181	77	0	21
Queue Length 95th (ft)	6	304	#150	262	135	44	53
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	416	1089	460	1280	415	782	494
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	0.01	0.55	0.79	0.50	0.39	0.29	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	533	651	146	221	35
Future Vol, veh/h	5	533	651	146	221	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	579	708	159	240	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	867	0	-	0	1377	788
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	589	-
Critical Hdwy	4.12	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	777	-	-	-	346	595
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	777	-	-	-	343	595
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	33.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	777	-	-	-	343	595
HCM Lane V/C Ratio	0.007	-	-	-	0.7	0.064
HCM Control Delay (s)	9.7	0	-	-	36.7	11.5
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	5	0.2

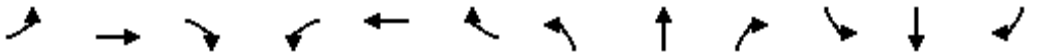
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	188	197	0	51	38
Future Vol, veh/h	0	188	197	0	51	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	224	235	0	61	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	459	235
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	224	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	564	809
Stage 1	0	-	-	0	809	-
Stage 2	0	-	-	0	818	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	564	809
Mov Cap-2 Maneuver	-	-	-	-	564	-
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	818	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	648
HCM Lane V/C Ratio	-	-	0.164
HCM Control Delay (s)	-	-	11.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

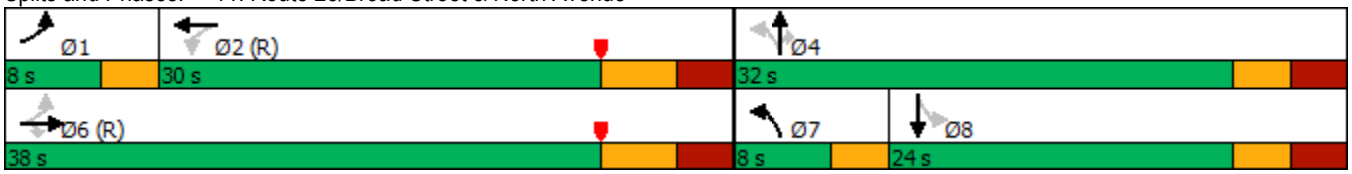


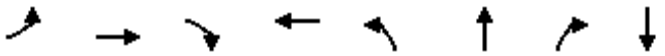
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	299	339	199	436	6	236	448	123	26	422	108
Future Volume (vph)	122	299	339	199	436	6	236	448	123	26	422	108
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.999				0.850		0.971	
Flt Protected	0.950				0.985		0.950				0.998	
Satd. Flow (prot)	1956	1538	1750	0	3813	0	1956	2059	1785	0	3745	0
Flt Permitted	0.303				0.752		0.250				0.910	
Satd. Flow (perm)	624	1538	1750	0	2911	0	515	2059	1785	0	3415	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			326		1						41	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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
Heavy Vehicles (%)	2%	4%	2%	3%	3%	0%	2%	2%	0%	0%	3%	5%
Adj. Flow (vph)	127	311	353	207	454	6	246	467	128	27	440	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	311	353	0	667	0	246	467	128	0	580	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	37.0	33.0	33.0		26.0		27.0	24.0	24.0		16.0	
Actuated g/C Ratio	0.53	0.47	0.47		0.37		0.39	0.34	0.34		0.23	
v/c Ratio	0.29	0.43	0.35		0.62		0.82	0.66	0.21		0.71	
Control Delay	10.8	15.3	3.2		21.8		39.6	24.4	16.6		28.2	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	10.8	15.3	3.2		21.8		39.6	24.4	16.6		28.2	
LOS	B	B	A		C		D	C	B		C	
Approach Delay		9.2			21.8			27.6			28.2	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)	26	87	6		138		70	164	37		110	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	54	154	49		215		#155	251	71		159	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185											
Base Capacity (vph)	439	724	996		1082		301	764	663		908	
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	0.29	0.43	0.35		0.62		0.82	0.61	0.19		0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 92.4%		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: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	127	311	353	667	246	467	128	580
v/c Ratio	0.29	0.43	0.35	0.62	0.82	0.66	0.21	0.71
Control Delay	10.8	15.3	3.2	21.8	39.6	24.4	16.6	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	15.3	3.2	21.8	39.6	24.4	16.6	28.2
Queue Length 50th (ft)	26	87	6	138	70	164	37	110
Queue Length 95th (ft)	54	154	49	215	#155	251	71	159
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	439	724	996	1082	301	764	663	908
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	0.29	0.43	0.35	0.62	0.82	0.61	0.19	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

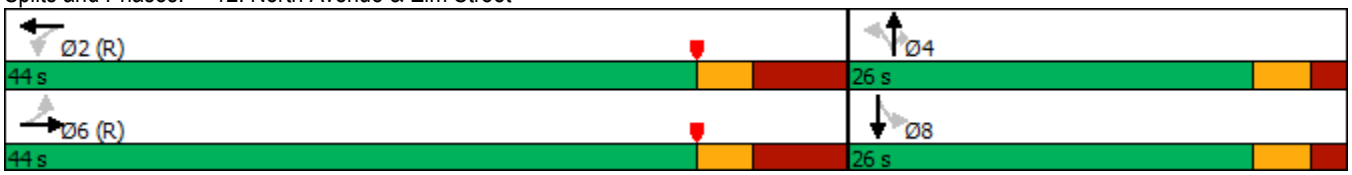
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	402	21	21	670	104	16	16	9	103	19	115
Future Volume (vph)	29	402	21	21	670	104	16	16	9	103	19	115
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.993			0.980				0.850		0.934	
Flt Protected		0.997			0.999			0.976			0.979	
Satd. Flow (prot)	0	3848	0	0	3810	0	0	1854	1700	0	1712	0
Flt Permitted		0.864			0.933			0.831			0.846	
Satd. Flow (perm)	0	3334	0	0	3558	0	0	1579	1700	0	1480	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			35				78		69	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
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 (%)	0%	3%	0%	0%	3%	0%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	30	419	22	22	698	108	17	17	9	107	20	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	471	0	0	828	0	0	34	9	0	247	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0	26.0	26.0	26.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	Max	Max	
Act Effct Green (s)		36.0			36.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.51			0.51			0.30	0.30		0.30	
v/c Ratio		0.27			0.45			0.07	0.02		0.50	
Control Delay		9.9			13.4			18.2	0.0		18.5	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		9.9			13.4			18.2	0.0		18.5	
LOS		A			B			B	A		B	
Approach Delay		9.9			13.4			14.4			18.5	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)		24			107			10	0		63	
Queue Length 95th (ft)		101			m136			30	0		132	
Internal Link Dist (ft)		83			399			113			96	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1719			1846			473	564		492	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.27			0.45			0.07	0.02		0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			
* User Entered Value			

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

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	471	828	34	9	247
v/c Ratio	0.27	0.45	0.07	0.02	0.50
Control Delay	9.9	13.4	18.2	0.0	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.9	13.4	18.2	0.0	18.5
Queue Length 50th (ft)	24	107	10	0	63
Queue Length 95th (ft)	101	m136	30	0	132
Internal Link Dist (ft)	83	399	113		96
Turn Bay Length (ft)					
Base Capacity (vph)	1719	1846	473	564	492
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.45	0.07	0.02	0.50

Intersection Summary

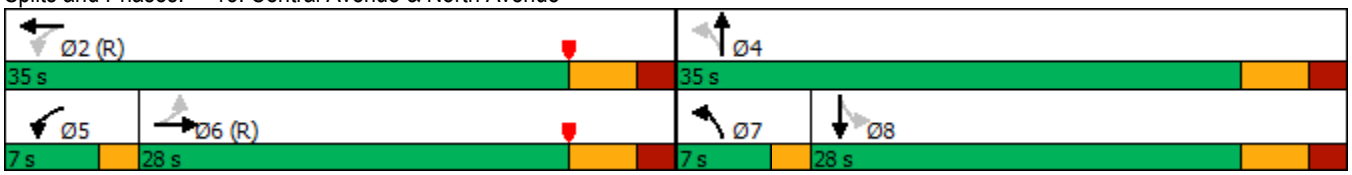
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	420	140	210	610	45	150	525	190	55	625	10
Future Volume (vph)	25	420	140	210	610	45	150	525	190	55	625	10
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.964			0.992			0.967			0.998	
Flt Protected		0.998			0.988			0.991			0.996	
Satd. Flow (prot)	0	3763	0	0	3834	0	0	3749	0	0	3888	0
Flt Permitted		0.886			0.612			0.590			0.796	
Satd. Flow (perm)	0	3341	0	0	2375	0	0	2232	0	0	3108	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					10			64				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	26	442	147	221	642	47	158	553	200	58	658	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	615	0	0	910	0	0	911	0	0	727	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		22.8			29.9			28.9			21.9	
Actuated g/C Ratio		0.33			0.43			0.41			0.31	
v/c Ratio		0.57			0.87			0.92			0.75	
Control Delay		18.4			28.8			34.2			27.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.4			28.8			34.2			27.1	
LOS		B			C			C			C	
Approach Delay		18.4			28.8			34.2			27.1	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)		90			148			140			144	
Queue Length 95th (ft)		96			#241			#243			205	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1087			1051			1004			994	
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		0.57			0.87			0.91			0.73	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 95.9%		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.			

Splits and Phases: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	615	910	911	727
v/c Ratio	0.57	0.87	0.92	0.75
Control Delay	18.4	28.8	34.2	27.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.4	28.8	34.2	27.1
Queue Length 50th (ft)	90	148	140	144
Queue Length 95th (ft)	96	#241	#243	205
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	1087	1051	1004	994
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	0.57	0.87	0.91	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	560	0	0	485	45	10	40	15	35	0	110
Future Vol, veh/h	115	560	0	0	485	45	10	40	15	35	0	110
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	121	589	0	0	511	47	11	42	16	37	0	116

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	558	0	-	-	-	0	1424	1389	589	1395	1366	535
Stage 1	-	-	-	-	-	-	831	831	-	535	535	-
Stage 2	-	-	-	-	-	-	593	558	-	860	831	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1013	-	0	0	-	-	113	142	508	119	147	545
Stage 1	-	-	0	0	-	-	364	384	-	529	524	-
Stage 2	-	-	0	0	-	-	492	512	-	351	384	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1013	-	-	-	-	-	81	125	508	78	130	545
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	125	-	78	130	-
Stage 1	-	-	-	-	-	-	321	338	-	466	524	-
Stage 2	-	-	-	-	-	-	387	512	-	262	338	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0	55	50.2
HCM LOS			F	F

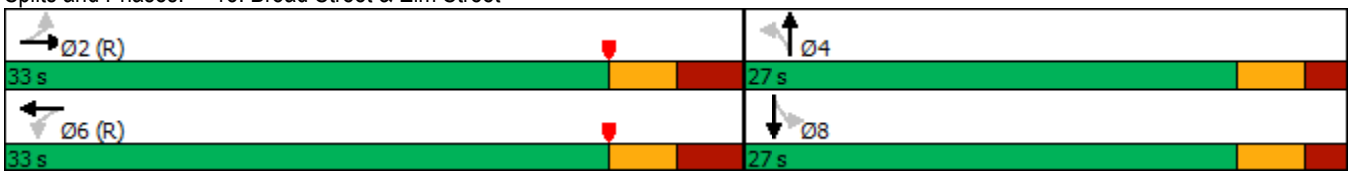
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	137	1013	-	-	-	223
HCM Lane V/C Ratio	0.499	0.119	-	-	-	0.684
HCM Control Delay (s)	55	9	-	-	-	50.2
HCM Lane LOS	F	A	-	-	-	F
HCM 95th %tile Q(veh)	2.3	0.4	-	-	-	4.4

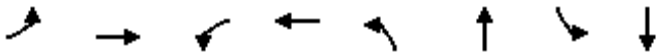
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	520	35	40	420	75	25	60	20	125	80	85
Future Volume (vph)	60	520	35	40	420	75	25	60	20	125	80	85
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.977			0.962			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1956	2038	0	1956	2011	0	1956	1981	0	1956	1900	0
Flt Permitted	0.434			0.390			0.636			0.702		
Satd. Flow (perm)	894	2038	0	803	2011	0	1309	1981	0	1445	1900	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			19			21			89	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	63	547	37	42	442	79	26	63	21	132	84	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	584	0	42	521	0	26	84	0	132	173	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	37.9	37.9		37.9	37.9		11.1	11.1		11.1	11.1	
Actuated g/C Ratio	0.63	0.63		0.63	0.63		0.18	0.18		0.18	0.18	
v/c Ratio	0.11	0.45		0.08	0.41		0.11	0.22		0.49	0.41	
Control Delay	6.2	7.8		5.9	7.9		19.3	16.6		27.4	13.4	
Queue Delay	0.0	0.1		0.0	0.4		0.0	0.0		0.0	0.0	
Total Delay	6.2	7.9		5.9	8.4		19.3	16.6		27.4	13.4	
LOS	A	A		A	A		B	B		C	B	
Approach Delay		7.7			8.2			17.2			19.5	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	8	88		5	111		8	20		44	26	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	26	194		25	195		23	46		79	65	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	564	1289		506	1276		479	739		529	753	
Starvation Cap Reductn	0	0		0	342		0	0		0	0	
Spillback Cap Reductn	0	74		0	0		0	6		4	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.48		0.08	0.56		0.05	0.11		0.25	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 67.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	63	584	42	521	26	84	132	173
v/c Ratio	0.11	0.45	0.08	0.41	0.11	0.22	0.49	0.41
Control Delay	6.2	7.8	5.9	7.9	19.3	16.6	27.4	13.4
Queue Delay	0.0	0.1	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	6.2	7.9	5.9	8.4	19.3	16.6	27.4	13.4
Queue Length 50th (ft)	8	88	5	111	8	20	44	26
Queue Length 95th (ft)	26	194	25	195	23	46	79	65
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	564	1289	506	1276	479	739	529	753
Starvation Cap Reductn	0	0	0	342	0	0	0	0
Spillback Cap Reductn	0	74	0	0	0	6	4	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.48	0.08	0.56	0.05	0.11	0.25	0.23

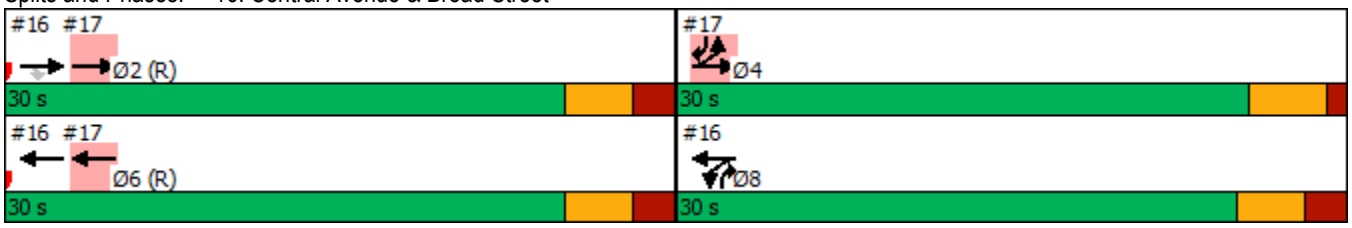
Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	580	85	515	485	0	390		
Future Volume (vph)	580	85	515	485	0	390		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2059	1750	1956	2059	0	1781		
Flt Permitted			0.950					
Satd. Flow (perm)	2059	1750	1956	2059	0	1781		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		89				158		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	611	89	542	511	0	411		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	611	89	542	511	0	411		
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0			7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	26.6	26.6	23.4	60.0		23.4		
Actuated g/C Ratio	0.44	0.44	0.39	1.00		0.39		
v/c Ratio	0.67	0.11	0.71	0.25		0.52		
Control Delay	20.9	6.7	24.9	0.3		10.5		
Queue Delay	4.0	0.0	17.7	0.0		0.1		
Total Delay	24.9	6.7	42.6	0.3		10.6		
LOS	C	A	D	A		B		
Approach Delay	22.5			22.1	10.6			
Approach LOS	C			C	B			
Queue Length 50th (ft)	198	3	194	0		59		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	280	36	290	0		125		
Internal Link Dist (ft)	238			23	636			
Turn Bay Length (ft)			130					
Base Capacity (vph)	912	825	815	2027		834		
Starvation Cap Reductn	130	0	268	0		0		
Spillback Cap Reductn	217	0	0	0		53		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	0.88	0.11	0.99	0.25		0.53		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 20.0		Intersection LOS: C	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

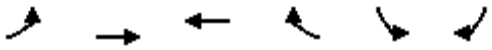
Splits and Phases: 16: Central Avenue & Broad Street





Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	611	89	542	511	411
v/c Ratio	0.67	0.11	0.71	0.25	0.52
Control Delay	20.9	6.7	24.9	0.3	10.5
Queue Delay	4.0	0.0	17.7	0.0	0.1
Total Delay	24.9	6.7	42.6	0.3	10.6
Queue Length 50th (ft)	198	3	194	0	59
Queue Length 95th (ft)	280	36	290	0	125
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	912	825	815	2027	834
Starvation Cap Reductn	130	0	268	0	0
Spillback Cap Reductn	217	0	0	0	53
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.88	0.11	0.99	0.25	0.53

Intersection Summary

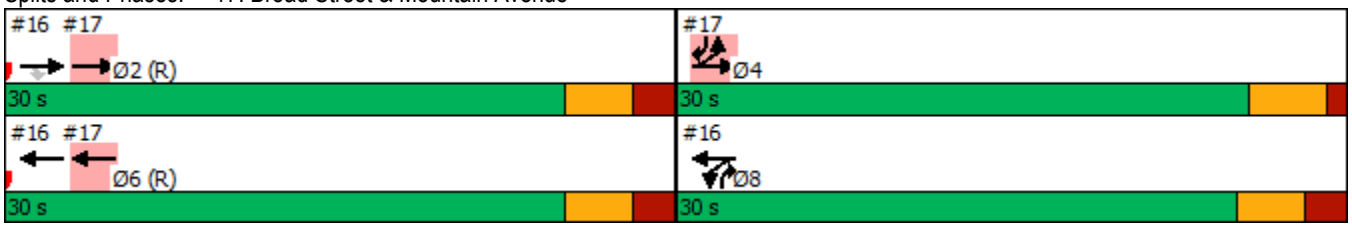


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	460	505	525	25	0	475		
Future Volume (vph)	460	505	525	25	0	475		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.993			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1956	2059	3884	0	0	3080		
Flt Permitted	0.950							
Satd. Flow (perm)	1956	2059	3884	0	0	3080		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			10			338		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	484	532	553	26	0	500		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	484	532	579	0	0	500		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	23.9	60.0	26.6			23.9		
Actuated g/C Ratio	0.40	1.00	0.44			0.40		
v/c Ratio	0.62	0.26	0.34			0.35		
Control Delay	19.6	0.2	11.9			4.5		
Queue Delay	20.0	0.0	54.9			0.1		
Total Delay	39.6	0.2	66.9			4.6		
LOS	D	A	E			A		
Approach Delay		19.0	66.9		4.6			
Approach LOS		B	E		A			
Queue Length 50th (ft)	145	0	71			19		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	231	0	104			47		
Internal Link Dist (ft)		13	318		952			
Turn Bay Length (ft)						150		
Base Capacity (vph)	831	2027	1727			1503		
Starvation Cap Reductn	344	0	0			0		
Spillback Cap Reductn	0	0	1245			240		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.99	0.26	1.20			0.40		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 28.8		Intersection LOS: C	
Intersection Capacity Utilization 44.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Broad Street & Mountain Avenue





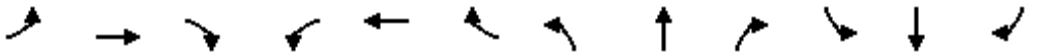
Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	484	532	579	500
v/c Ratio	0.62	0.26	0.34	0.35
Control Delay	19.6	0.2	11.9	4.5
Queue Delay	20.0	0.0	54.9	0.1
Total Delay	39.6	0.2	66.9	4.6
Queue Length 50th (ft)	145	0	71	19
Queue Length 95th (ft)	231	0	104	47
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	831	2027	1727	1503
Starvation Cap Reductn	344	0	0	0
Spillback Cap Reductn	0	0	1245	240
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.26	1.20	0.40

Intersection Summary

Kimley»Horn

DRAFT

Existing Saturday Midday Peak

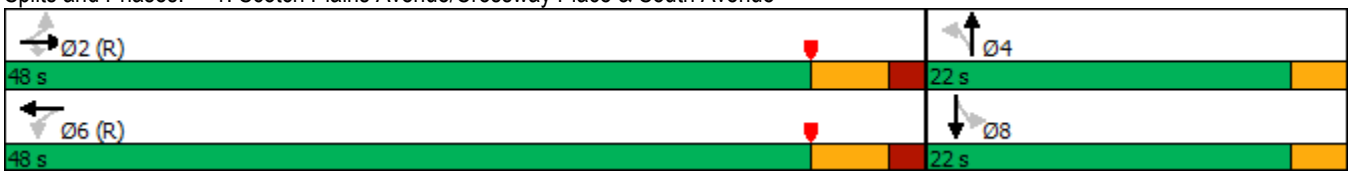


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	360	44	25	336	73	42	154	19	61	132	115
Future Volume (vph)	145	360	44	25	336	73	42	154	19	61	132	115
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.977			0.983			0.930	
Flt Protected		0.986			0.997		0.950			0.950		
Satd. Flow (prot)	0	2065	1785	0	2037	0	1995	2035	0	1975	1953	0
Flt Permitted		0.760			0.960		0.315			0.473		
Satd. Flow (perm)	0	1591	1785	0	1962	0	662	2035	0	983	1953	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			46		26			9			61	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	1%	0%	0%	4%	0%	1%	0%	1%	5%	1%	0%	0%
Adj. Flow (vph)	151	375	46	26	350	76	44	160	20	64	138	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	526	46	0	452	0	44	180	0	64	258	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Maximum Green (s)	42.0	42.0	42.0	42.0	42.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)							0.0	0.0		0.0	0.0	
Flash Dont Walk (s)							10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)		48.3	48.3		48.3		12.7	12.7		12.7	12.7	
Actuated g/C Ratio		0.69	0.69		0.69		0.18	0.18		0.18	0.18	
v/c Ratio		0.48	0.04		0.33		0.37	0.48		0.36	0.64	
Control Delay		11.5	4.4		5.6		32.4	27.7		29.3	26.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		11.5	4.4		5.6		32.4	27.7		29.3	26.8	
LOS		B	A		A		C	C		C	C	
Approach Delay		10.9			5.6			28.6			27.3	
Approach LOS		B			A			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	526	46	452	44	180	64	258
v/c Ratio	0.48	0.04	0.33	0.37	0.48	0.36	0.64
Control Delay	11.5	4.4	5.6	32.4	27.7	29.3	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	4.4	5.6	32.4	27.7	29.3	26.8
Queue Length 50th (ft)	136	1	59	17	67	25	78
Queue Length 95th (ft)	264	22	132	42	109	52	133
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	1098	1246	1362	179	558	266	574
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	0.48	0.04	0.33	0.25	0.32	0.24	0.45

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	388	72	401	400	107	301
Future Volume (vph)	388	72	401	400	107	301
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.979					0.850
Flt Protected				0.976	0.950	
Satd. Flow (prot)	2018	0	0	3875	1995	1785
Flt Permitted				0.592	0.950	
Satd. Flow (perm)	2018	0	0	2350	1995	1785
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	12%	1%	0%	0%	0%
Adj. Flow (vph)	396	73	409	408	109	307
Shared Lane Traffic (%)						
Lane Group Flow (vph)	469	0	0	817	109	307
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	6		20	6	20	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	7.0		10.0	9.0	7.0	10.0
Minimum Split (s)	33.0		13.0	35.0	22.0	13.0
Total Split (s)	33.0		13.0	46.0	24.0	13.0
Total Split (%)	47.1%		18.6%	65.7%	34.3%	18.6%
Maximum Green (s)	27.0		10.0	40.0	19.0	10.0
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	2.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			9.0	7.0	
Flash Dont Walk (s)	20.0			20.0	10.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	39.5			52.7	8.7	21.5
Actuated g/C Ratio	0.56			0.75	0.12	0.31
v/c Ratio	0.41			0.42	0.44	0.56
Control Delay	11.2			4.1	33.8	23.6
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.2			4.1	33.8	23.6
LOS	B			A	C	C
Approach Delay	11.2			4.1	26.2	
Approach LOS	B			A	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Broad St & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	469	817	109	307
v/c Ratio	0.41	0.42	0.44	0.56
Control Delay	11.2	4.1	33.8	23.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.2	4.1	33.8	23.6
Queue Length 50th (ft)	111	50	45	105
Queue Length 95th (ft)	198	85	85	163
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1139	1927	541	547
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	0.41	0.42	0.20	0.56

Intersection Summary

MOVEMENT SUMMARY

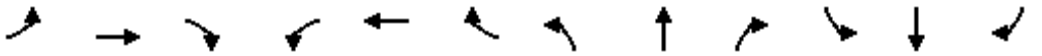
Site: 101 [Westfield RAB_Existing_SAT (Site Folder: Existing Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.598	12.8	LOS B	5.3	134.7	0.72	0.90	1.19	22.3
6	T1	329	0.0	358	0.0	0.598	12.8	LOS B	5.3	134.7	0.72	0.90	1.19	20.6
16	R2	331	7.0	360	7.0	0.598	9.5	LOS A	5.3	134.7	0.61	0.67	0.82	22.7
Approach		674	3.4	732	3.4	0.598	11.2	LOS B	5.3	134.7	0.67	0.79	1.01	21.6
North: SB - SR 28														
7	L2	338	0.0	367	0.0	0.415	8.0	LOS A	2.1	52.5	0.55	0.48	0.55	23.0
14	R2	351	0.0	382	0.0	0.415	6.8	LOS A	2.1	52.5	0.50	0.43	0.50	21.3
Approach		689	0.0	749	0.0	0.415	7.4	LOS A	2.1	52.5	0.53	0.46	0.53	22.3
West: EB - South Ave														
5	L2	476	0.0	517	0.0	0.717	15.3	LOS C	10.7	268.2	0.79	1.02	1.46	14.4
2	T1	373	1.0	405	1.0	0.717	10.8	LOS B	10.7	268.2	0.63	0.72	1.00	22.6
Approach		849	0.4	923	0.4	0.717	13.4	LOS B	10.7	268.2	0.72	0.89	1.26	17.5
All Vehicles		2212	1.2	2404	1.2	0.717	10.8	LOS B	10.7	268.2	0.64	0.72	0.95	20.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

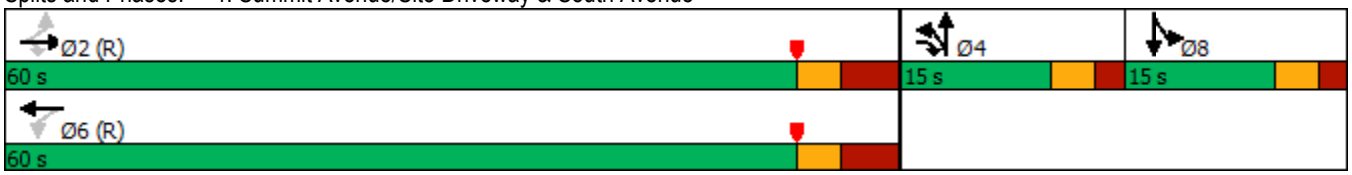


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	582	38	20	528	11	91	13	32	12	2	17
Future Volume (vph)	9	582	38	20	528	11	91	13	32	12	2	17
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	0		70	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997			0.895			0.865	
Flt Protected		0.999			0.998		0.950			0.950		
Satd. Flow (prot)	0	2098	1785	0	3970	0	1995	1880	0	1995	1817	0
Flt Permitted		0.991			0.923		0.950			0.950		
Satd. Flow (perm)	0	2081	1785	0	3672	0	1995	1880	0	1995	1817	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			40		4			33			18	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			169			500			138	
Travel Time (s)		13.9			3.8			13.6			3.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	606	40	21	550	11	95	14	33	13	2	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	615	40	0	582	0	95	47	0	13	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Maximum Green (s)	53.0	53.0	10.0	53.0	53.0		10.0	10.0		10.0	10.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0							
Flash Dont Walk (s)	11.0	11.0		11.0	11.0							
Pedestrian Calls (#/hr)	0	0		0	0							
Act Effct Green (s)		65.6	79.7		65.6		9.0	9.0		7.1	7.1	
Actuated g/C Ratio		0.73	0.89		0.73		0.10	0.10		0.08	0.08	
v/c Ratio		0.41	0.03		0.22		0.48	0.22		0.08	0.13	
Control Delay		8.1	0.6		6.1		46.4	20.5		39.8	20.7	
Queue Delay		0.2	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		8.3	0.6		6.1		46.4	20.5		39.8	20.7	
LOS		A	A		A		D	C		D	C	
Approach Delay		7.8			6.1			37.8			28.2	
Approach LOS		A			A			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 55.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	615	40	582	95	47	13	20
v/c Ratio	0.41	0.03	0.22	0.48	0.22	0.08	0.13
Control Delay	8.1	0.6	6.1	46.4	20.5	39.8	20.7
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	0.6	6.1	46.4	20.5	39.8	20.7
Queue Length 50th (ft)	167	0	69	52	7	7	1
Queue Length 95th (ft)	249	4	96	99	39	25	23
Internal Link Dist (ft)	431		89		420		58
Turn Bay Length (ft)							
Base Capacity (vph)	1516	1575	2676	221	238	221	217
Starvation Cap Reductn	251	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	0.49	0.03	0.22	0.43	0.20	0.06	0.09

Intersection Summary

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	590	42	32	504	42	104
Future Vol, veh/h	590	42	32	504	42	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	602	43	33	514	43	106

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	645	0	947	624
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	323	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	950	-	277	489
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	712	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	950	-	263	489
Mov Cap-2 Maneuver	-	-	-	-	263	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	19.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	392	-	-	950	-
HCM Lane V/C Ratio	0.38	-	-	0.034	-
HCM Control Delay (s)	19.7	-	-	8.9	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

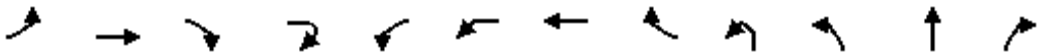
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	655	542	16	18	37
Future Vol, veh/h	21	655	542	16	18	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	704	583	17	19	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	600	0	-	0	1342	300
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	987	-	-	-	157	702
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	470	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	987	-	-	-	151	702
Mov Cap-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	470	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	987	-	-	-	320
HCM Lane V/C Ratio	0.023	-	-	-	0.185
HCM Control Delay (s)	8.7	0	-	-	18.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	119	370	181	11	59	85	353	190	4	130	443	28
Future Volume (vph)	119	370	181	11	59	85	353	190	4	130	443	28
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949						0.850			0.991	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1995	3737	0	0	0	1995	2100	1767	0	1976	2038	0
Flt Permitted	0.420					0.376				0.325		
Satd. Flow (perm)	882	3737	0	0	0	790	2100	1767	0	676	2038	0
Right Turn on Red				Yes				Yes				Yes
Satd. Flow (RTOR)		2						167			4	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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%	0%	0%	0%	1%	0%	1%	2%	4%
Adj. Flow (vph)	124	385	189	11	61	89	368	198	4	135	461	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	585	0	0	0	150	368	198	0	139	490	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left	Right
Median Width(ft)		12					12				12	
Link Offset(ft)		0					0				0	
Crosswalk Width(ft)		16					16				16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	9	15	15		9	15	15		9
Number of Detectors	1	2			1	1	2	1	1	1	2	
Detector Template	Left	Thru			Left	Left	Thru	Right	Left	Left	Thru	
Leading Detector (ft)	20	100			20	20	100	20	20	20	100	
Trailing Detector (ft)	0	0			0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0			0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6			20	20	6	20	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94					94				94	
Detector 2 Size(ft)		6					6				6	
Detector 2 Type		Cl+Ex					Cl+Ex				Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0					0.0				0.0	
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	

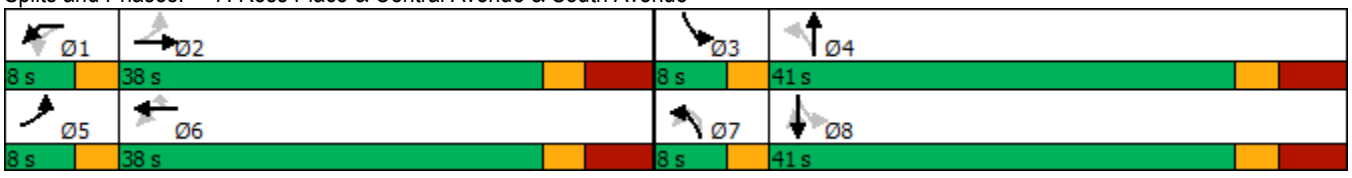


Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	168	385	108	75
Future Volume (vph)	168	385	108	75
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1995	2059	1775	0
Flt Permitted	0.196			
Satd. Flow (perm)	412	2059	1775	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	1%	0%
Adj. Flow (vph)	175	401	113	78
Shared Lane Traffic (%)				
Lane Group Flow (vph)	175	401	191	0
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Left	Left	Right	Right
Median Width(ft)		12		
Link Offset(ft)		0		
Crosswalk Width(ft)		16		
Two way Left Turn Lane				
Headway Factor	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	9
Number of Detectors	1	2	1	
Detector Template	Left	Thru	Right	
Leading Detector (ft)	20	100	20	
Trailing Detector (ft)	0	0	0	
Detector 1 Position(ft)	0	0	0	
Detector 1 Size(ft)	20	6	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel				
Detector 1 Extend (s)	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	
Detector 2 Position(ft)		94		
Detector 2 Size(ft)		6		
Detector 2 Type		Cl+Ex		
Detector 2 Channel				
Detector 2 Extend (s)		0.0		
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	8.4%	43.2%	
Maximum Green (s)	5.0	30.0			5.0	5.0	30.0	30.0	5.0	5.0	33.0	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max			None	None	None	None	None	None	None	
Walk Time (s)							7.0	7.0				
Flash Dont Walk (s)							23.0	23.0				
Pedestrian Calls (#/hr)							0	0				
Act Effct Green (s)	40.2	30.1				40.2	30.1	30.1		35.7	25.6	
Actuated g/C Ratio	0.46	0.34				0.46	0.34	0.34		0.41	0.29	
v/c Ratio	0.27	0.46				0.35	0.51	0.28		0.40	0.82	
Control Delay	15.4	24.8				16.6	27.3	6.9		18.2	40.8	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	15.4	24.8				16.6	27.3	6.9		18.2	40.8	
LOS	B	C				B	C	A		B	D	
Approach Delay		23.1					19.4				35.8	
Approach LOS		C					B				D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 87.9			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 26.0		Intersection LOS: C	
Intersection Capacity Utilization 73.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	41.0	41.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Maximum Green (s)	5.0	33.0	33.0	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	
Recall Mode	None	None	None	
Walk Time (s)		7.0	7.0	
Flash Dont Walk (s)		26.0	26.0	
Pedestrian Calls (#/hr)		0	0	
Act Effct Green (s)	35.7	25.6	25.6	
Actuated g/C Ratio	0.41	0.29	0.29	
v/c Ratio	0.68	0.67	0.32	
Control Delay	30.6	33.0	10.1	
Queue Delay	0.0	0.0	0.0	
Total Delay	30.6	33.0	10.1	
LOS	C	C	B	
Approach Delay		26.8		
Approach LOS		C		

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	124	585	150	368	198	139	490	175	401	191
v/c Ratio	0.27	0.46	0.35	0.51	0.28	0.40	0.82	0.68	0.67	0.32
Control Delay	15.4	24.8	16.6	27.3	6.9	18.2	40.8	30.6	33.0	10.1
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	24.8	16.6	27.3	6.9	18.2	40.8	30.6	33.0	10.1
Queue Length 50th (ft)	37	133	45	163	12	45	249	57	194	26
Queue Length 95th (ft)	76	200	90	273	62	79	363	#102	288	74
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	466	1282	430	719	715	348	771	257	776	747
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	0.27	0.46	0.35	0.51	0.28	0.40	0.64	0.68	0.52	0.26

Intersection Summary

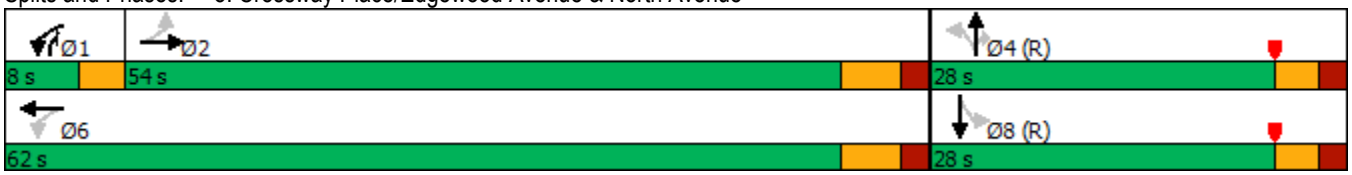
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

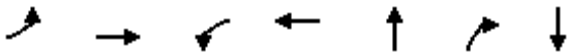
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	446	49	224	497	17	66	57	269	5	57	13
Future Volume (vph)	6	446	49	224	497	17	66	57	269	5	57	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.995				0.850		0.976	
Flt Protected	0.950			0.950				0.974			0.997	
Satd. Flow (prot)	1995	2050	0	1995	2050	0	0	2045	1750	0	2043	0
Flt Permitted	0.448			0.332				0.804			0.985	
Satd. Flow (perm)	941	2050	0	697	2050	0	0	1688	1750	0	2019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4				289		11	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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%	2%	0%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	6	480	53	241	534	18	71	61	289	5	61	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	533	0	241	552	0	0	132	289	0	80	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		8.0	62.0		28.0	28.0	8.0	28.0	28.0	
Total Split (%)	60.0%	60.0%		8.9%	68.9%		31.1%	31.1%	8.9%	31.1%	31.1%	
Maximum Green (s)	48.0	48.0		5.0	56.0		23.0	23.0	5.0	23.0	23.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Walk Time (s)	20.0	20.0			20.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	22.0	22.0			22.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	48.0	48.0		59.0	56.0			23.0	33.0		23.0	
Actuated g/C Ratio	0.53	0.53		0.66	0.62			0.26	0.37		0.26	
v/c Ratio	0.01	0.49		0.46	0.43			0.31	0.35		0.15	
Control Delay	10.0	14.9		9.1	10.0			29.5	3.8		23.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.0	14.9		9.1	10.0			29.5	3.8		23.5	
LOS	A	B		A	B			C	A		C	
Approach Delay		14.8			9.7			11.8			23.5	
Approach LOS		B			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 12.3		Intersection LOS: B	
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	6	533	241	552	132	289	80
v/c Ratio	0.01	0.49	0.46	0.43	0.31	0.35	0.15
Control Delay	10.0	14.9	9.1	10.0	29.5	3.8	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	14.9	9.1	10.0	29.5	3.8	23.5
Queue Length 50th (ft)	2	177	48	146	61	0	30
Queue Length 95th (ft)	7	260	77	213	111	50	66
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	501	1097	529	1277	431	824	524
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	0.01	0.49	0.46	0.43	0.31	0.35	0.15

Intersection Summary

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	527	483	146	151	34
Future Vol, veh/h	13	527	483	146	151	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	13	543	498	151	156	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	649	0	-	0	1143	574
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	569	-
Critical Hdwy	4.1	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	947	-	-	-	421	707
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	947	-	-	-	413	707
Mov Cap-2 Maneuver	-	-	-	-	413	-
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	570	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	947	-	-	-	413	707
HCM Lane V/C Ratio	0.014	-	-	-	0.377	0.05
HCM Control Delay (s)	8.9	0	-	-	18.9	10.4
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	1.7	0.2

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	165	160	0	41	11
Future Vol, veh/h	0	165	160	0	41	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	0	0
Mvmt Flow	0	183	178	0	46	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	361	178
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	183	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	642	870
Stage 1	0	-	-	0	858	-
Stage 2	0	-	-	0	853	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	642	870
Mov Cap-2 Maneuver	-	-	-	-	642	-
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	853	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.8
HCM LOS			B

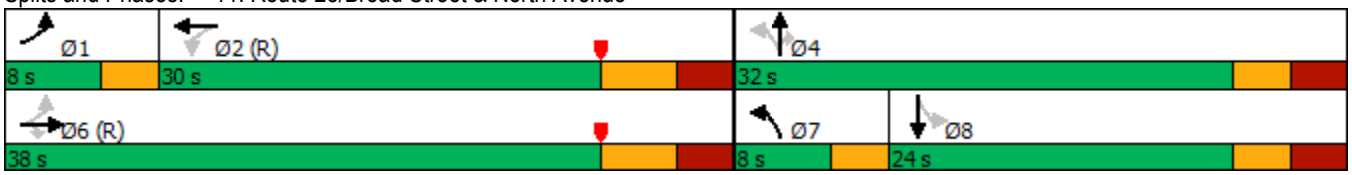
Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	680
HCM Lane V/C Ratio	-	-	0.085
HCM Control Delay (s)	-	-	10.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

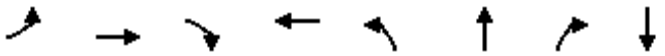
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	268	313	187	381	12	211	407	158	46	371	86
Future Volume (vph)	108	268	313	187	381	12	211	407	158	46	371	86
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.997				0.850		0.974	
Flt Protected	0.950				0.984		0.950				0.995	
Satd. Flow (prot)	1975	1600	1767	0	3790	0	1995	2100	1785	0	3832	0
Flt Permitted	0.347				0.758		0.292				0.865	
Satd. Flow (perm)	721	1600	1767	0	2920	0	613	2100	1785	0	3331	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			323		3						33	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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%	0%	1%	2%	4%	0%	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	111	276	323	193	393	12	218	420	163	47	382	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	276	323	0	598	0	218	420	163	0	518	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	1.24	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Maximum Green (s)	5.0	31.0	31.0	23.0	23.0		5.0	26.0	26.0	18.0	18.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		16.0	16.0	16.0	16.0			11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0			0	0	0	0	
Act Effct Green (s)	37.6	33.6	33.6		26.5		26.4	23.4	23.4		15.4	
Actuated g/C Ratio	0.54	0.48	0.48		0.38		0.38	0.33	0.33		0.22	
v/c Ratio	0.23	0.36	0.32		0.54		0.66	0.60	0.27		0.68	
Control Delay	10.0	13.9	2.6		19.6		25.9	23.0	17.7		28.1	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	10.0	13.9	2.6		19.6		25.9	23.0	17.7		28.1	
LOS	A	B	A		B		C	C	B		C	
Approach Delay		8.1			19.6			22.7			28.1	
Approach LOS		A			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	111	276	323	598	218	420	163	518
v/c Ratio	0.23	0.36	0.32	0.54	0.66	0.60	0.27	0.68
Control Delay	10.0	13.9	2.6	19.6	25.9	23.0	17.7	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	13.9	2.6	19.6	25.9	23.0	17.7	28.1
Queue Length 50th (ft)	22	72	0	144	63	145	50	99
Queue Length 95th (ft)	48	133	40	157	#104	220	89	143
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	491	768	1016	1109	329	780	663	881
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	0.23	0.36	0.32	0.54	0.66	0.54	0.25	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

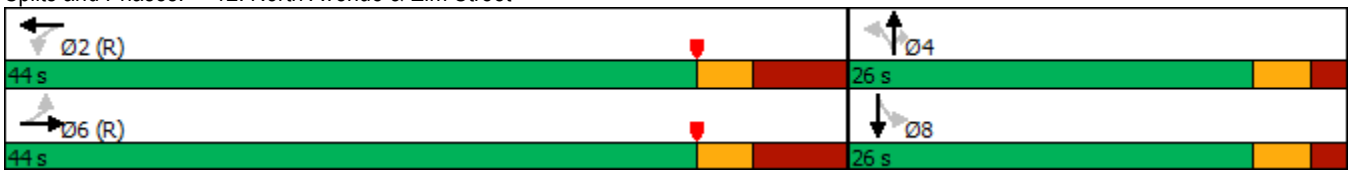
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	417	45	36	564	130	0	0	0	126	26	91
Future Volume (vph)	24	417	45	36	564	130	0	0	0	126	26	91
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.986			0.973						0.949	
Flt Protected		0.998			0.998						0.975	
Satd. Flow (prot)	0	3926	0	0	3875	0	0	1900	2000	0	1758	0
Flt Permitted		0.895			0.906						0.837	
Satd. Flow (perm)	0	3521	0	0	3517	0	0	1900	2000	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			54						44	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	421	45	36	570	131	0	0	0	127	26	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	490	0	0	737	0	0	0	0	0	245	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.94	0.94	0.94	0.94	0.94	0.94
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA				Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0	26.0	26.0	26.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Maximum Green (s)	36.0	36.0		36.0	36.0		21.0	21.0	21.0	21.0	21.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	Max	Max	
Act Effct Green (s)		36.0			36.0						21.0	
Actuated g/C Ratio		0.51			0.51						0.30	
v/c Ratio		0.27			0.40						0.51	
Control Delay		7.7			10.4						20.8	
Queue Delay		0.0			0.0						0.0	
Total Delay		7.7			10.4						20.8	
LOS		A			B						C	
Approach Delay		7.7			10.4						20.8	
Approach LOS		A			B						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

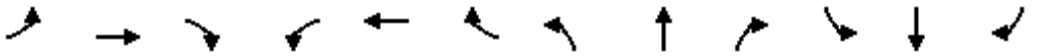
* User Entered Value

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	490	737	245
v/c Ratio	0.27	0.40	0.51
Control Delay	7.7	10.4	20.8
Queue Delay	0.0	0.0	0.0
Total Delay	7.7	10.4	20.8
Queue Length 50th (ft)	17	66	73
Queue Length 95th (ft)	52	131	142
Internal Link Dist (ft)	83	399	96
Turn Bay Length (ft)			
Base Capacity (vph)	1821	1834	483
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.40	0.51

Intersection Summary

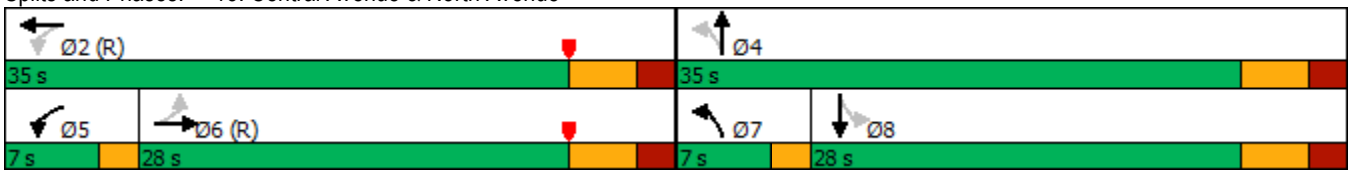


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	367	162	198	510	58	169	470	143	42	435	29
Future Volume (vph)	70	367	162	198	510	58	169	470	143	42	435	29
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.959			0.989			0.973			0.991	
Flt Protected		0.994			0.987			0.989			0.996	
Satd. Flow (prot)	0	3803	0	0	3895	0	0	3826	0	0	3932	0
Flt Permitted		0.772			0.617			0.650			0.823	
Satd. Flow (perm)	0	2954	0	0	2435	0	0	2514	0	0	3249	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					15			47				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	0%
Adj. Flow (vph)	71	374	165	202	520	59	172	480	146	43	444	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	610	0	0	781	0	0	798	0	0	517	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Maximum Green (s)	22.4	22.4		4.9	29.4		4.9	29.4		22.4	22.4	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		25.2			32.6			26.2			19.2	
Actuated g/C Ratio		0.36			0.47			0.37			0.27	
v/c Ratio		0.57			0.66			0.80			0.58	
Control Delay		17.5			18.0			24.5			24.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.5			18.0			24.5			24.2	
LOS		B			B			C			C	
Approach Delay		17.5			18.0			24.5			24.2	
Approach LOS		B			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 87.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	610	781	798	517
v/c Ratio	0.57	0.66	0.80	0.58
Control Delay	17.5	18.0	24.5	24.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.5	18.0	24.5	24.2
Queue Length 50th (ft)	87	115	124	97
Queue Length 95th (ft)	99	167	166	137
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	1065	1178	1109	1039
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	0.57	0.66	0.72	0.50

Intersection Summary

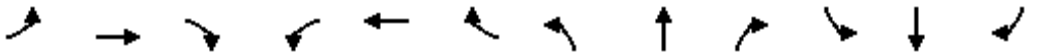
Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	134	426	1	0	343	66	17	45	75	6	0	164
Future Vol, veh/h	134	426	1	0	343	66	17	45	75	6	0	164
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	0	3	0	0	0	0	0	1
Mvmt Flow	144	458	1	0	369	71	18	48	81	6	0	176

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	-	-	0	1240	1187	459	1216	1152	405
Stage 1	-	-	-	-	-	-	747	747	-	405	405	-
Stage 2	-	-	-	-	-	-	493	440	-	811	747	-
Critical Hdwy	4.1	-	-	-	-	-	7.1	6.5	6.2	7.1	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.309
Pot Cap-1 Maneuver	1131	-	-	0	-	-	153	190	606	159	199	648
Stage 1	-	-	-	0	-	-	408	423	-	626	602	-
Stage 2	-	-	-	0	-	-	562	581	-	376	423	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1131	-	-	-	-	-	101	166	606	97	174	648
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	166	-	97	174	-
Stage 1	-	-	-	-	-	-	356	369	-	546	602	-
Stage 2	-	-	-	-	-	-	409	581	-	247	369	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	40.3	15
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	243	1131	-	-	-	-	540
HCM Lane V/C Ratio	0.606	0.127	-	-	-	-	0.339
HCM Control Delay (s)	40.3	8.6	-	-	-	-	15
HCM Lane LOS	E	A	-	-	-	-	C
HCM 95th %tile Q(veh)	3.6	0.4	-	-	-	-	1.5

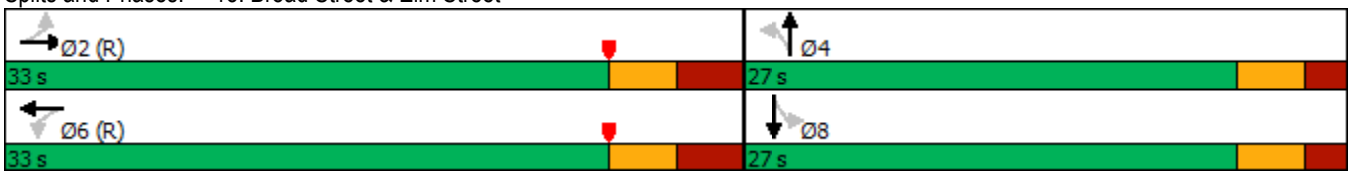


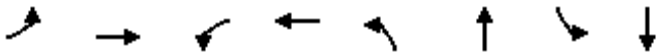
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	343	72	31	277	78	50	147	84	116	114	80
Future Volume (vph)	74	343	72	31	277	78	50	147	84	116	114	80
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.967			0.945			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	2045	0	1995	2031	0	1995	1985	0	1995	1970	0
Flt Permitted	0.541			0.496			0.570			0.479		
Satd. Flow (perm)	1136	2045	0	1042	2031	0	1197	1985	0	1006	1970	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			31			54			66	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	77	357	75	32	289	81	52	153	88	121	119	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	432	0	32	370	0	52	241	0	121	202	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	27.0	27.0		27.0	27.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	13.0	13.0		13.0	13.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	37.4	37.4		37.4	37.4		11.6	11.6		11.6	11.6	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.19	0.19		0.19	0.19	
v/c Ratio	0.11	0.34		0.05	0.29		0.23	0.56		0.62	0.47	
Control Delay	6.3	6.8		6.5	7.5		21.0	21.3		35.5	16.9	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	6.3	6.8		6.5	7.8		21.0	21.3		35.5	16.9	
LOS	A	A		A	A		C	C		D	B	
Approach Delay		6.7			7.7			21.2			23.9	
Approach LOS		A			A			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	432	32	370	52	241	121	202
v/c Ratio	0.11	0.34	0.05	0.29	0.23	0.56	0.62	0.47
Control Delay	6.3	6.8	6.5	7.5	21.0	21.3	35.5	16.9
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	6.3	6.8	6.5	7.8	21.0	21.3	35.5	16.9
Queue Length 50th (ft)	9	58	4	72	16	61	41	43
Queue Length 95th (ft)	31	133	21	142	37	106	78	83
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	708	1283	649	1277	438	762	368	764
Starvation Cap Reductn	0	0	0	425	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	0.11	0.34	0.05	0.43	0.12	0.32	0.33	0.26

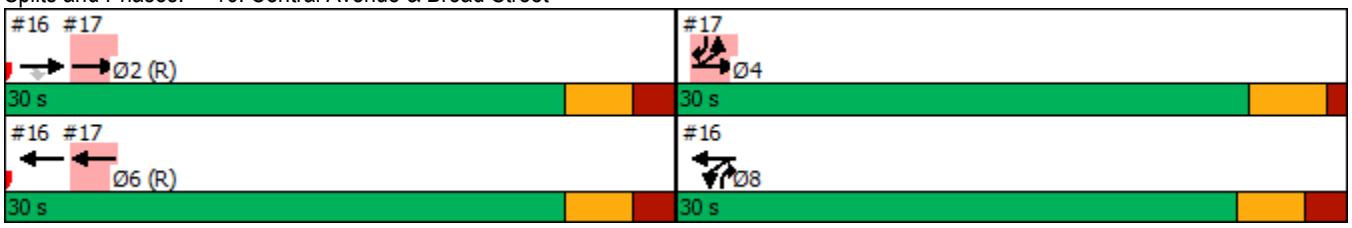
Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	401	157	455	392	0	359		
Future Volume (vph)	401	157	455	392	0	359		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2100	1785	1995	2100	0	1817		
Flt Permitted			0.950					
Satd. Flow (perm)	2100	1785	1995	2100	0	1817		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		164				297		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	418	164	474	408	0	374		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	418	164	474	408	0	374		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	12			12	0			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88		
Turning Speed (mph)		9	15		15	9		
Number of Detectors	2	1	1	2		1		
Detector Template	Thru	Right	Left	Thru		Right		
Leading Detector (ft)	100	20	20	100		20		
Trailing Detector (ft)	0	0	0	0		0		
Detector 1 Position(ft)	0	0	0	0		0		
Detector 1 Size(ft)	6	20	20	6		20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		
Detector 2 Position(ft)	94			94				
Detector 2 Size(ft)	6			6				
Detector 2 Type	Cl+Ex			Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)	0.0			0.0				
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0			7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Maximum Green (s)	25.0	25.0	25.0			25.0	25.5	25.0
Yellow Time (s)	3.0	3.0	3.0			3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Walk Time (s)	9.0	9.0	5.0			5.0	5.0	9.0
Flash Dont Walk (s)	16.0	16.0	14.0			14.0	14.0	16.0
Pedestrian Calls (#/hr)	0	0	0			0	0	0
Act Effct Green (s)	27.9	27.9	22.1	60.0		22.1		
Actuated g/C Ratio	0.46	0.46	0.37	1.00		0.37		
v/c Ratio	0.43	0.18	0.64	0.19		0.44		
Control Delay	13.8	4.6	23.7	0.2		4.8		
Queue Delay	0.3	0.0	16.7	0.0		0.1		
Total Delay	14.1	4.6	40.5	0.2		4.9		
LOS	B	A	D	A		A		
Approach Delay	11.4			21.9	4.9			
Approach LOS	B			C	A			

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

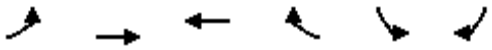
Splits and Phases: 16: Central Avenue & Broad Street



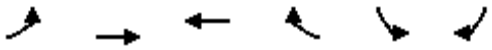


Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	418	164	474	408	374
v/c Ratio	0.43	0.18	0.64	0.19	0.44
Control Delay	13.8	4.6	23.7	0.2	4.8
Queue Delay	0.3	0.0	16.7	0.0	0.1
Total Delay	14.1	4.6	40.5	0.2	4.9
Queue Length 50th (ft)	98	0	159	0	16
Queue Length 95th (ft)	173	38	245	0	61
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	976	917	831	2094	930
Starvation Cap Reductn	154	0	346	0	0
Spillback Cap Reductn	159	0	0	0	63
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.18	0.98	0.19	0.43

Intersection Summary



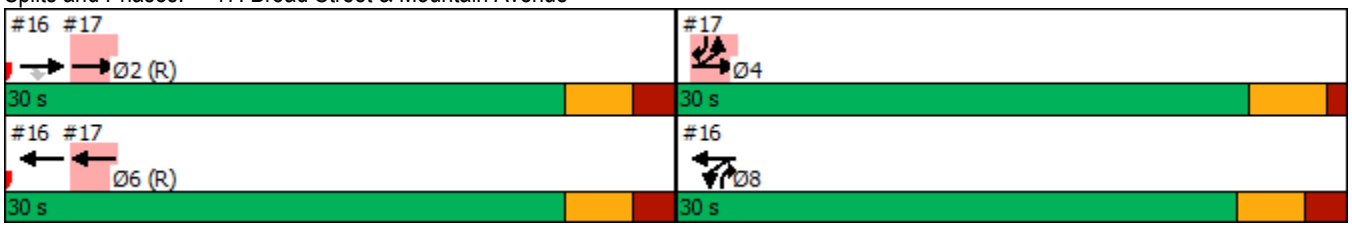
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	391	368	439	39	0	410		
Future Volume (vph)	391	368	439	39	0	410		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.988			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1995	2100	3942	0	0	3142		
Flt Permitted	0.950							
Satd. Flow (perm)	1995	2100	3942	0	0	3142		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			19			466		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	403	379	453	40	0	423		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	403	379	493	0	0	423		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Left	Left	Right	Left	Right		
Median Width(ft)		12	12		0			
Link Offset(ft)		0	0		0			
Crosswalk Width(ft)		16	16		16			
Two way Left Turn Lane								
Headway Factor	0.88	0.88	0.88	0.88	0.88	0.88		
Turning Speed (mph)	15			9	15	9		
Number of Detectors	1	2	2			1		
Detector Template	Left	Thru	Thru			Right		
Leading Detector (ft)	20	100	100			20		
Trailing Detector (ft)	0	0	0			0		
Detector 1 Position(ft)	0	0	0			0		
Detector 1 Size(ft)	20	6	6			20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)	0.0	0.0	0.0			0.0		
Detector 1 Queue (s)	0.0	0.0	0.0			0.0		
Detector 1 Delay (s)	0.0	0.0	0.0			0.0		
Detector 2 Position(ft)		94	94					
Detector 2 Size(ft)		6	6					
Detector 2 Type		Cl+Ex	Cl+Ex					
Detector 2 Channel								
Detector 2 Extend (s)		0.0	0.0					
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Maximum Green (s)	25.5		25.0			25.5	25.0	25.0
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0
Recall Mode	None		C-Max			None	C-Max	None
Walk Time (s)	5.0		9.0			5.0	9.0	5.0
Flash Dont Walk (s)	14.0		16.0			14.0	16.0	14.0
Pedestrian Calls (#/hr)	0		0			0	0	0
Act Effct Green (s)	22.6	60.0	27.9			22.6		
Actuated g/C Ratio	0.38	1.00	0.46			0.38		
v/c Ratio	0.54	0.18	0.27			0.29		
Control Delay	19.3	0.2	10.7			1.5		
Queue Delay	9.1	0.0	1.2			0.1		
Total Delay	28.4	0.2	11.9			1.6		
LOS	C	A	B			A		
Approach Delay		14.7	11.9		1.6			
Approach LOS		B	B		A			

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 39.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Broad Street & Mountain Avenue





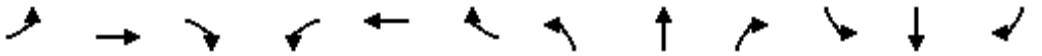
Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	403	379	493	423
v/c Ratio	0.54	0.18	0.27	0.29
Control Delay	19.3	0.2	10.7	1.5
Queue Delay	9.1	0.0	1.2	0.1
Total Delay	28.4	0.2	11.9	1.6
Queue Length 50th (ft)	123	0	57	0
Queue Length 95th (ft)	186	0	86	17
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	847	2094	1841	1603
Starvation Cap Reductn	403	0	0	0
Spillback Cap Reductn	0	0	1079	265
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.18	0.65	0.32

Intersection Summary

Kimley»Horn

DRAFT

2027 No-Build AM Peak



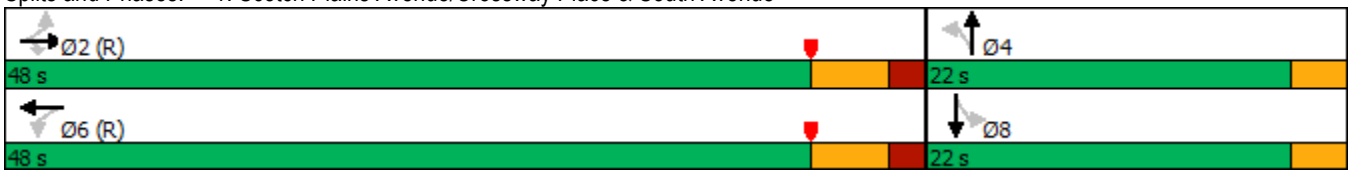
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	199	46	0	159	41	46	295	10	92	187	42
Future Volume (vph)	287	199	46	0	159	41	46	295	10	92	187	42
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972			0.995			0.973	
Flt Protected		0.971					0.950			0.950		
Satd. Flow (prot)	0	1942	1700	0	1944	0	1900	1990	0	1900	1946	0
Flt Permitted		0.703					0.402			0.253		
Satd. Flow (perm)	0	1406	1700	0	1944	0	804	1990	0	506	1946	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		33			2			16	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	302	209	48	0	167	43	48	311	11	97	197	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	511	48	0	210	0	48	322	0	97	241	0
Turn Type	Perm	NA	Perm		NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		45.2	45.2		45.2		15.8	15.8		15.8	15.8	
Actuated g/C Ratio		0.65	0.65		0.65		0.23	0.23		0.23	0.23	
v/c Ratio		0.56	0.04		0.17		0.27	0.71		0.85	0.53	
Control Delay		16.9	4.5		5.1		25.0	33.8		80.5	26.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		16.9	4.5		5.1		25.0	33.8		80.5	26.1	
LOS		B	A		A		C	C		F	C	
Approach Delay		15.9			5.1			32.6			41.7	
Approach LOS		B			A			C			D	
Queue Length 50th (ft)		202	5		26		17	126		40	84	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		307	m11		57		43	197		#113	142	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		907	1114		1266		218	541		137	539	
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		0.56	0.04		0.17		0.22	0.60		0.71	0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 24.4		Intersection LOS: C	
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: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	511	48	210	48	322	97	241
v/c Ratio	0.56	0.04	0.17	0.27	0.71	0.85	0.53
Control Delay	16.9	4.5	5.1	25.0	33.8	80.5	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	4.5	5.1	25.0	33.8	80.5	26.1
Queue Length 50th (ft)	202	5	26	17	126	40	84
Queue Length 95th (ft)	307	m11	57	43	197	#113	142
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	907	1114	1266	218	541	137	539
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	0.56	0.04	0.17	0.22	0.60	0.71	0.45

Intersection Summary

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.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	372	92	761	192	92	375
Future Volume (vph)	372	92	761	192	92	375
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.973					0.850
Flt Protected				0.962	0.950	
Satd. Flow (prot)	1946	0	0	3656	1900	1700
Flt Permitted				0.547	0.950	
Satd. Flow (perm)	1946	0	0	2079	1900	1700
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	392	97	801	202	97	395
Shared Lane Traffic (%)						
Lane Group Flow (vph)	489	0	0	1003	97	395
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	10.0		9.0	9.0	7.0	9.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	37.2			52.9	8.5	23.8
Actuated g/C Ratio	0.53			0.76	0.12	0.34
v/c Ratio	0.47			1.12dl	0.42	0.68
Control Delay	14.0			4.9	33.7	25.2
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	14.0			4.9	33.7	25.2
LOS	B			A	C	C
Approach Delay	14.0			4.9	26.9	
Approach LOS	B			A	C	
Queue Length 50th (ft)	125			65	40	141

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	248			111	78	191
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	1033			1789	461	583
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	0.47			0.56	0.21	0.68

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 80.9%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad Street & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	489	1003	97	395
v/c Ratio	0.47	1.12dl	0.42	0.68
Control Delay	14.0	4.9	33.7	25.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.0	4.9	33.7	25.2
Queue Length 50th (ft)	125	65	40	141
Queue Length 95th (ft)	248	111	78	191
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1033	1789	461	583
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	0.47	0.56	0.21	0.68

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

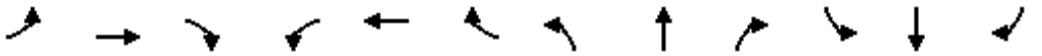
Site: 101 [Westfield RAB_Existing_AM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	18	0.0	19	0.0	0.661	16.5	LOS C	6.1	157.7	0.80	1.04	1.49	20.4
6	T1	319	4.0	339	4.0	0.661	16.6	LOS C	6.1	157.7	0.80	1.04	1.49	18.6
16	R2	327	4.0	348	4.0	0.661	11.5	LOS B	6.1	157.7	0.68	0.78	0.98	21.4
Approach		664	3.9	706	3.9	0.661	14.1	LOS B	6.1	157.7	0.74	0.91	1.24	19.9
North: SB - SR 28														
7	L2	508	5.0	540	5.0	0.641	13.2	LOS B	7.0	183.3	0.70	0.84	1.16	19.8
14	R2	520	5.0	553	5.0	0.641	10.0	LOS A	7.0	183.3	0.60	0.60	0.75	18.9
Approach		1028	5.0	1094	5.0	0.641	11.6	LOS B	7.0	183.3	0.65	0.72	0.95	19.4
West: EB - South Ave														
5u	U	2	0.0	2	0.0	1.110	86.3	LOS F	54.6	1403.4	1.00	3.02	6.62	5.5
5	L2	633	3.0	673	3.0	1.110	86.4	LOS F	54.6	1403.4	1.00	3.02	6.62	5.7
2	T1	448	5.0	477	5.0	1.110	49.4	LOS F	54.6	1403.4	0.79	1.86	3.78	10.7
Approach		1083	3.8	1152	3.8	1.110	71.1	LOS F	54.6	1403.4	0.91	2.54	5.45	7.2
All Vehicles		2775	4.3	2952	4.3	1.110	35.4	LOS E	54.6	1403.4	0.77	1.48	2.77	11.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

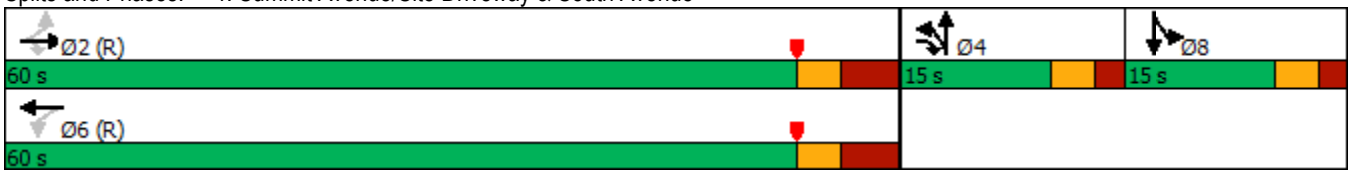


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	627	44	11	488	48	180	37	39	58	5	19
Future Volume (vph)	25	627	44	11	488	48	180	37	39	58	5	19
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		65	0		0	60		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.987			0.923			0.880	
Flt Protected		0.998			0.999		0.950			0.950		
Satd. Flow (prot)	0	1964	1700	0	3766	0	1956	1938	0	1995	1848	0
Flt Permitted		0.966			0.940		0.950			0.950		
Satd. Flow (perm)	0	1901	1700	0	3544	0	1956	1938	0	1995	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		20			41			20	
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		511			111			500			138	
Travel Time (s)		13.9			2.5			13.6			3.1	
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%	7%	5%	0%	5%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	26	653	46	11	508	50	188	39	41	60	5	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	679	46	0	569	0	188	80	0	60	25	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		57.1	75.1		57.1		10.0	10.0		8.3	8.3	
Actuated g/C Ratio		0.63	0.83		0.63		0.11	0.11		0.09	0.09	
v/c Ratio		0.56	0.03		0.25		0.87	0.32		0.33	0.13	
Control Delay		12.6	0.8		7.9		75.7	24.6		42.8	20.4	
Queue Delay		0.3	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		12.8	0.8		7.9		75.7	24.6		42.8	20.4	
LOS		B	A		A		E	C		D	C	
Approach Delay		12.1			7.9			60.4			36.2	
Approach LOS		B			A			E			D	
Queue Length 50th (ft)		214	0		68		107	20		33	3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		335	6		102		#226	63		70	26	
Internal Link Dist (ft)		431			31			420			58	
Turn Bay Length (ft)			65				60					
Base Capacity (vph)		1206	1426		2257		217	251		221	223	
Starvation Cap Reductn		132	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		0.63	0.03		0.25		0.87	0.32		0.27	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 19.7		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.			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	679	46	569	188	80	60	25
v/c Ratio	0.56	0.03	0.25	0.87	0.32	0.33	0.13
Control Delay	12.6	0.8	7.9	75.7	24.6	42.8	20.4
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	0.8	7.9	75.7	24.6	42.8	20.4
Queue Length 50th (ft)	214	0	68	107	20	33	3
Queue Length 95th (ft)	335	6	102	#226	63	70	26
Internal Link Dist (ft)	431		31		420		58
Turn Bay Length (ft)		65		60			
Base Capacity (vph)	1206	1426	2257	217	251	221	223
Starvation Cap Reductn	132	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	0.63	0.03	0.25	0.87	0.32	0.27	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	620	53	19	455	48	154
Future Vol, veh/h	620	53	19	455	48	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	7	8	0	5	4	0
Mvmt Flow	660	56	20	484	51	164

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	716	0	970	688
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	282	-
Critical Hdwy	-	-	4.1	-	6.66	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.2	-	3.538	3.3
Pot Cap-1 Maneuver	-	-	894	-	262	450
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	894	-	254	450
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	26.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	380	-	-	894	-
HCM Lane V/C Ratio	0.566	-	-	0.023	-
HCM Control Delay (s)	26.1	-	-	9.1	0.1
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	3.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	751	453	23	13	21
Future Vol, veh/h	23	751	453	23	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	5	5	0	0	5
Mvmt Flow	24	799	482	24	14	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	506	0	-	0	1341	253
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	847	-
Critical Hdwy	4.1	-	-	-	6.6	6.975
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3475
Pot Cap-1 Maneuver	1069	-	-	-	158	739
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	424	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1069	-	-	-	152	739
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	424	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1069	-	-	-	298
HCM Lane V/C Ratio	0.023	-	-	-	0.121
HCM Control Delay (s)	8.4	0	-	-	18.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4



Lane Group	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	214	394	164	5	36	295	109	10	172	615	11	89
Future Volume (vph)	214	394	164	5	36	295	109	10	172	615	11	89
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0		0		115		100		0	105
Storage Lanes	1		0		1		1		1		0	1
Taper Length (ft)	25				25				25			25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955					0.850			0.997		
Flt Protected	0.950				0.950				0.950			0.950
Satd. Flow (prot)	1900	3629	0	0	1900	2000	1700	0	1900	1994	0	1900
Flt Permitted	0.432				0.392				0.577			0.131
Satd. Flow (perm)	864	3629	0	0	784	2000	1700	0	1154	1994	0	262
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)		1					126			1		
Link Speed (mph)		30				35				25		
Link Distance (ft)		446				926				398		
Travel Time (s)		10.1				18.0				10.9		
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	225	415	173	5	38	311	115	11	181	647	12	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	225	593	0	0	38	311	115	0	192	659	0	94
Turn Type	pm+pt	NA			pm+pt	NA	Perm	custom	pm+pt	NA		pm+pt
Protected Phases	5	2			1	6			7	4		3
Permitted Phases	2				6		6	7	4			8
Detector Phase	5	2			1	6	6	7	7	4		3
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	10.0	10.0	5.0	5.0	7.0		5.0
Minimum Split (s)	8.0	18.0			8.0	38.0	38.0	8.0	8.0	15.0		8.0
Total Split (s)	8.0	38.0			8.0	38.0	38.0	8.0	8.0	41.0		8.0
Total Split (%)	8.4%	40.0%			8.4%	40.0%	40.0%	8.4%	8.4%	43.2%		8.4%
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0
All-Red Time (s)	0.0	5.0			0.0	5.0	5.0	0.0	0.0	5.0		0.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	3.0	8.0			3.0	8.0	8.0		3.0	8.0		3.0
Lead/Lag	Lead	Lag			Lead	Lag	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Max			None	None	None	None	None	None		None
Act Effct Green (s)	38.2	30.3			36.8	26.7	26.7		40.7	31.8		39.9
Actuated g/C Ratio	0.43	0.34			0.41	0.30	0.30		0.46	0.36		0.45
v/c Ratio	0.52	0.48			0.10	0.52	0.19		0.34	0.92		0.45
Control Delay	22.6	26.0			15.4	29.9	4.8		16.1	49.4		20.0
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	22.6	26.0			15.4	29.9	4.8		16.1	49.4		20.0
LOS	C	C			B	C	A		B	D		B
Approach Delay		25.1				22.5				41.9		
Approach LOS		C				C				D		
Queue Length 50th (ft)	82	152			12	151	0		64	382		30



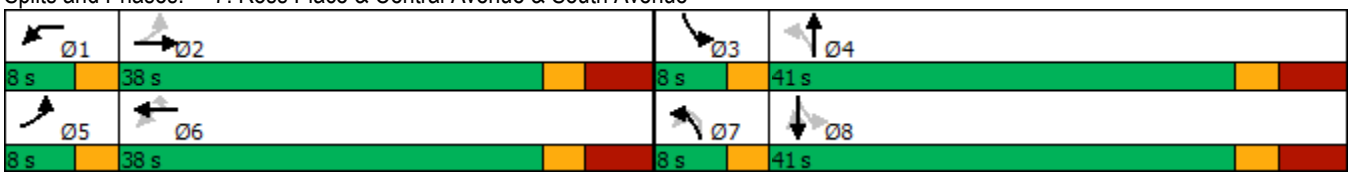
Lane Group	SBT	SBR	SBR2
Lane Configurations			
Traffic Volume (vph)	217	150	80
Future Volume (vph)	217	150	80
Ideal Flow (vphpl)	2100	2100	2100
Storage Length (ft)		0	
Storage Lanes		1	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	1.00
Frt		0.850	
Flt Protected			
Satd. Flow (prot)	2000	1700	0
Flt Permitted			
Satd. Flow (perm)	2000	1700	0
Right Turn on Red			Yes
Satd. Flow (RTOR)		126	
Link Speed (mph)	25		
Link Distance (ft)	792		
Travel Time (s)	21.6		
Peak Hour Factor	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%
Adj. Flow (vph)	228	158	84
Shared Lane Traffic (%)			
Lane Group Flow (vph)	228	242	0
Turn Type	NA	Perm	
Protected Phases	8		
Permitted Phases		8	
Detector Phase	8	8	
Switch Phase			
Minimum Initial (s)	7.0	7.0	
Minimum Split (s)	41.0	41.0	
Total Split (s)	41.0	41.0	
Total Split (%)	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	
All-Red Time (s)	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	8.0	8.0	
Lead/Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	
Act Effct Green (s)	29.8	29.8	
Actuated g/C Ratio	0.34	0.34	
v/c Ratio	0.34	0.37	
Control Delay	24.0	12.6	
Queue Delay	0.0	0.0	
Total Delay	24.0	12.6	
LOS	C	B	
Approach Delay	18.5		
Approach LOS	B		
Queue Length 50th (ft)	100	49	

Lane Group	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL
Queue Length 95th (ft)	132	205			30	232	33		106	#611		57
Internal Link Dist (ft)		366				846				318		
Turn Bay Length (ft)	90						115		100			105
Base Capacity (vph)	430	1238			388	682	663		570	749		210
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	0.48			0.10	0.46	0.17		0.34	0.88		0.45

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.9			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBT	SBR	SBR2
Queue Length 95th (ft)	161	109	
Internal Link Dist (ft)	712		
Turn Bay Length (ft)			
Base Capacity (vph)	750	716	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.30	0.34	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	225	593	38	311	115	192	659	94	228	242
v/c Ratio	0.52	0.48	0.10	0.52	0.19	0.34	0.92	0.45	0.34	0.37
Control Delay	22.6	26.0	15.4	29.9	4.8	16.1	49.4	20.0	24.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	26.0	15.4	29.9	4.8	16.1	49.4	20.0	24.0	12.6
Queue Length 50th (ft)	82	152	12	151	0	64	382	30	100	49
Queue Length 95th (ft)	132	205	30	232	33	106	#611	57	161	109
Internal Link Dist (ft)		366		846			318		712	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	430	1238	388	682	663	570	749	210	750	716
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	0.52	0.48	0.10	0.46	0.17	0.34	0.88	0.45	0.30	0.34

Intersection Summary

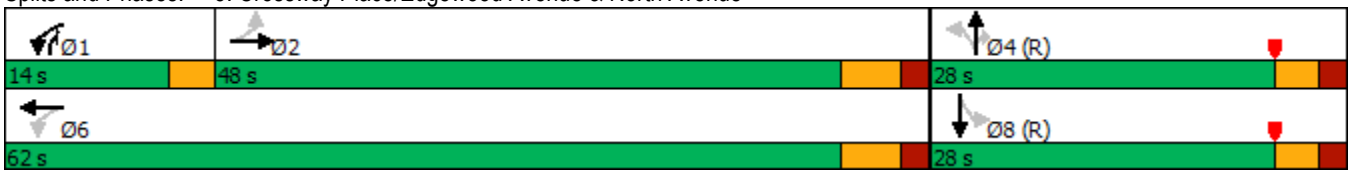
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

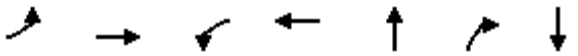
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	666	26	122	334	0	132	56	403	26	163	5
Future Volume (vph)	5	666	26	122	334	0	132	56	403	26	163	5
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994							0.850		0.997	
Flt Protected	0.950			0.950				0.966			0.993	
Satd. Flow (prot)	1900	1988	0	1900	2000	0	0	1932	1700	0	1980	0
Flt Permitted	0.550			0.167				0.582			0.941	
Satd. Flow (perm)	1100	1988	0	334	2000	0	0	1164	1700	0	1876	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3							151		1	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	5	701	27	128	352	0	139	59	424	27	172	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	728	0	128	352	0	0	198	424	0	204	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	48.0	48.0		14.0	62.0		28.0	28.0	14.0	28.0	28.0	
Total Split (%)	53.3%	53.3%		15.6%	68.9%		31.1%	31.1%	15.6%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	45.1	45.1		59.0	56.0			23.0	35.9		23.0	
Actuated g/C Ratio	0.50	0.50		0.66	0.62			0.26	0.40		0.26	
v/c Ratio	0.01	0.73		0.36	0.28			0.67	0.55		0.42	
Control Delay	12.2	23.4		8.6	8.5			42.7	15.8		31.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.2	23.4		8.6	8.5			42.7	15.8		31.1	
LOS	B	C		A	A			D	B		C	
Approach Delay		23.4			8.6			24.3			31.1	
Approach LOS		C			A			C			C	
Queue Length 50th (ft)	1	308		24	83			101	114		97	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	480		43	127			#193	193		162	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	551	997		410	1244			297	822		480	
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	0.01	0.73		0.31	0.28			0.67	0.52		0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 77.6%		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: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	728	128	352	198	424	204
v/c Ratio	0.01	0.73	0.36	0.28	0.67	0.55	0.42
Control Delay	12.2	23.4	8.6	8.5	42.7	15.8	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	23.4	8.6	8.5	42.7	15.8	31.1
Queue Length 50th (ft)	1	308	24	83	101	114	97
Queue Length 95th (ft)	7	480	43	127	#193	193	162
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	551	997	410	1244	297	822	480
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	0.01	0.73	0.31	0.28	0.67	0.52	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	705	571	154	197	12
Future Vol, veh/h	7	705	571	154	197	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	4	4	3	4	0
Mvmt Flow	7	734	595	160	205	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	755	0	-	0	1423	675
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	748	-
Critical Hdwy	4.1	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.536	3.3
Pot Cap-1 Maneuver	865	-	-	-	332	653
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	865	-	-	-	327	653
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	464	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	31.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	865	-	-	-	327	653
HCM Lane V/C Ratio	0.008	-	-	-	0.628	0.019
HCM Control Delay (s)	9.2	0	-	-	32.9	10.6
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	4	0.1

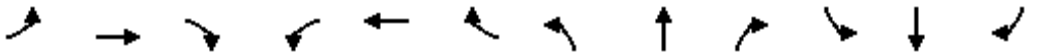
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	177	179	0	42	44
Future Vol, veh/h	0	177	179	0	42	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	1	3	0	6	0
Mvmt Flow	0	249	252	0	59	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	501	252
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	249	-
Critical Hdwy	-	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	0	-	-	0	523	792
Stage 1	0	-	-	0	781	-
Stage 2	0	-	-	0	783	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	523	792
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	783	-

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

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	633
HCM Lane V/C Ratio	-	-	0.191
HCM Control Delay (s)	-	-	12
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

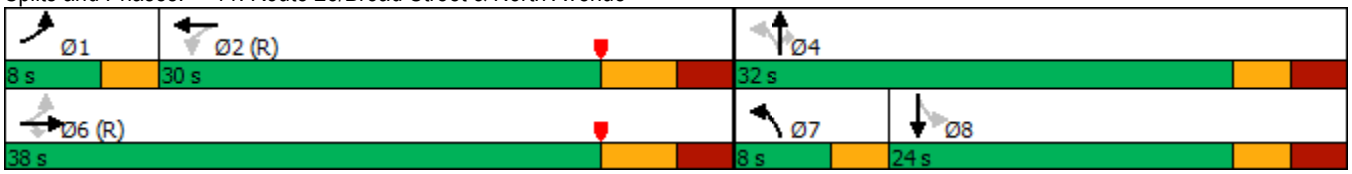


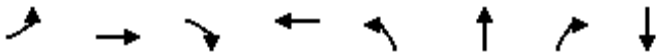
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	398	342	219	446	5	225	573	161	11	465	85
Future Volume (vph)	187	398	342	219	446	5	225	573	161	11	465	85
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.999				0.850		0.977	
Flt Protected	0.950				0.984		0.950				0.999	
Satd. Flow (prot)	1847	1509	1700	0	3761	0	1956	2039	1684	0	3723	0
Flt Permitted	0.255				0.710		0.240				0.834	
Satd. Flow (perm)	496	1509	1700	0	2713	0	494	2039	1684	0	3108	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			300		1						28	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		267			555			498			430	
Travel Time (s)		5.2			15.1			13.6			11.7	
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 (%)	8%	6%	5%	5%	4%	0%	2%	3%	6%	0%	5%	3%
Adj. Flow (vph)	203	433	372	238	485	5	245	623	175	12	505	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	203	433	372	0	728	0	245	623	175	0	609	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	36.2	32.2	32.2		23.7		27.8	24.8	24.8		16.8	
Actuated g/C Ratio	0.52	0.46	0.46		0.34		0.40	0.35	0.35		0.24	
v/c Ratio	0.56	0.62	0.39		0.79		0.81	0.86	0.29		0.79	
Control Delay	16.7	19.8	4.4		31.2		39.3	34.9	17.4		32.2	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	16.7	19.8	4.4		31.2		39.3	34.9	17.4		32.2	
LOS	B	B	A		C		D	C	B		C	
Approach Delay		13.5			31.2			33.0			32.2	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	46	139	17		172		68	237	52		121	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	82	235	64		#250		#157	#409	96		176	
Internal Link Dist (ft)		187			475			418			350	
Turn Bay Length (ft)	185											
Base Capacity (vph)	362	693	944		919		301	757	625		820	
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	0.56	0.62	0.39		0.79		0.81	0.82	0.28		0.74	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 26.7		Intersection LOS: C	
Intersection Capacity Utilization 105.3%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	203	433	372	728	245	623	175	609
v/c Ratio	0.56	0.62	0.39	0.79	0.81	0.86	0.29	0.79
Control Delay	16.7	19.8	4.4	31.2	39.3	34.9	17.4	32.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	19.8	4.4	31.2	39.3	34.9	17.4	32.2
Queue Length 50th (ft)	46	139	17	172	68	237	52	121
Queue Length 95th (ft)	82	235	64	#250	#157	#409	96	176
Internal Link Dist (ft)		187		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	362	693	944	919	301	757	625	820
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	0.56	0.62	0.39	0.79	0.81	0.82	0.28	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

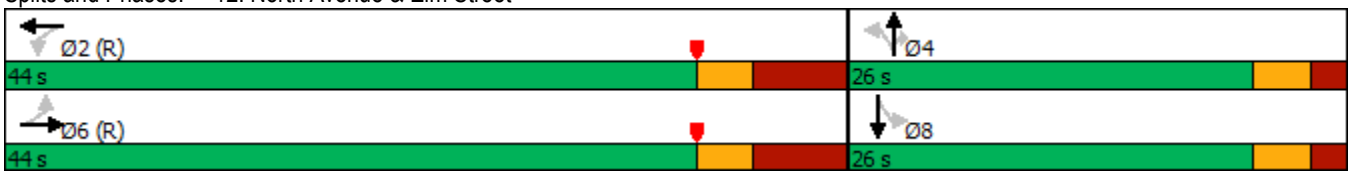
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	539	22	4	633	150	2	9	0	83	13	56
Future Volume (vph)	69	539	22	4	633	150	2	9	0	83	13	56
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.995			0.971						0.950	
Flt Protected		0.995						0.992			0.973	
Satd. Flow (prot)	0	3727	0	0	3718	0	0	1885	2000	0	1728	0
Flt Permitted		0.757			0.952			0.953			0.823	
Satd. Flow (perm)	0	2835	0	0	3539	0	0	1811	2000	0	1462	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			60						43	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			460			167			176	
Travel Time (s)		4.4			12.5			3.8			4.0	
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%	7%	0%	0%	5%	1%	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	77	599	24	4	703	167	2	10	0	92	14	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	700	0	0	874	0	0	12	0	0	168	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		10.0	10.0	10.0	10.0	10.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			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	None	
Act Effct Green (s)		45.6			45.6			11.4			11.4	
Actuated g/C Ratio		0.65			0.65			0.16			0.16	
v/c Ratio		0.38			0.38			0.04			0.62	
Control Delay		9.6			7.1			22.2			29.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.6			7.1			22.2			29.1	
LOS		A			A			C			C	
Approach Delay		9.6			7.1			22.2			29.1	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		73			63			4			52	
Queue Length 95th (ft)		164			m132			16			103	
Internal Link Dist (ft)		83			380			87			96	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1851			2328			543			468	
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		0.38			0.38			0.02			0.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 10.3		Intersection LOS: B	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			
* User Entered Value			

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

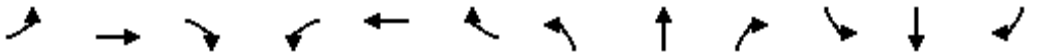
Splits and Phases: 12: North Avenue & Elm Street



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	700	874	12	168
v/c Ratio	0.38	0.38	0.04	0.62
Control Delay	9.6	7.1	22.2	29.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.6	7.1	22.2	29.1
Queue Length 50th (ft)	73	63	4	52
Queue Length 95th (ft)	164	m132	16	103
Internal Link Dist (ft)	83	380	87	96
Turn Bay Length (ft)				
Base Capacity (vph)	1851	2328	543	468
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	0.38	0.38	0.02	0.36

Intersection Summary

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

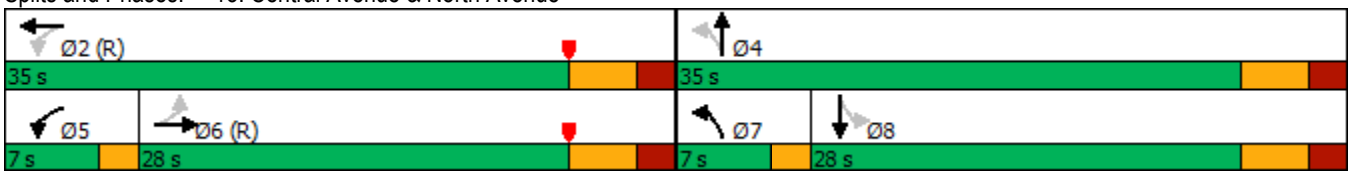


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	437	107	153	522	27	219	595	125	15	452	10
Future Volume (vph)	17	437	107	153	522	27	219	595	125	15	452	10
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.971			0.994			0.980			0.997	
Flt Protected		0.998			0.989			0.988			0.998	
Satd. Flow (prot)	0	3682	0	0	3736	0	0	3679	0	0	3781	0
Flt Permitted		0.919			0.631			0.662			0.905	
Satd. Flow (perm)	0	3391	0	0	2383	0	0	2465	0	0	3429	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					7			30				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		221			706			792			210	
Travel Time (s)		6.0			13.8			21.6			5.7	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	18	460	113	161	549	28	231	626	132	16	476	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	591	0	0	738	0	0	989	0	0	503	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		4.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		22.6			29.7			29.1			22.1	
Actuated g/C Ratio		0.32			0.42			0.42			0.32	
v/c Ratio		0.54			0.71			0.93			0.47	
Control Delay		16.5			20.7			35.2			20.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.5			20.7			35.2			20.8	
LOS		B			C			D			C	
Approach Delay		16.5			20.7			35.2			20.8	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)		112			115			164			89	
Queue Length 95th (ft)		65			160			#282			131	
Internal Link Dist (ft)		141			626			712			130	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1095			1044			1076			1097	
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		0.54			0.71			0.92			0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 87.2%		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.			

Splits and Phases: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	591	738	989	503
v/c Ratio	0.54	0.71	0.93	0.47
Control Delay	16.5	20.7	35.2	20.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.5	20.7	35.2	20.8
Queue Length 50th (ft)	112	115	164	89
Queue Length 95th (ft)	65	160	#282	131
Internal Link Dist (ft)	141	626	712	130
Turn Bay Length (ft)				
Base Capacity (vph)	1095	1044	1076	1097
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	0.54	0.71	0.92	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	532	0	0	547	36	5	41	10	21	0	121
Future Vol, veh/h	61	532	0	0	547	36	5	41	10	21	0	121
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	64	560	0	0	576	38	5	43	11	22	0	127

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	614	0	-	-	-	0	1347	1302	560	1310	1283	595
Stage 1	-	-	-	-	-	-	688	688	-	595	595	-
Stage 2	-	-	-	-	-	-	659	614	-	715	688	-
Critical Hdwy	4.15	-	-	-	-	-	7.15	6.55	6.25	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.545	4.045	3.345	3.545	4.045	3.345
Pot Cap-1 Maneuver	951	-	0	0	-	-	126	159	522	134	163	499
Stage 1	-	-	0	0	-	-	432	442	-	486	488	-
Stage 2	-	-	0	0	-	-	448	478	-	417	442	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	951	-	-	-	-	-	89	148	522	97	152	499
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	148	-	97	152	-
Stage 1	-	-	-	-	-	-	403	412	-	453	488	-
Stage 2	-	-	-	-	-	-	334	478	-	341	412	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	40.4	27.1
HCM LOS			E	D

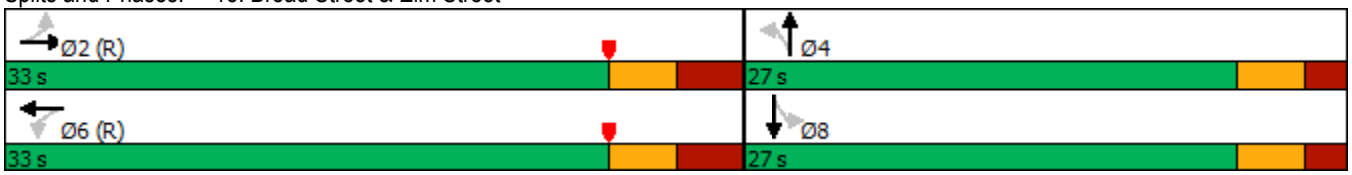
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	159	951	-	-	-	309
HCM Lane V/C Ratio	0.371	0.068	-	-	-	0.484
HCM Control Delay (s)	40.4	9.1	-	-	-	27.1
HCM Lane LOS	E	A	-	-	-	D
HCM 95th %tile Q(veh)	1.6	0.2	-	-	-	2.5

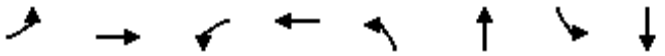
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	518	24	49	509	81	11	27	25	61	64	68
Future Volume (vph)	22	518	24	49	509	81	11	27	25	61	64	68
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.979			0.928			0.922	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1900	1986	0	1900	1958	0	1900	1856	0	1900	1844	0
Flt Permitted	0.392			0.424			0.668			0.722		
Satd. Flow (perm)	784	1986	0	848	1958	0	1336	1856	0	1444	1844	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			17			26			72	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	545	25	52	536	85	12	28	26	64	67	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	570	0	52	621	0	12	54	0	64	139	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	44.0	44.0		44.0	44.0		8.6	8.6		8.6	8.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.14	0.14		0.14	0.14	
v/c Ratio	0.04	0.39		0.08	0.43		0.06	0.19		0.31	0.43	
Control Delay	4.1	5.4		3.5	5.9		21.7	15.4		26.6	16.6	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	4.1	5.4		3.5	6.2		21.7	15.4		26.6	16.6	
LOS	A	A		A	A		C	B		C	B	
Approach Delay		5.4			6.0			16.5			19.7	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	2	72		2	132		4	9		21	22	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	10	148		16	222		15	34		49	62	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	575	1459		622	1441		489	697		529	721	
Starvation Cap Reductn	0	0		0	293		0	0		0	0	
Spillback Cap Reductn	0	75		0	0		0	9		6	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.41		0.08	0.54		0.02	0.08		0.12	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 55.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	23	570	52	621	12	54	64	139
v/c Ratio	0.04	0.39	0.08	0.43	0.06	0.19	0.31	0.43
Control Delay	4.1	5.4	3.5	5.9	21.7	15.4	26.6	16.6
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	4.1	5.4	3.5	6.2	21.7	15.4	26.6	16.6
Queue Length 50th (ft)	2	72	2	132	4	9	21	22
Queue Length 95th (ft)	10	148	16	222	15	34	49	62
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	575	1459	622	1441	489	697	529	721
Starvation Cap Reductn	0	0	0	293	0	0	0	0
Spillback Cap Reductn	0	75	0	0	0	9	6	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.41	0.08	0.54	0.02	0.08	0.12	0.19

Intersection Summary

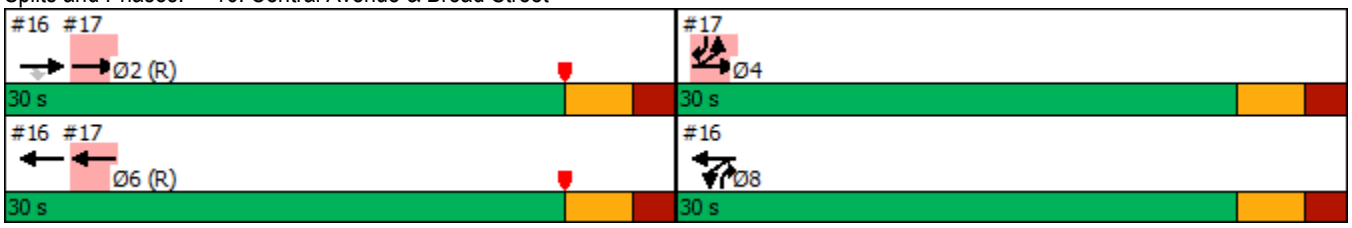


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	542	56	381	593	0	544		
Future Volume (vph)	542	56	381	593	0	544		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2000	1700	1900	2000	0	1730		
Flt Permitted			0.950					
Satd. Flow (perm)	2000	1700	1900	2000	0	1730		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		59				181		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	728			
Travel Time (s)	8.7			2.8	19.9			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Adj. Flow (vph)	571	59	401	624	0	573		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	571	59	401	624	0	573		
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0			5.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	24.0	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	25.3	25.3	24.7	60.0		24.7		
Actuated g/C Ratio	0.42	0.42	0.41	1.00		0.41		
v/c Ratio	0.68	0.08	0.51	0.31		0.70		
Control Delay	24.5	8.8	19.9	0.6		15.1		
Queue Delay	20.6	0.0	7.3	0.0		0.7		
Total Delay	45.2	8.8	27.2	0.6		15.8		
LOS	D	A	C	A		B		
Approach Delay	41.8			11.0	15.8			
Approach LOS	D			B	B			
Queue Length 50th (ft)	207	1	127	1		107		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	285	30	217	7		212		
Internal Link Dist (ft)	238			23	648			
Turn Bay Length (ft)			130					
Base Capacity (vph)	844	751	791	1978		826		
Starvation Cap Reductn	181	0	338	0		0		
Spillback Cap Reductn	276	0	0	74		65		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.01	0.08	0.89	0.33		0.75		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

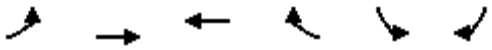
Splits and Phases: 16: Central Avenue & Broad Street



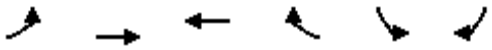


Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	571	59	401	624	573
v/c Ratio	0.68	0.08	0.51	0.31	0.70
Control Delay	24.5	8.8	19.9	0.6	15.1
Queue Delay	20.6	0.0	7.3	0.0	0.7
Total Delay	45.2	8.8	27.2	0.6	15.8
Queue Length 50th (ft)	207	1	127	1	107
Queue Length 95th (ft)	285	30	217	7	212
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	844	751	791	1978	826
Starvation Cap Reductn	181	0	338	0	0
Spillback Cap Reductn	276	0	0	74	65
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.01	0.08	0.89	0.33	0.75

Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	655	399	543	21	0	432		
Future Volume (vph)	655	399	543	21	0	432		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.994			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1900	2000	3777	0	0	2992		
Flt Permitted	0.950							
Satd. Flow (perm)	1900	2000	3777	0	0	2992		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			8			317		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	392		630			
Travel Time (s)		2.5	10.7		17.2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Adj. Flow (vph)	689	420	572	22	0	455		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	689	420	594	0	0	455		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	5.0
Minimum Split (s)	24.0		30.0			24.0	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.0		3.0			3.0	3.0	3.0
All-Red Time (s)	2.0		2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	5.0		5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	24.7	60.0	25.3			24.7		
Actuated g/C Ratio	0.41	1.00	0.42			0.41		
v/c Ratio	0.88	0.21	0.37			0.32		
Control Delay	29.4	0.2	12.7			4.4		
Queue Delay	49.8	0.0	1.4			0.1		
Total Delay	79.2	0.2	14.1			4.5		
LOS	E	A	B			A		
Approach Delay		49.3	14.1		4.5			
Approach LOS		D	B		A			
Queue Length 50th (ft)	225	0	73			16		

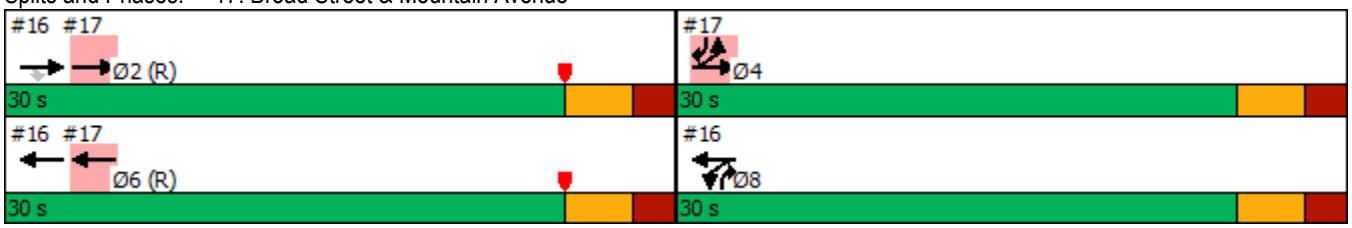


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	#411	m0	108			43		
Internal Link Dist (ft)		13	312		550			
Turn Bay Length (ft)						150		
Base Capacity (vph)	791	1978	1599			1431		
Starvation Cap Reductn	251	0	0			0		
Spillback Cap Reductn	0	0	772			202		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	1.28	0.21	0.72			0.37		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 30.1		Intersection LOS: C	
Intersection Capacity Utilization 55.4%		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: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	689	420	594	455
v/c Ratio	0.88	0.21	0.37	0.32
Control Delay	29.4	0.2	12.7	4.4
Queue Delay	49.8	0.0	1.4	0.1
Total Delay	79.2	0.2	14.1	4.5
Queue Length 50th (ft)	225	0	73	16
Queue Length 95th (ft)	#411	m0	108	43
Internal Link Dist (ft)		13	312	
Turn Bay Length (ft)				150
Base Capacity (vph)	791	1978	1599	1431
Starvation Cap Reductn	251	0	0	0
Spillback Cap Reductn	0	0	772	202
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.28	0.21	0.72	0.37

Intersection Summary

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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	701	4	14	709	0	2	0	8	0	0	0
Future Vol, veh/h	0	701	4	14	709	0	2	0	8	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	95	95	95	92	95	92	95	92	92	92
Heavy Vehicles, %	2	5	5	5	5	2	5	2	5	2	2	2
Mvmt Flow	0	738	4	15	746	0	2	0	8	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	746	0	0	742	0	0	1516	1516	740	1520	1518	746
Stage 1	-	-	-	-	-	-	740	740	-	776	776	-
Stage 2	-	-	-	-	-	-	776	776	-	744	742	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.15	6.52	6.25	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.545	4.018	3.345	3.518	4.018	3.318
Pot Cap-1 Maneuver	862	-	-	852	-	-	96	119	412	97	119	413
Stage 1	-	-	-	-	-	-	404	423	-	390	407	-
Stage 2	-	-	-	-	-	-	386	407	-	407	422	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	862	-	-	852	-	-	94	115	412	93	115	413
Mov Cap-2 Maneuver	-	-	-	-	-	-	94	115	-	93	115	-
Stage 1	-	-	-	-	-	-	404	423	-	390	395	-
Stage 2	-	-	-	-	-	-	374	395	-	399	422	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	20.3	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	246	862	-	-	852	-	-	-
HCM Lane V/C Ratio	0.043	-	-	-	0.017	-	-	-
HCM Control Delay (s)	20.3	0	-	-	9.3	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	703	6	16	720	3	9
Future Vol, veh/h	703	6	16	720	3	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	740	6	17	758	3	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	746	0	1535	743
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	792	-
Critical Hdwy	-	-	4.15	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.245	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	849	-	126	410
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	849	-	122	410
Mov Cap-2 Maneuver	-	-	-	-	122	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	426	-

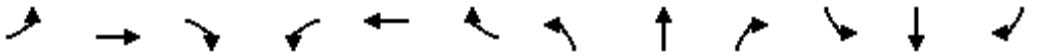
Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	19.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	-	-	849	-
HCM Lane V/C Ratio	0.049	-	-	0.02	-
HCM Control Delay (s)	19.7	-	-	9.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Kimley»Horn

DRAFT

2027 No-Build PM Peak



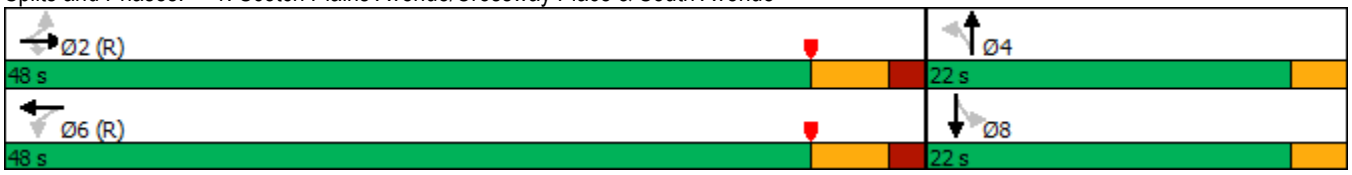
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	282	56	15	267	92	36	210	10	51	230	143
Future Volume (vph)	81	282	56	15	267	92	36	210	10	51	230	143
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.967			0.993			0.942	
Flt Protected		0.989			0.998		0.950			0.950		
Satd. Flow (prot)	0	2036	1750	0	1987	0	1956	2044	0	1956	1939	0
Flt Permitted		0.841			0.981		0.238			0.436		
Satd. Flow (perm)	0	1731	1750	0	1953	0	490	2044	0	898	1939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		42			4			44	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	85	297	59	16	281	97	38	221	11	54	242	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	382	59	0	394	0	38	232	0	54	393	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		44.2	44.2		44.2		16.8	16.8		16.8	16.8	
Actuated g/C Ratio		0.63	0.63		0.63		0.24	0.24		0.24	0.24	
v/c Ratio		0.35	0.05		0.32		0.32	0.47		0.25	0.79	
Control Delay		11.6	4.6		6.5		29.1	25.2		23.7	34.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		11.6	4.6		6.5		29.1	25.2		23.7	34.3	
LOS		B	A		A		C	C		C	C	
Approach Delay		10.6			6.5			25.8			33.0	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		123	5		65		13	81		18	135	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		201	m15		110		39	140		46	#231	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		1093	1127		1249		133	557		243	558	
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		0.35	0.05		0.32		0.29	0.42		0.22	0.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 77.4%		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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	382	59	394	38	232	54	393
v/c Ratio	0.35	0.05	0.32	0.32	0.47	0.25	0.79
Control Delay	11.6	4.6	6.5	29.1	25.2	23.7	34.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	4.6	6.5	29.1	25.2	23.7	34.3
Queue Length 50th (ft)	123	5	65	13	81	18	135
Queue Length 95th (ft)	201	m15	110	39	140	46	#231
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	1093	1127	1249	133	557	243	558
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	0.35	0.05	0.32	0.29	0.42	0.22	0.70

Intersection Summary

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.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	277	112	695	433	195	413
Future Volume (vph)	277	112	695	433	195	413
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.961					0.850
Flt Protected				0.970	0.950	
Satd. Flow (prot)	1979	0	0	3794	1956	1750
Flt Permitted				0.585	0.950	
Satd. Flow (perm)	1979	0	0	2288	1956	1750
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	292	118	732	456	205	435
Shared Lane Traffic (%)						
Lane Group Flow (vph)	410	0	0	1188	205	435
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	9.0		10.0	9.0	7.0	10.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	34.2			47.4	11.6	26.8
Actuated g/C Ratio	0.49			0.68	0.17	0.38
v/c Ratio	0.42			1.06dl	0.63	0.65
Control Delay	14.2			9.1	35.5	22.3
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	14.2			9.1	35.5	22.3
LOS	B			A	D	C
Approach Delay	14.2			9.1	26.5	
Approach LOS	B			A	C	
Queue Length 50th (ft)	107			105	83	150

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	201			179	135	210
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	966			1701	475	670
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	0.42			0.70	0.43	0.65

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad St & South Avenue



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	410	1188	205	435
v/c Ratio	0.42	1.06dl	0.63	0.65
Control Delay	14.2	9.1	35.5	22.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.2	9.1	35.5	22.3
Queue Length 50th (ft)	107	105	83	150
Queue Length 95th (ft)	201	179	135	210
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	966	1701	475	670
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	0.42	0.70	0.43	0.65

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

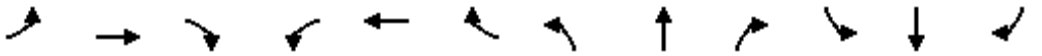
Site: 101 [Westfield RAB_Existing_PM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.539	11.9	LOS B	4.0	101.6	0.72	0.85	1.09	23.0
6	T1	418	2.0	427	2.0	0.539	12.0	LOS B	4.0	101.6	0.72	0.85	1.09	21.3
16	R2	340	3.0	347	3.0	0.539	9.6	LOS A	4.0	101.6	0.65	0.70	0.79	22.4
Approach		772	2.4	788	2.4	0.539	11.0	LOS B	4.0	101.6	0.69	0.78	0.96	21.8
North: SB - SR 28														
7	L2	485	2.0	495	2.0	0.521	10.5	LOS B	3.8	97.1	0.64	0.72	0.90	21.2
14	R2	561	2.0	572	2.0	0.603	12.4	LOS B	5.7	144.4	0.70	0.85	1.13	17.6
Approach		1046	2.0	1067	2.0	0.603	11.5	LOS B	5.7	144.4	0.68	0.79	1.02	19.5
West: EB - South Ave														
5u	U	2	0.0	2	0.0	0.991	49.1	LOS E	35.5	899.3	1.00	2.18	4.16	8.1
5	L2	558	1.0	569	1.0	0.991	49.2	LOS E	35.5	899.3	1.00	2.18	4.16	8.3
2	T1	405	3.0	413	3.0	0.991	40.0	LOS E	35.5	899.3	0.89	1.81	3.39	12.3
Approach		965	1.8	985	1.8	0.991	45.3	LOS E	35.5	899.3	0.95	2.02	3.84	9.8
All Vehicles		2783	2.1	2840	2.1	0.991	23.1	LOS C	35.5	899.3	0.78	1.22	1.98	14.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

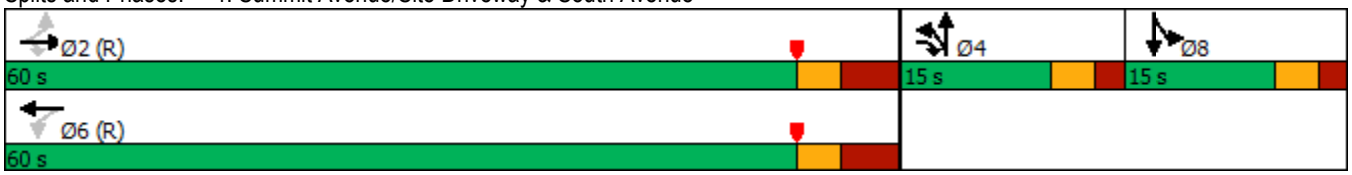


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	618	53	28	603	48	101	21	43	76	21	63
Future Volume (vph)	21	618	53	28	603	48	101	21	43	76	21	63
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	0		70	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.989			0.899			0.887	
Flt Protected		0.998			0.998		0.950			0.950		
Satd. Flow (prot)	0	2053	1785	0	3869	0	1956	1888	0	1995	1835	0
Flt Permitted		0.966			0.909		0.950			0.950		
Satd. Flow (perm)	0	1987	1785	0	3524	0	1956	1888	0	1995	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55		15			45			66	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			156			500			138	
Travel Time (s)		13.9			3.5			13.6			3.8	
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 (%)	5%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Adj. Flow (vph)	22	644	55	29	628	50	105	22	45	79	22	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	666	55	0	707	0	105	67	0	79	88	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		61.4	74.7		61.4		9.1	9.1		8.7	8.7	
Actuated g/C Ratio		0.68	0.83		0.68		0.10	0.10		0.10	0.10	
v/c Ratio		0.49	0.04		0.29		0.53	0.29		0.41	0.37	
Control Delay		11.2	0.7		8.1		48.3	20.7		44.5	19.1	
Queue Delay		0.2	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		11.4	0.7		8.1		48.3	20.7		44.5	19.1	
LOS		B	A		A		D	C		D	B	
Approach Delay		10.6			8.1			37.6			31.1	
Approach LOS		B			A			D			C	
Queue Length 50th (ft)		208	0		94		57	11		43	12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		314	6		131		109	50		86	55	
Internal Link Dist (ft)		431			76			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)		1355	1496		2408		217	249		221	262	
Starvation Cap Reductn		169	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		0.56	0.04		0.29		0.48	0.27		0.36	0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	666	55	707	105	67	79	88
v/c Ratio	0.49	0.04	0.29	0.53	0.29	0.41	0.37
Control Delay	11.2	0.7	8.1	48.3	20.7	44.5	19.1
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	0.7	8.1	48.3	20.7	44.5	19.1
Queue Length 50th (ft)	208	0	94	57	11	43	12
Queue Length 95th (ft)	314	6	131	109	50	86	55
Internal Link Dist (ft)	431		76		420		58
Turn Bay Length (ft)							
Base Capacity (vph)	1355	1496	2408	217	249	221	262
Starvation Cap Reductn	169	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	0.56	0.04	0.29	0.48	0.27	0.36	0.34

Intersection Summary

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	643	47	29	561	35	89
Future Vol, veh/h	643	47	29	561	35	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	0	3	2	0	1
Mvmt Flow	649	47	29	567	35	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	696	0	1015	673
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	342	-
Critical Hdwy	-	-	4.145	-	6.6	6.215
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2285	-	3.5	3.3095
Pot Cap-1 Maneuver	-	-	892	-	252	456
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	697	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	892	-	240	456
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	20
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	364	-	-	892	-
HCM Lane V/C Ratio	0.344	-	-	0.033	-
HCM Control Delay (s)	20	-	-	9.2	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

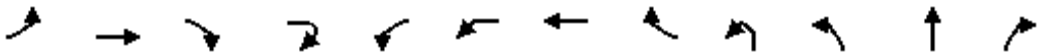
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	725	561	14	18	28
Future Vol, veh/h	5	725	561	14	18	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	5	747	578	14	19	29

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	592	0	-	0	1342	296
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	757	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	994	-	-	-	157	706
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	467	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	994	-	-	-	156	706
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	994	-	-	-	297
HCM Lane V/C Ratio	0.005	-	-	-	0.16
HCM Control Delay (s)	8.6	0	-	-	19.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	172	476	215	5	30	51	425	190	5	187	575	32
Future Volume (vph)	172	476	215	5	30	51	425	190	5	187	575	32
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.953						0.850			0.992	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1956	3728	0	0	0	1956	2059	1750	0	1956	2042	0
Flt Permitted	0.270					0.273				0.128		
Satd. Flow (perm)	556	3728	0	0	0	562	2059	1750	0	264	2042	0
Right Turn on Red				Yes				Yes				Yes
Satd. Flow (RTOR)		1						139			3	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	181	501	226	5	32	54	447	200	5	197	605	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	732	0	0	0	86	447	200	0	202	639	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	8.4%	43.2%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max			None	None	None	None	None	None	None	
Act Effct Green (s)	39.1	30.2				38.4	28.3	28.3		41.4	31.3	
Actuated g/C Ratio	0.43	0.33				0.42	0.31	0.31		0.45	0.34	
v/c Ratio	0.58	0.60				0.28	0.70	0.31		0.96	0.92	
Control Delay	25.1	29.0				17.4	35.3	10.0		73.3	48.8	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	25.1	29.0				17.4	35.3	10.0		73.3	48.8	
LOS	C	C				B	D	A		E	D	
Approach Delay		28.2					26.3				54.7	
Approach LOS		C					C				D	
Queue Length 50th (ft)	64	196				29	234	26		67	360	



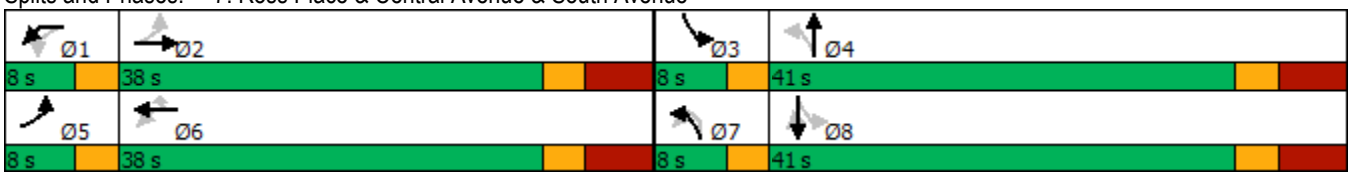
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	173	616	173	80
Future Volume (vph)	173	616	173	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1956	2059	1750	0
Flt Permitted	0.128			
Satd. Flow (perm)	264	2059	1750	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%
Adj. Flow (vph)	182	648	182	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	182	648	266	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	41.0	41.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	41.4	31.3	31.3	
Actuated g/C Ratio	0.45	0.34	0.34	
v/c Ratio	0.86	0.92	0.39	
Control Delay	54.1	50.0	13.8	
Queue Delay	0.0	0.0	0.0	
Total Delay	54.1	50.0	13.8	
LOS	D	D	B	
Approach Delay		41.9		
Approach LOS		D		
Queue Length 50th (ft)	60	368	59	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	107	257				56	343	78		#181	#571	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	312	1225				311	676	668		211	740	
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	0.58	0.60				0.28	0.66	0.30		0.96	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.8			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 38.2		Intersection LOS: D	
Intersection Capacity Utilization 87.8%		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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#154	#578	124	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	211	744	713	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.86	0.87	0.37	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	181	732	86	447	200	202	639	182	648	266
v/c Ratio	0.58	0.60	0.28	0.70	0.31	0.96	0.92	0.86	0.92	0.39
Control Delay	25.1	29.0	17.4	35.3	10.0	73.3	48.8	54.1	50.0	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	29.0	17.4	35.3	10.0	73.3	48.8	54.1	50.0	13.8
Queue Length 50th (ft)	64	196	29	234	26	67	360	60	368	59
Queue Length 95th (ft)	107	257	56	343	78	#181	#571	#154	#578	124
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	312	1225	311	676	668	211	740	211	744	713
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	0.58	0.60	0.28	0.66	0.30	0.96	0.86	0.86	0.87	0.37

Intersection Summary

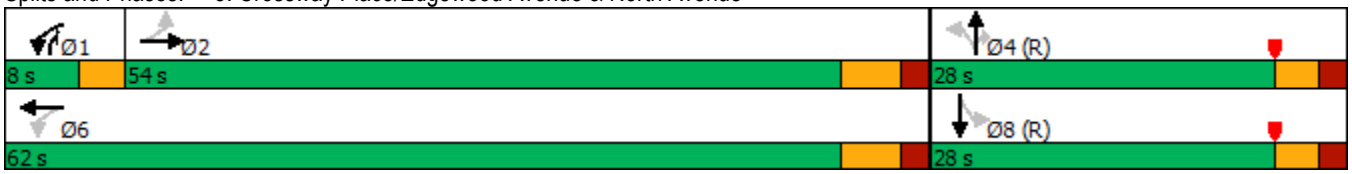
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

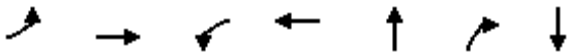
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	588	41	357	661	5	92	61	226	10	36	15
Future Volume (vph)	5	588	41	357	661	5	92	61	226	10	36	15
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999				0.850		0.967	
Flt Protected	0.950			0.950				0.971			0.992	
Satd. Flow (prot)	1956	2038	0	1956	2057	0	0	1999	1750	0	1975	0
Flt Permitted	0.335			0.240				0.786			0.948	
Satd. Flow (perm)	690	2038	0	494	2057	0	0	1618	1750	0	1887	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			1				238		16	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	619	43	376	696	5	97	64	238	11	38	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	662	0	376	701	0	0	161	238	0	65	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		8.0	62.0		28.0	28.0	8.0	28.0	28.0	
Total Split (%)	60.0%	60.0%		8.9%	68.9%		31.1%	31.1%	8.9%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	48.0	48.0		59.0	56.0			23.0	33.0		23.0	
Actuated g/C Ratio	0.53	0.53		0.66	0.62			0.26	0.37		0.26	
v/c Ratio	0.01	0.61		0.93	0.55			0.39	0.30		0.13	
Control Delay	10.2	17.3		42.9	11.7			31.1	3.8		21.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.2	17.3		42.9	11.7			31.1	3.8		21.5	
LOS	B	B		D	B			C	A		C	
Approach Delay		17.3			22.6			14.8			21.5	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	1	243		81	206			76	0		21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	353		#202	298			134	46		53	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	368	1089		405	1280			413	792		494	
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	0.01	0.61		0.93	0.55			0.39	0.30		0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 74.8%		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: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	662	376	701	161	238	65
v/c Ratio	0.01	0.61	0.93	0.55	0.39	0.30	0.13
Control Delay	10.2	17.3	42.9	11.7	31.1	3.8	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	17.3	42.9	11.7	31.1	3.8	21.5
Queue Length 50th (ft)	1	243	81	206	76	0	21
Queue Length 95th (ft)	7	353	#202	298	134	46	53
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	368	1089	405	1280	413	792	494
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	0.01	0.61	0.93	0.55	0.39	0.30	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	623	742	148	230	36
Future Vol, veh/h	5	623	742	148	230	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	677	807	161	250	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	968	0	-	0	1575	888
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	687	-
Critical Hdwy	4.12	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	712	-	-	-	293	550
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	499	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	712	-	-	-	290	550
Mov Cap-2 Maneuver	-	-	-	-	290	-
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	499	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	55.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	712	-	-	-	290	550
HCM Lane V/C Ratio	0.008	-	-	-	0.862	0.071
HCM Control Delay (s)	10.1	0	-	-	62.4	12
HCM Lane LOS	B	A	-	-	F	B
HCM 95th %tile Q(veh)	0	-	-	-	7.5	0.2

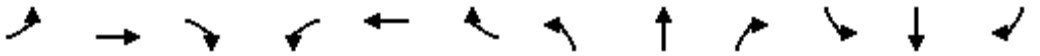
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	191	200	0	52	39
Future Vol, veh/h	0	191	200	0	52	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	227	238	0	62	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	465	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	227	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	559	806
Stage 1	0	-	-	0	806	-
Stage 2	0	-	-	0	815	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	559	806
Mov Cap-2 Maneuver	-	-	-	-	559	-
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	644
HCM Lane V/C Ratio	-	-	0.168
HCM Control Delay (s)	-	-	11.7
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

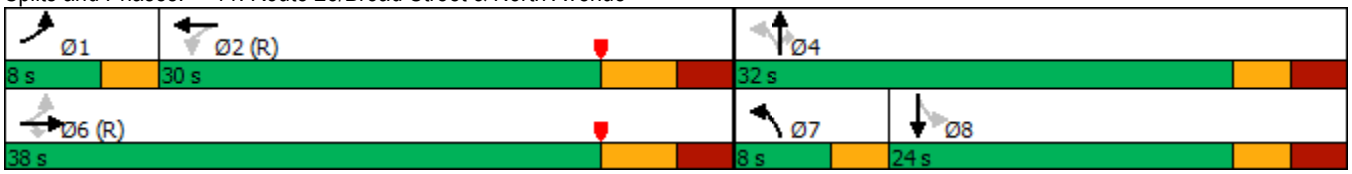


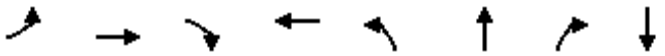
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	376	382	228	526	6	267	492	162	33	435	136
Future Volume (vph)	155	376	382	228	526	6	267	492	162	33	435	136
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.999				0.850		0.966	
Flt Protected	0.950				0.985		0.950				0.997	
Satd. Flow (prot)	1956	1538	1750	0	3813	0	1956	2059	1785	0	3720	0
Flt Permitted	0.222				0.732		0.223				0.856	
Satd. Flow (perm)	457	1538	1750	0	2833	0	459	2059	1785	0	3194	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			320		1						52	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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
Heavy Vehicles (%)	2%	4%	2%	3%	3%	0%	2%	2%	0%	0%	3%	5%
Adj. Flow (vph)	161	392	398	238	548	6	278	513	169	34	453	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	392	398	0	792	0	278	513	169	0	629	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	36.4	32.4	32.4		23.9		27.6	24.6	24.6		16.6	
Actuated g/C Ratio	0.52	0.46	0.46		0.34		0.39	0.35	0.35		0.24	
v/c Ratio	0.45	0.55	0.41		0.82		0.97	0.71	0.27		0.79	
Control Delay	13.6	17.8	4.4		27.5		66.7	25.7	17.1		30.8	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	13.6	17.8	4.4		27.5		66.7	25.7	17.1		30.8	
LOS	B	B	A		C		E	C	B		C	
Approach Delay		11.5			27.5			36.1			30.8	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)	35	121	19		191		79	180	49		119	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	66	204	67		#277		#203	281	92		176	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185											
Base Capacity (vph)	357	712	982		966		287	764	663		859	
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	0.45	0.55	0.41		0.82		0.97	0.67	0.25		0.73	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 26.0		Intersection LOS: C	
Intersection Capacity Utilization 103.6%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	161	392	398	792	278	513	169	629
v/c Ratio	0.45	0.55	0.41	0.82	0.97	0.71	0.27	0.79
Control Delay	13.6	17.8	4.4	27.5	66.7	25.7	17.1	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	17.8	4.4	27.5	66.7	25.7	17.1	30.8
Queue Length 50th (ft)	35	121	19	191	79	180	49	119
Queue Length 95th (ft)	66	204	67	#277	#203	281	92	176
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	357	712	982	966	287	764	663	859
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	0.45	0.55	0.41	0.82	0.97	0.67	0.25	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

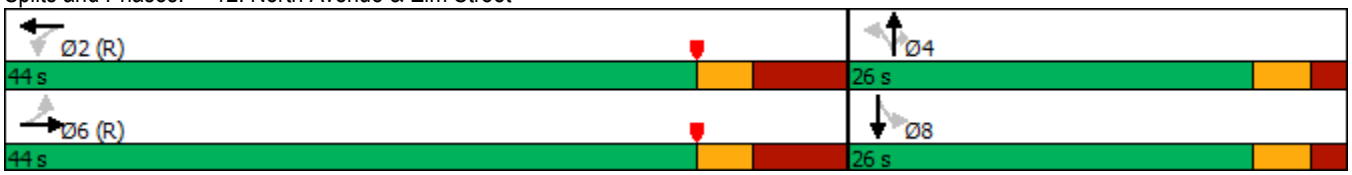
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	483	21	21	730	163	16	16	9	105	19	174
Future Volume (vph)	66	483	21	21	730	163	16	16	9	105	19	174
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.994			0.973				0.850		0.921	
Flt Protected		0.994			0.999			0.976			0.983	
Satd. Flow (prot)	0	3845	0	0	3788	0	0	1854	1700	0	1691	0
Flt Permitted		0.726			0.931			0.822			0.871	
Satd. Flow (perm)	0	2808	0	0	3530	0	0	1562	1700	0	1498	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			54				78		103	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
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 (%)	0%	3%	0%	0%	3%	0%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	69	503	22	22	760	170	17	17	9	109	20	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	594	0	0	952	0	0	34	9	0	310	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0	26.0	26.0	26.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	Max	Max	
Act Effct Green (s)		36.0			36.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.51			0.51			0.30	0.30		0.30	
v/c Ratio		0.41			0.52			0.07	0.02		0.60	
Control Delay		12.8			14.0			18.2	0.0		19.2	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		12.8			14.0			18.2	0.0		19.2	
LOS		B			B			B	A		B	
Approach Delay		12.8			14.0			14.4			19.2	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		85			132			10	0		76	
Queue Length 95th (ft)		140			m132			31	0		158	
Internal Link Dist (ft)		83			399			113			96	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1448			1841			468	564		521	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.41			0.52			0.07	0.02		0.60	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

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

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	594	952	34	9	310
v/c Ratio	0.41	0.52	0.07	0.02	0.60
Control Delay	12.8	14.0	18.2	0.0	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	14.0	18.2	0.0	19.2
Queue Length 50th (ft)	85	132	10	0	76
Queue Length 95th (ft)	140	m132	31	0	158
Internal Link Dist (ft)	83	399	113		96
Turn Bay Length (ft)					
Base Capacity (vph)	1448	1841	468	564	521
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.41	0.52	0.07	0.02	0.60

Intersection Summary

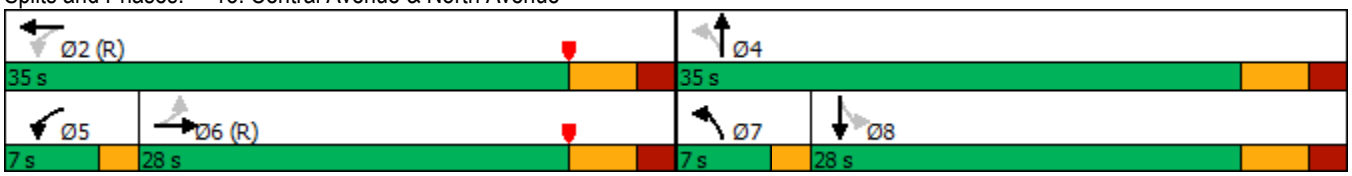
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	483	159	214	673	62	201	534	200	57	666	16
Future Volume (vph)	32	483	159	214	673	62	201	534	200	57	666	16
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.965			0.990			0.968			0.997	
Flt Protected		0.998			0.989			0.989			0.996	
Satd. Flow (prot)	0	3767	0	0	3830	0	0	3745	0	0	3884	0
Flt Permitted		0.859			0.580			0.559			0.770	
Satd. Flow (perm)	0	3243	0	0	2246	0	0	2117	0	0	3003	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					13			61				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	34	508	167	225	708	65	212	562	211	60	701	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	709	0	0	998	0	0	985	0	0	778	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		22.4			29.4			29.4			22.4	
Actuated g/C Ratio		0.32			0.42			0.42			0.32	
v/c Ratio		0.68			1.02			1.03			0.81	
Control Delay		18.4			55.0			58.1			30.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.4			55.0			58.1			30.2	
LOS		B			D			E			C	
Approach Delay		18.4			55.0			58.1			30.2	
Approach LOS		B			D			E			C	
Queue Length 50th (ft)		85			~173			~166			159	
Queue Length 95th (ft)		99			#322			#315			#248	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1037			982			957			960	
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		0.68			1.02			1.03			0.81	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 42.8		Intersection LOS: D	
Intersection Capacity Utilization 103.5%		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.			

Splits and Phases: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	709	998	985	778
v/c Ratio	0.68	1.02	1.03	0.81
Control Delay	18.4	55.0	58.1	30.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.4	55.0	58.1	30.2
Queue Length 50th (ft)	85	~173	~166	159
Queue Length 95th (ft)	99	#322	#315	#248
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	1037	982	957	960
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	0.68	1.02	1.03	0.81

Intersection Summary

~ 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.

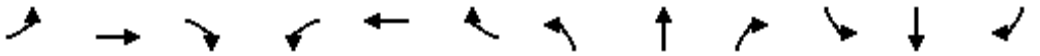
Intersection	
Int Delay, s/veh	18.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	635	0	0	515	55	26	42	15	36	0	113
Future Vol, veh/h	125	635	0	0	515	55	26	42	15	36	0	113
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	132	668	0	0	542	58	27	44	16	38	0	119

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	600	0	-	-	-	0	1563	1532	668	1533	1503	571
Stage 1	-	-	-	-	-	-	932	932	-	571	571	-
Stage 2	-	-	-	-	-	-	631	600	-	962	932	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	977	-	0	0	-	-	91	117	458	95	122	520
Stage 1	-	-	0	0	-	-	320	345	-	506	505	-
Stage 2	-	-	0	0	-	-	469	490	-	308	345	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	977	-	-	-	-	-	63	101	458	55	106	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	63	101	-	55	106	-
Stage 1	-	-	-	-	-	-	277	298	-	438	505	-
Stage 2	-	-	-	-	-	-	362	490	-	219	298	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0	147.8	102.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	96	977	-	-	-	171
HCM Lane V/C Ratio	0.91	0.135	-	-	-	0.917
HCM Control Delay (s)	147.8	9.3	-	-	-	102.5
HCM Lane LOS	F	A	-	-	-	F
HCM 95th %tile Q(veh)	5.2	0.5	-	-	-	6.8

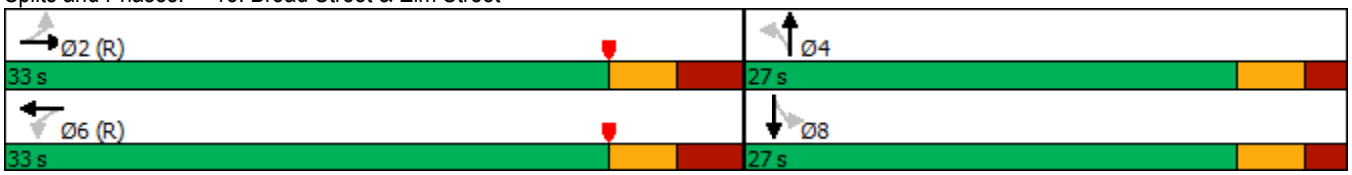


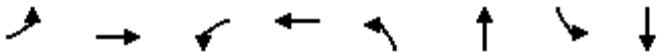
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	565	65	61	454	76	28	69	47	128	90	89
Future Volume (vph)	62	565	65	61	454	76	28	69	47	128	90	89
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.978			0.940			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1956	2028	0	1956	2014	0	1956	1935	0	1956	1904	0
Flt Permitted	0.406			0.335			0.599			0.679		
Satd. Flow (perm)	836	2028	0	690	2014	0	1233	1935	0	1398	1904	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			18			49			94	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	65	595	68	64	478	80	29	73	49	135	95	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	663	0	64	558	0	29	122	0	135	189	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	37.6	37.6		37.6	37.6		11.4	11.4		11.4	11.4	
Actuated g/C Ratio	0.63	0.63		0.63	0.63		0.19	0.19		0.19	0.19	
v/c Ratio	0.12	0.52		0.15	0.44		0.12	0.30		0.51	0.43	
Control Delay	6.5	8.8		6.8	8.1		19.4	14.3		27.6	13.7	
Queue Delay	0.0	0.1		0.0	0.5		0.0	0.0		0.0	0.0	
Total Delay	6.5	8.9		6.8	8.5		19.4	14.3		27.7	13.7	
LOS	A	A		A	A		B	B		C	B	
Approach Delay		8.7			8.3			15.3			19.5	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	8	108		9	117		9	23		45	30	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	28	236		35	206		25	54		81	69	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	524	1275		432	1268		452	740		512	757	
Starvation Cap Reductn	0	0		0	312		0	0		0	0	
Spillback Cap Reductn	0	74		0	0		0	18		11	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.55		0.15	0.58		0.06	0.17		0.27	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	663	64	558	29	122	135	189
v/c Ratio	0.12	0.52	0.15	0.44	0.12	0.30	0.51	0.43
Control Delay	6.5	8.8	6.8	8.1	19.4	14.3	27.6	13.7
Queue Delay	0.0	0.1	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	6.5	8.9	6.8	8.5	19.4	14.3	27.7	13.7
Queue Length 50th (ft)	8	108	9	117	9	23	45	30
Queue Length 95th (ft)	28	236	35	206	25	54	81	69
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	524	1275	432	1268	452	740	512	757
Starvation Cap Reductn	0	0	0	312	0	0	0	0
Spillback Cap Reductn	0	74	0	0	0	18	11	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.55	0.15	0.58	0.06	0.17	0.27	0.25

Intersection Summary



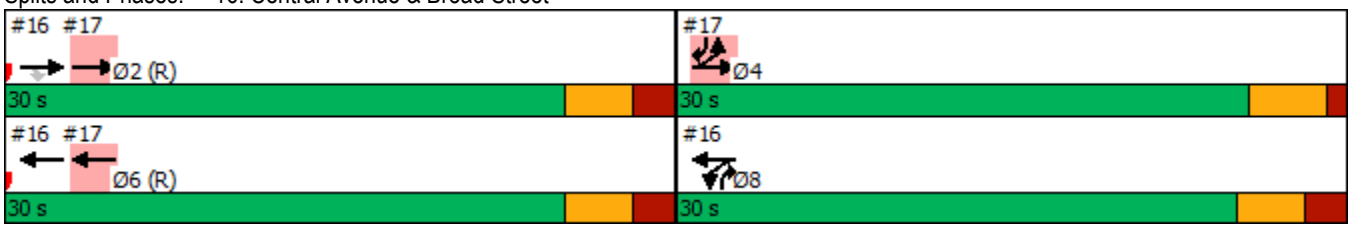
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	652	87	561	540	0	411		
Future Volume (vph)	652	87	561	540	0	411		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2059	1750	1956	2059	0	1781		
Flt Permitted			0.950					
Satd. Flow (perm)	2059	1750	1956	2059	0	1781		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		92				124		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	686	92	591	568	0	433		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	686	92	591	568	0	433		
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0			7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	26.1	26.1	23.9	60.0		23.9		
Actuated g/C Ratio	0.44	0.44	0.40	1.00		0.40		
v/c Ratio	0.77	0.11	0.76	0.28		0.55		
Control Delay	24.2	5.9	25.8	0.3		12.5		
Queue Delay	20.4	0.0	26.9	0.0		0.2		
Total Delay	44.5	5.9	52.6	0.3		12.6		
LOS	D	A	D	A		B		
Approach Delay	40.0			27.0	12.6			
Approach LOS	D			C	B			
Queue Length 50th (ft)	224	4	214	0		76		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	#387	m30	316	0		149		
Internal Link Dist (ft)	238			23	636			
Turn Bay Length (ft)			130					
Base Capacity (vph)	896	813	815	2059		814		
Starvation Cap Reductn	103	0	241	0		0		
Spillback Cap Reductn	219	0	0	30		48		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.01	0.11	1.03	0.28		0.57		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 67.5%		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: 16: Central Avenue & Broad Street

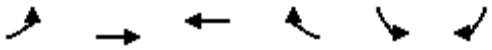




Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	686	92	591	568	433
v/c Ratio	0.77	0.11	0.76	0.28	0.55
Control Delay	24.2	5.9	25.8	0.3	12.5
Queue Delay	20.4	0.0	26.9	0.0	0.2
Total Delay	44.5	5.9	52.6	0.3	12.6
Queue Length 50th (ft)	224	4	214	0	76
Queue Length 95th (ft)	#387	m30	316	0	149
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	896	813	815	2059	814
Starvation Cap Reductn	103	0	241	0	0
Spillback Cap Reductn	219	0	0	30	48
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.01	0.11	1.03	0.28	0.57

Intersection Summary

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.



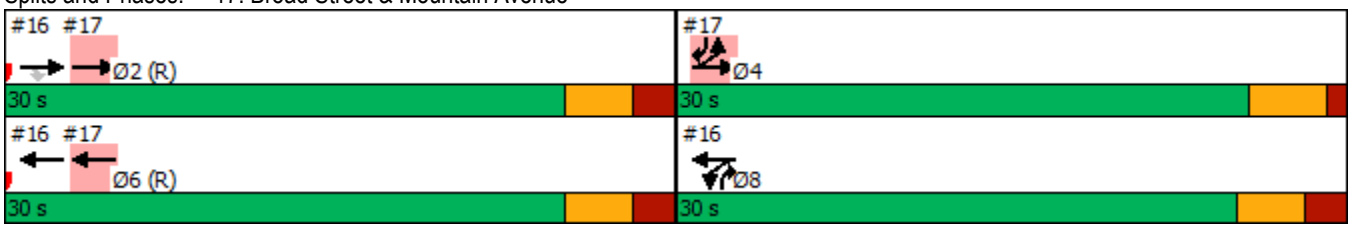
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	500	558	584	26	0	517		
Future Volume (vph)	500	558	584	26	0	517		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.994			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1956	2059	3888	0	0	3080		
Flt Permitted	0.950							
Satd. Flow (perm)	1956	2059	3888	0	0	3080		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			9			276		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	526	587	615	27	0	544		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	526	587	642	0	0	544		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	24.4	60.0	26.1			24.4		
Actuated g/C Ratio	0.41	1.00	0.44			0.41		
v/c Ratio	0.66	0.29	0.38			0.38		
Control Delay	19.5	0.3	12.5			6.5		
Queue Delay	46.3	0.0	55.3			0.1		
Total Delay	65.8	0.3	67.7			6.6		
LOS	E	A	E			A		
Approach Delay		31.2	67.7		6.6			
Approach LOS		C	E		A			
Queue Length 50th (ft)	156	0	80			32		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	m234	m0	117			64		
Internal Link Dist (ft)		13	318		952			
Turn Bay Length (ft)						150		
Base Capacity (vph)	831	2059	1697			1467		
Starvation Cap Reductn	344	0	0			0		
Spillback Cap Reductn	0	0	1236			214		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	1.08	0.29	1.39			0.43		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 35.6		Intersection LOS: D	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	526	587	642	544
v/c Ratio	0.66	0.29	0.38	0.38
Control Delay	19.5	0.3	12.5	6.5
Queue Delay	46.3	0.0	55.3	0.1
Total Delay	65.8	0.3	67.7	6.6
Queue Length 50th (ft)	156	0	80	32
Queue Length 95th (ft)	m234	m0	117	64
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	831	2059	1697	1467
Starvation Cap Reductn	344	0	0	0
Spillback Cap Reductn	0	0	1236	214
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.08	0.29	1.39	0.43

Intersection Summary

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	565	11	37	810	0	11	0	37	0	0	0
Future Vol, veh/h	0	565	11	37	810	0	11	0	37	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	595	12	39	853	0	12	0	39	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	853	0	0	607	0	0	1532	1532	601	1552	1538	853
Stage 1	-	-	-	-	-	-	601	601	-	931	931	-
Stage 2	-	-	-	-	-	-	931	931	-	621	607	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	786	-	-	971	-	-	95	117	500	92	116	359
Stage 1	-	-	-	-	-	-	487	489	-	320	346	-
Stage 2	-	-	-	-	-	-	320	346	-	475	486	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	786	-	-	971	-	-	89	108	500	80	107	359
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	108	-	80	107	-
Stage 1	-	-	-	-	-	-	487	489	-	320	320	-
Stage 2	-	-	-	-	-	-	296	320	-	438	486	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	23.7	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	243	786	-	-	971	-	-	-
HCM Lane V/C Ratio	0.208	-	-	-	0.04	-	-	-
HCM Control Delay (s)	23.7	0	-	-	8.9	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	586	16	42	831	16	42
Future Vol, veh/h	586	16	42	831	16	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	617	17	44	875	17	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	634	0	1589	626
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	963	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	949	-	119	484
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	370	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	949	-	108	484
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	337	-

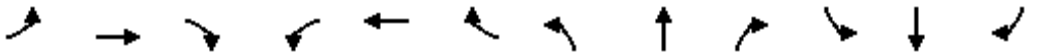
Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	24.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	247	-	-	949	-
HCM Lane V/C Ratio	0.247	-	-	0.047	-
HCM Control Delay (s)	24.3	-	-	9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Kimley»Horn

DRAFT

2027 No-Build Saturday
Midday Peak



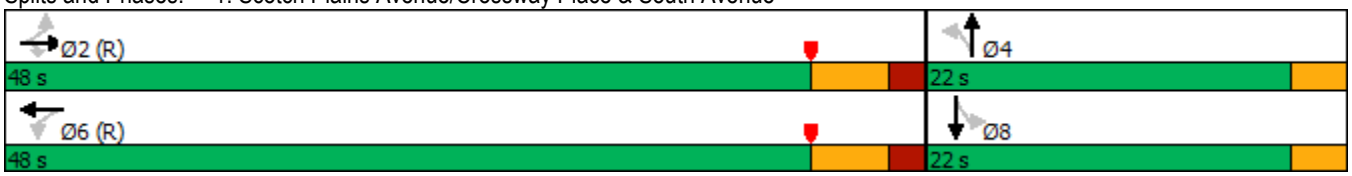
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	373	45	25	348	74	43	192	19	62	166	125
Future Volume (vph)	157	373	45	25	348	74	43	192	19	62	166	125
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.986			0.936	
Flt Protected		0.985			0.997		0.950			0.950		
Satd. Flow (prot)	0	2062	1785	0	2040	0	1995	2043	0	1975	1966	0
Flt Permitted		0.749			0.959		0.280			0.414		
Satd. Flow (perm)	0	1568	1785	0	1962	0	588	2043	0	861	1966	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		25			7			53	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	1%	0%	0%	4%	0%	1%	0%	1%	5%	1%	0%	0%
Adj. Flow (vph)	164	389	47	26	363	77	45	200	20	65	173	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	553	47	0	466	0	45	220	0	65	303	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		46.7	46.7		46.7		14.3	14.3		14.3	14.3	
Actuated g/C Ratio		0.67	0.67		0.67		0.20	0.20		0.20	0.20	
v/c Ratio		0.53	0.04		0.35		0.38	0.52		0.37	0.69	
Control Delay		13.5	4.7		6.4		31.9	27.7		28.8	28.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		13.5	4.7		6.4		31.9	27.7		28.8	28.8	
LOS		B	A		A		C	C		C	C	
Approach Delay		12.8			6.4			28.4			28.8	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		159	1		68		17	82		24	99	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		282	m21		141		43	132		54	162	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		1046	1207		1318		159	559		233	572	
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		0.53	0.04		0.35		0.28	0.39		0.28	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 84.8%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	553	47	466	45	220	65	303
v/c Ratio	0.53	0.04	0.35	0.38	0.52	0.37	0.69
Control Delay	13.5	4.7	6.4	31.9	27.7	28.8	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	4.7	6.4	31.9	27.7	28.8	28.8
Queue Length 50th (ft)	159	1	68	17	82	24	99
Queue Length 95th (ft)	282	m21	141	43	132	54	162
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	1046	1207	1318	159	559	233	572
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	0.53	0.04	0.35	0.28	0.39	0.28	0.53

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	401	73	406	412	108	305
Future Volume (vph)	401	73	406	412	108	305
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.979					0.850
Flt Protected				0.976	0.950	
Satd. Flow (prot)	2019	0	0	3875	1995	1785
Flt Permitted				0.587	0.950	
Satd. Flow (perm)	2019	0	0	2331	1995	1785
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	12%	1%	0%	0%	0%
Adj. Flow (vph)	409	74	414	420	110	311
Shared Lane Traffic (%)						
Lane Group Flow (vph)	483	0	0	834	110	311
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	7.0		10.0	9.0	7.0	10.0
Minimum Split (s)	33.0		13.0	35.0	22.0	13.0
Total Split (s)	33.0		13.0	46.0	24.0	13.0
Total Split (%)	47.1%		18.6%	65.7%	34.3%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	39.5			52.7	8.7	21.5
Actuated g/C Ratio	0.56			0.75	0.12	0.31
v/c Ratio	0.42			0.44	0.45	0.57
Control Delay	11.4			4.2	33.8	23.7
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.4			4.2	33.8	23.7
LOS	B			A	C	C
Approach Delay	11.4			4.2	26.3	
Approach LOS	B			A	C	
Queue Length 50th (ft)	116			51	45	107

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	206			88	86	164
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	1139			1914	541	548
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	0.42			0.44	0.20	0.57

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Broad St & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	483	834	110	311
v/c Ratio	0.42	0.44	0.45	0.57
Control Delay	11.4	4.2	33.8	23.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.4	4.2	33.8	23.7
Queue Length 50th (ft)	116	51	45	107
Queue Length 95th (ft)	206	88	86	164
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1139	1914	541	548
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	0.42	0.44	0.20	0.57

Intersection Summary

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Existing_SAT (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.666	15.1	LOS C	7.1	181.1	0.78	1.02	1.43	21.1
6	T1	341	0.0	371	0.0	0.666	15.1	LOS C	7.1	181.1	0.78	1.02	1.43	19.3
16	R2	385	7.0	418	7.0	0.666	11.1	LOS B	7.1	181.1	0.66	0.76	0.97	21.7
Approach		740	3.6	804	3.6	0.666	13.0	LOS B	7.1	181.1	0.72	0.88	1.19	20.5
North: SB - SR 28														
7	L2	387	0.0	421	0.0	0.454	8.7	LOS A	2.7	66.5	0.58	0.55	0.64	22.5
14	R2	356	0.0	387	0.0	0.454	7.2	LOS A	2.7	66.5	0.53	0.46	0.53	21.1
Approach		743	0.0	808	0.0	0.454	8.0	LOS A	2.7	66.5	0.56	0.51	0.59	21.9
West: EB - South Ave														
5	L2	482	0.0	524	0.0	0.768	18.4	LOS C	12.8	321.0	0.87	1.22	1.79	13.5
2	T1	386	1.0	420	1.0	0.768	12.7	LOS B	12.8	321.0	0.69	0.86	1.21	21.5
Approach		868	0.4	943	0.4	0.768	15.9	LOS C	12.8	321.0	0.79	1.06	1.53	16.5
All Vehicles		2351	1.3	2555	1.3	0.768	12.5	LOS B	12.8	321.0	0.69	0.83	1.13	19.2

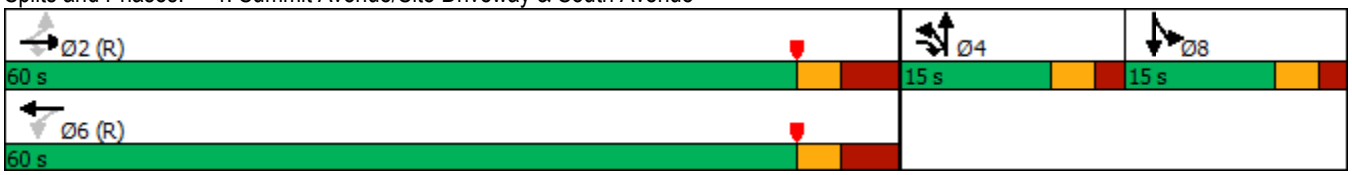
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	633	47	27	582	11	102	13	40	12	2	17
Future Volume (vph)	9	633	47	27	582	11	102	13	40	12	2	17
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	0		70	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997			0.887			0.865	
Flt Protected		0.999			0.998		0.950			0.950		
Satd. Flow (prot)	0	2098	1785	0	3970	0	1995	1863	0	1995	1817	0
Flt Permitted		0.991			0.908		0.950			0.950		
Satd. Flow (perm)	0	2081	1785	0	3612	0	1995	1863	0	1995	1817	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			49		3			42			18	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			169			500			138	
Travel Time (s)		13.9			3.8			13.6			3.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	659	49	28	606	11	106	14	42	13	2	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	668	49	0	645	0	106	56	0	13	20	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		65.4	79.7		65.4		9.1	9.1		7.1	7.1	
Actuated g/C Ratio		0.73	0.89		0.73		0.10	0.10		0.08	0.08	
v/c Ratio		0.44	0.03		0.25		0.52	0.25		0.08	0.13	
Control Delay		8.6	0.6		6.3		47.9	19.1		39.8	20.7	
Queue Delay		0.2	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		8.8	0.6		6.3		47.9	19.1		39.8	20.7	
LOS		A	A		A		D	B		D	C	
Approach Delay		8.2			6.3			38.0			28.2	
Approach LOS		A			A			D			C	
Queue Length 50th (ft)		191	0		80		58	7		7	1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		279	5		109		109	42		25	23	
Internal Link Dist (ft)		431			89			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)		1512	1573		2626		221	244		221	217	
Starvation Cap Reductn		222	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		0.52	0.03		0.25		0.48	0.23		0.06	0.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	668	49	645	106	56	13	20
v/c Ratio	0.44	0.03	0.25	0.52	0.25	0.08	0.13
Control Delay	8.6	0.6	6.3	47.9	19.1	39.8	20.7
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	0.6	6.3	47.9	19.1	39.8	20.7
Queue Length 50th (ft)	191	0	80	58	7	7	1
Queue Length 95th (ft)	279	5	109	109	42	25	23
Internal Link Dist (ft)	431		89		420		58
Turn Bay Length (ft)							
Base Capacity (vph)	1512	1573	2626	221	244	221	217
Starvation Cap Reductn	222	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	0.52	0.03	0.25	0.48	0.23	0.06	0.09

Intersection Summary

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	649	43	32	565	43	105
Future Vol, veh/h	649	43	32	565	43	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	662	44	33	577	44	107

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	706	0	1039	684
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	355	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	902	-	243	452
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	902	-	230	452
Mov Cap-2 Maneuver	-	-	-	-	230	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	649	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	353	-	-	902	-
HCM Lane V/C Ratio	0.428	-	-	0.036	-
HCM Control Delay (s)	22.6	-	-	9.1	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	715	604	16	18	37
Future Vol, veh/h	21	715	604	16	18	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	769	649	17	19	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	666	0	-	0	1473	333
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	815	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	933	-	-	-	130	669
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	439	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	933	-	-	-	124	669
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	21.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	933	-	-	-	274
HCM Lane V/C Ratio	0.024	-	-	-	0.216
HCM Control Delay (s)	9	0	-	-	21.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	122	398	199	11	59	60	381	257	4	162	472	65
Future Volume (vph)	122	398	199	11	59	60	381	257	4	162	472	65
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948						0.850			0.982	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1995	3734	0	0	0	1995	2100	1767	0	1976	2017	0
Flt Permitted	0.366					0.332				0.310		
Satd. Flow (perm)	769	3734	0	0	0	697	2100	1767	0	645	2017	0
Right Turn on Red				Yes				Yes				Yes
Satd. Flow (RTOR)		2						209			8	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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%	0%	0%	0%	1%	0%	1%	2%	4%
Adj. Flow (vph)	127	415	207	11	61	63	397	268	4	169	492	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	633	0	0	0	124	397	268	0	173	560	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	8.4%	43.2%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max			None	None	None	None	None	None	None	
Act Effct Green (s)	40.1	30.1				40.1	30.1	30.1		38.9	28.8	
Actuated g/C Ratio	0.44	0.33				0.44	0.33	0.33		0.43	0.32	
v/c Ratio	0.31	0.51				0.33	0.57	0.37		0.50	0.87	
Control Delay	17.0	27.0				17.3	30.0	8.1		20.3	44.1	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	17.0	27.0				17.3	30.0	8.1		20.3	44.1	
LOS	B	C				B	C	A		C	D	
Approach Delay		25.3					20.6				38.5	
Approach LOS		C					C				D	
Queue Length 50th (ft)	42	160				41	196	24		57	297	



Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	239	411	112	75
Future Volume (vph)	239	411	112	75
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1995	2059	1774	0
Flt Permitted	0.139			
Satd. Flow (perm)	292	2059	1774	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	1%	0%
Adj. Flow (vph)	249	428	117	78
Shared Lane Traffic (%)				
Lane Group Flow (vph)	249	428	195	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	41.0	41.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	38.9	28.8	28.8	
Actuated g/C Ratio	0.43	0.32	0.32	
v/c Ratio	1.14	0.66	0.30	
Control Delay	127.0	32.0	10.0	
Queue Delay	0.0	0.0	0.0	
Total Delay	127.0	32.0	10.0	
LOS	F	C	A	
Approach Delay		54.2		
Approach LOS		D		
Queue Length 50th (ft)	~104	210	28	

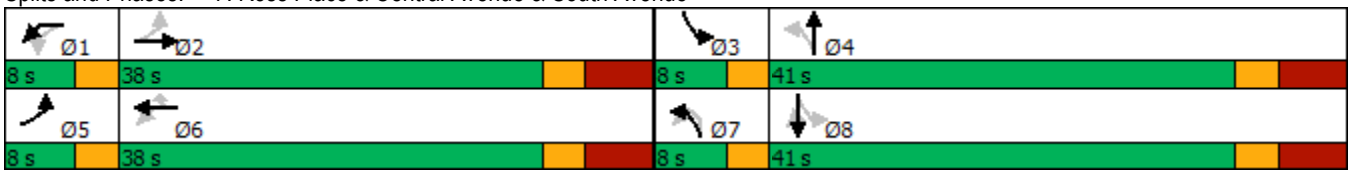
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	78	218				76	297	84		95	#445	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	406	1235				378	694	724		348	738	
Starvation Cap Reductn	0	0				0	0	0		0	0	
Spillback Cap Reductn	0	0				0	0	0		0	0	
Storage Cap Reductn	0	0				0	0	0		0	0	
Reduced v/c Ratio	0.31	0.51				0.33	0.57	0.37		0.50	0.76	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 35.2		Intersection LOS: D	
Intersection Capacity Utilization 82.3%		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.

Splits and Phases: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#239	309	76	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	218	748	725	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	1.14	0.57	0.27	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	127	633	124	397	268	173	560	249	428	195
v/c Ratio	0.31	0.51	0.33	0.57	0.37	0.50	0.87	1.14	0.66	0.30
Control Delay	17.0	27.0	17.3	30.0	8.1	20.3	44.1	127.0	32.0	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	27.0	17.3	30.0	8.1	20.3	44.1	127.0	32.0	10.0
Queue Length 50th (ft)	42	160	41	196	24	57	297	~104	210	28
Queue Length 95th (ft)	78	218	76	297	84	95	#445	#239	309	76
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	406	1235	378	694	724	348	738	218	748	725
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	0.31	0.51	0.33	0.57	0.37	0.50	0.76	1.14	0.57	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

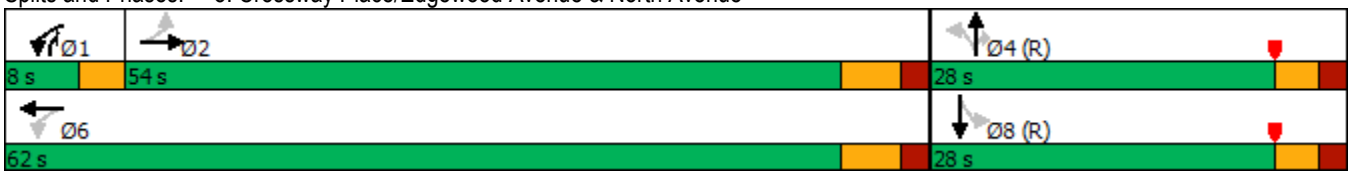
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

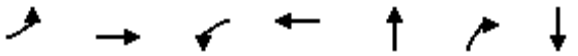
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	488	50	268	536	17	67	58	319	5	58	13
Future Volume (vph)	6	488	50	268	536	17	67	58	319	5	58	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.995				0.850		0.977	
Flt Protected	0.950			0.950				0.974			0.997	
Satd. Flow (prot)	1995	2052	0	1995	2050	0	0	2045	1750	0	2046	0
Flt Permitted	0.415			0.298				0.803			0.985	
Satd. Flow (perm)	872	2052	0	626	2050	0	0	1686	1750	0	2021	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			3				304		11	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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%	2%	0%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	6	525	54	288	576	18	72	62	343	5	62	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	579	0	288	594	0	0	134	343	0	81	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		8.0	62.0		28.0	28.0	8.0	28.0	28.0	
Total Split (%)	60.0%	60.0%		8.9%	68.9%		31.1%	31.1%	8.9%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	48.0	48.0		59.0	56.0			23.0	33.0		23.0	
Actuated g/C Ratio	0.53	0.53		0.66	0.62			0.26	0.37		0.26	
v/c Ratio	0.01	0.53		0.59	0.47			0.31	0.41		0.15	
Control Delay	10.0	15.6		12.2	10.5			29.5	5.3		23.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.0	15.6		12.2	10.5			29.5	5.3		23.6	
LOS	A	B		B	B			C	A		C	
Approach Delay		15.5			11.0			12.1			23.6	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	2	198		59	162			62	14		31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	289		92	235			112	70		67	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	465	1098		486	1276			430	834		524	
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	0.01	0.53		0.59	0.47			0.31	0.41		0.15	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	6	579	288	594	134	343	81
v/c Ratio	0.01	0.53	0.59	0.47	0.31	0.41	0.15
Control Delay	10.0	15.6	12.2	10.5	29.5	5.3	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	15.6	12.2	10.5	29.5	5.3	23.6
Queue Length 50th (ft)	2	198	59	162	62	14	31
Queue Length 95th (ft)	7	289	92	235	112	70	67
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	465	1098	486	1276	430	834	524
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	0.01	0.53	0.59	0.47	0.31	0.41	0.15

Intersection Summary

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	700	668	148	160	34
Future Vol, veh/h	13	700	668	148	160	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	13	722	689	153	165	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	842	0	-	0	1514	766
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	748	-
Critical Hdwy	4.1	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	802	-	-	-	309	608
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	802	-	-	-	301	608
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	471	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	27.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	802	-	-	-	301	608
HCM Lane V/C Ratio	0.017	-	-	-	0.548	0.058
HCM Control Delay (s)	9.6	0	-	-	30.6	11.3
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	-	-	-	3.1	0.2

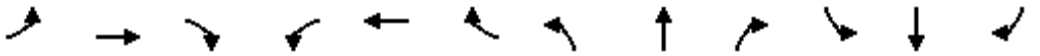
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	167	162	0	49	17
Future Vol, veh/h	0	167	162	0	49	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	0	0
Mvmt Flow	0	186	180	0	54	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	366	180
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	186	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	638	868
Stage 1	0	-	-	0	856	-
Stage 2	0	-	-	0	851	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	638	868
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	851	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	685
HCM Lane V/C Ratio	-	-	0.107
HCM Control Delay (s)	-	-	10.9
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

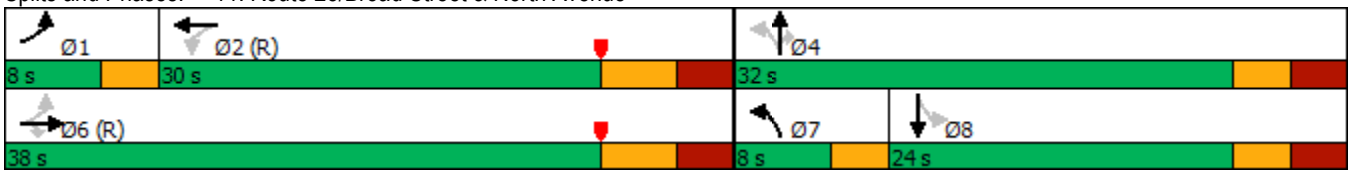


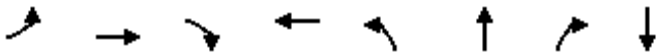
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	364	362	189	475	12	264	412	160	47	376	127
Future Volume (vph)	145	364	362	189	475	12	264	412	160	47	376	127
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.997				0.850		0.965	
Flt Protected	0.950				0.986		0.950				0.996	
Satd. Flow (prot)	1975	1600	1767	0	3794	0	1995	2100	1785	0	3800	0
Flt Permitted	0.286				0.745		0.259				0.869	
Satd. Flow (perm)	595	1600	1767	0	2867	0	544	2100	1785	0	3316	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			354		3						54	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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%	0%	1%	2%	4%	0%	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	149	375	373	195	490	12	272	425	165	48	388	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	375	373	0	697	0	272	425	165	0	567	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	37.1	33.1	33.1		26.1		26.9	23.9	23.9		15.9	
Actuated g/C Ratio	0.53	0.47	0.47		0.37		0.38	0.34	0.34		0.23	
v/c Ratio	0.35	0.50	0.36		0.65		0.87	0.59	0.27		0.72	
Control Delay	11.4	16.2	3.0		20.3		46.3	22.6	17.4		27.8	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	11.4	16.2	3.0		20.3		46.3	22.6	17.4		27.8	
LOS	B	B	A		C		D	C	B		C	
Approach Delay		9.9			20.3			29.1			27.8	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)	31	108	4		140		79	145	50		105	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	62	188	48		221		#177	222	90		153	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185											
Base Capacity (vph)	431	757	1022		1069		312	780	663		892	
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	0.35	0.50	0.36		0.65		0.87	0.54	0.25		0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 95.5%		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: 11: Route 28/Broad Street & North Avenue

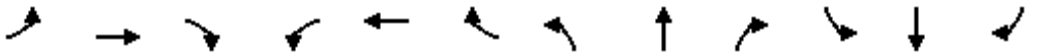




Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	149	375	373	697	272	425	165	567
v/c Ratio	0.35	0.50	0.36	0.65	0.87	0.59	0.27	0.72
Control Delay	11.4	16.2	3.0	20.3	46.3	22.6	17.4	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	16.2	3.0	20.3	46.3	22.6	17.4	27.8
Queue Length 50th (ft)	31	108	4	140	79	145	50	105
Queue Length 95th (ft)	62	188	48	221	#177	222	90	153
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	431	757	1022	1069	312	780	663	892
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	0.35	0.50	0.36	0.65	0.87	0.54	0.25	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



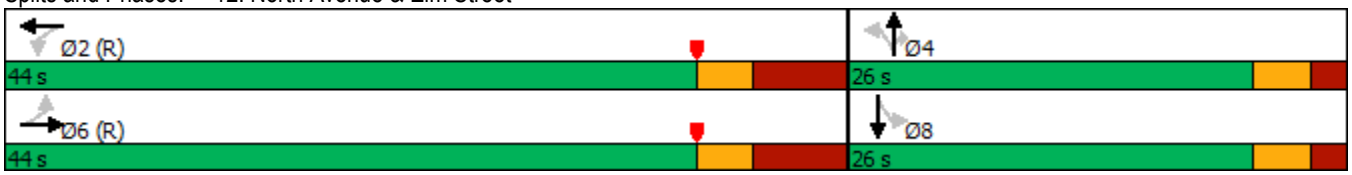
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	515	46	36	660	132	0	0	0	128	26	92
Future Volume (vph)	24	515	46	36	660	132	0	0	0	128	26	92
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.988			0.976						0.949	
Flt Protected		0.998			0.998						0.975	
Satd. Flow (prot)	0	3934	0	0	3886	0	0	1900	2000	0	1758	0
Flt Permitted		0.896			0.903						0.836	
Satd. Flow (perm)	0	3532	0	0	3516	0	0	1900	2000	0	1507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			46						44	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	520	46	36	667	133	0	0	0	129	26	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	590	0	0	836	0	0	0	0	0	248	0
Turn Type	Perm	NA		Perm	NA				Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0	26.0	26.0	26.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	Max	Max	
Act Effct Green (s)		36.0			36.0						21.0	
Actuated g/C Ratio		0.51			0.51						0.30	
v/c Ratio		0.32			0.46						0.51	
Control Delay		10.5			12.0						21.0	
Queue Delay		0.0			0.0						0.0	
Total Delay		10.5			12.0						21.0	
LOS		B			B						C	
Approach Delay		10.5			12.0						21.0	
Approach LOS		B			B						C	
Queue Length 50th (ft)		36			106						74	
Queue Length 95th (ft)		123			m144						145	
Internal Link Dist (ft)		83			399			113			96	
Turn Bay Length (ft)												

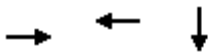
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1825			1830						482	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.32			0.46						0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			
* User Entered Value			

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

Splits and Phases: 12: North Avenue & Elm Street

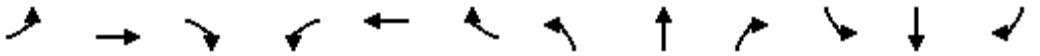




Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	590	836	248
v/c Ratio	0.32	0.46	0.51
Control Delay	10.5	12.0	21.0
Queue Delay	0.0	0.0	0.0
Total Delay	10.5	12.0	21.0
Queue Length 50th (ft)	36	106	74
Queue Length 95th (ft)	123	m144	145
Internal Link Dist (ft)	83	399	96
Turn Bay Length (ft)			
Base Capacity (vph)	1825	1830	482
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.46	0.51

Intersection Summary

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

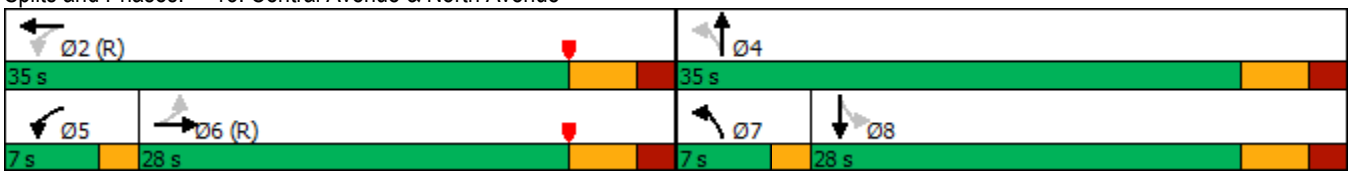


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	408	221	215	549	59	228	489	164	44	455	29
Future Volume (vph)	76	408	221	215	549	59	228	489	164	44	455	29
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.953			0.989			0.972			0.992	
Flt Protected		0.995			0.987			0.987			0.996	
Satd. Flow (prot)	0	3783	0	0	3895	0	0	3814	0	0	3936	0
Flt Permitted		0.757			0.569			0.632			0.809	
Satd. Flow (perm)	0	2878	0	0	2245	0	0	2442	0	0	3197	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					14			48				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	0%
Adj. Flow (vph)	78	416	226	219	560	60	233	499	167	45	464	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	720	0	0	839	0	0	899	0	0	539	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		23.3			30.5			28.3			21.3	
Actuated g/C Ratio		0.33			0.44			0.40			0.30	
v/c Ratio		0.75			0.82			0.86			0.56	
Control Delay		22.2			25.5			27.9			22.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		22.2			25.5			27.9			22.7	
LOS		C			C			C			C	
Approach Delay		22.2			25.5			27.9			22.7	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		97			132			139			98	
Queue Length 95th (ft)		#106			#210			#209			144	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		958			1025			1080			1023	
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		0.75			0.82			0.83			0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 94.7%		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: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	720	839	899	539
v/c Ratio	0.75	0.82	0.86	0.56
Control Delay	22.2	25.5	27.9	22.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.2	25.5	27.9	22.7
Queue Length 50th (ft)	97	132	139	98
Queue Length 95th (ft)	#106	#210	#209	144
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	958	1025	1080	1023
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	0.75	0.82	0.83	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	142	467	1	0	387	72	17	47	76	6	0	166
Future Vol, veh/h	142	467	1	0	387	72	17	47	76	6	0	166
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	0	3	0	0	0	0	0	1
Mvmt Flow	153	502	1	0	416	77	18	51	82	6	0	178

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	493	0	0	-	-	0	1353	1302	503	1330	1264	455
Stage 1	-	-	-	-	-	-	809	809	-	455	455	-
Stage 2	-	-	-	-	-	-	544	493	-	875	809	-
Critical Hdwy	4.1	-	-	-	-	-	7.1	6.5	6.2	7.1	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.309
Pot Cap-1 Maneuver	1081	-	-	0	-	-	128	162	573	133	171	607
Stage 1	-	-	-	0	-	-	377	396	-	589	572	-
Stage 2	-	-	-	0	-	-	527	550	-	347	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1081	-	-	-	-	-	81	139	573	74	147	607
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	139	-	74	147	-
Stage 1	-	-	-	-	-	-	323	340	-	505	572	-
Stage 2	-	-	-	-	-	-	372	550	-	217	340	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	58.9	16.9
HCM LOS			F	C

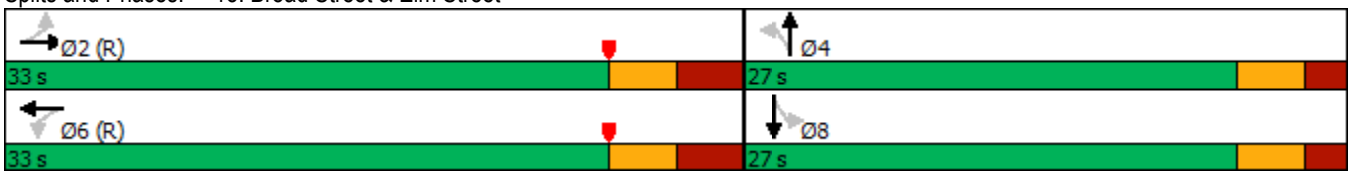
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	206	1081	-	-	-	-	485
HCM Lane V/C Ratio	0.731	0.141	-	-	-	-	0.381
HCM Control Delay (s)	58.9	8.9	-	-	-	-	16.9
HCM Lane LOS	F	A	-	-	-	-	C
HCM 95th %tile Q(veh)	4.8	0.5	-	-	-	-	1.8

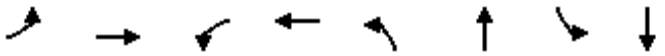
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	383	73	31	321	79	51	149	85	118	115	81
Future Volume (vph)	75	383	73	31	321	79	51	149	85	118	115	81
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976			0.970			0.945			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	2050	0	1995	2037	0	1995	1985	0	1995	1970	0
Flt Permitted	0.507			0.463			0.567			0.474		
Satd. Flow (perm)	1065	2050	0	972	2037	0	1191	1985	0	995	1970	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			27			54			66	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	78	399	76	32	334	82	53	155	89	123	120	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	475	0	32	416	0	53	244	0	123	204	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	37.3	37.3		37.3	37.3		11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.20	0.20		0.20	0.20	
v/c Ratio	0.12	0.37		0.05	0.33		0.23	0.57		0.64	0.47	
Control Delay	6.5	7.2		6.5	7.7		21.0	21.4		36.3	16.9	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	6.5	7.2		6.5	8.1		21.0	21.4		36.3	16.9	
LOS	A	A		A	A		C	C		D	B	
Approach Delay		7.1			8.0			21.3			24.2	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	10	66		4	85		16	62		42	44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	32	151		21	159		37	107		80	83	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	662	1282		604	1277		436	762		364	764	
Starvation Cap Reductn	0	0		0	396		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	0.12	0.37		0.05	0.47		0.12	0.32		0.34	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	475	32	416	53	244	123	204
v/c Ratio	0.12	0.37	0.05	0.33	0.23	0.57	0.64	0.47
Control Delay	6.5	7.2	6.5	7.7	21.0	21.4	36.3	16.9
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	6.5	7.2	6.5	8.1	21.0	21.4	36.3	16.9
Queue Length 50th (ft)	10	66	4	85	16	62	42	44
Queue Length 95th (ft)	32	151	21	159	37	107	80	83
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	662	1282	604	1277	436	762	364	764
Starvation Cap Reductn	0	0	0	396	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	0.12	0.37	0.05	0.47	0.12	0.32	0.34	0.27

Intersection Summary

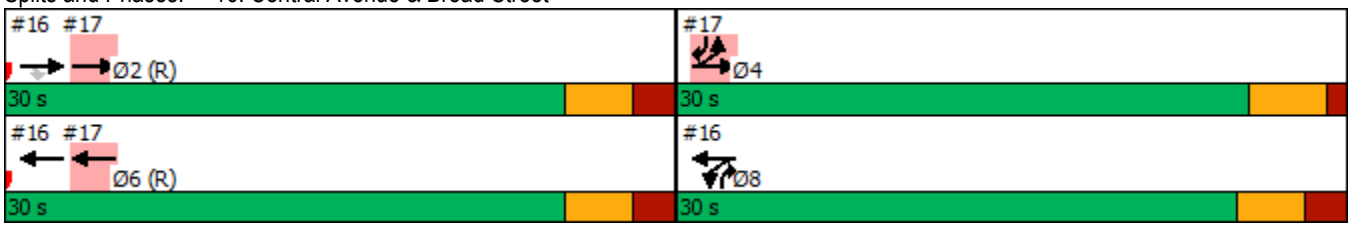


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	442	159	477	437	0	378		
Future Volume (vph)	442	159	477	437	0	378		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2100	1785	1995	2100	0	1817		
Flt Permitted			0.950					
Satd. Flow (perm)	2100	1785	1995	2100	0	1817		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		166				259		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	460	166	497	455	0	394		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	460	166	497	455	0	394		
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0			7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	27.2	27.2	22.8	60.0		22.8		
Actuated g/C Ratio	0.45	0.45	0.38	1.00		0.38		
v/c Ratio	0.48	0.18	0.66	0.22		0.46		
Control Delay	15.0	4.8	23.6	0.2		6.4		
Queue Delay	0.5	0.0	14.6	0.0		0.1		
Total Delay	15.5	4.8	38.1	0.2		6.5		
LOS	B	A	D	A		A		
Approach Delay	12.7			20.0	6.5			
Approach LOS	B			C	A			
Queue Length 50th (ft)	114	1	170	0		29		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	198	41	258	0		80		
Internal Link Dist (ft)	238			23	636			
Turn Bay Length (ft)			130					
Base Capacity (vph)	952	899	831	2080		908		
Starvation Cap Reductn	152	0	318	0		0		
Spillback Cap Reductn	181	0	0	0		61		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	0.60	0.18	0.97	0.22		0.47		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

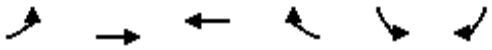
Splits and Phases: 16: Central Avenue & Broad Street



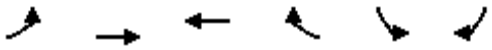


Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	460	166	497	455	394
v/c Ratio	0.48	0.18	0.66	0.22	0.46
Control Delay	15.0	4.8	23.6	0.2	6.4
Queue Delay	0.5	0.0	14.6	0.0	0.1
Total Delay	15.5	4.8	38.1	0.2	6.5
Queue Length 50th (ft)	114	1	170	0	29
Queue Length 95th (ft)	198	41	258	0	80
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	952	899	831	2080	908
Starvation Cap Reductn	152	0	318	0	0
Spillback Cap Reductn	181	0	0	0	61
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.18	0.97	0.22	0.47

Intersection Summary



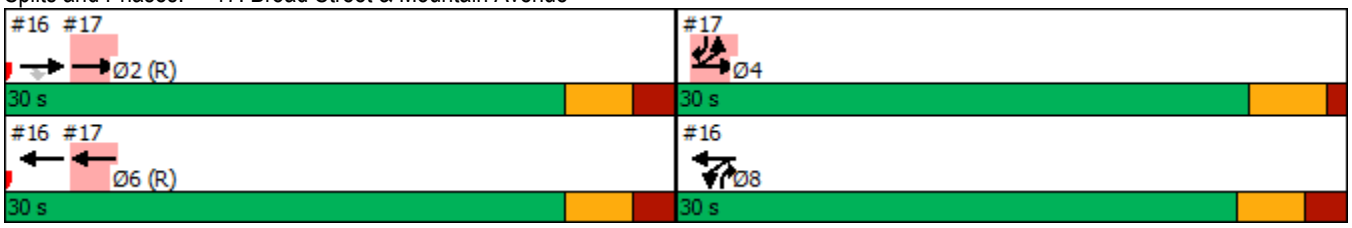
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	428	391	465	40	0	451		
Future Volume (vph)	428	391	465	40	0	451		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.988			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1995	2100	3942	0	0	3142		
Flt Permitted	0.950							
Satd. Flow (perm)	1995	2100	3942	0	0	3142		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			18			429		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	441	403	479	41	0	465		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	441	403	520	0	0	465		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	23.3	60.0	27.2			23.3		
Actuated g/C Ratio	0.39	1.00	0.45			0.39		
v/c Ratio	0.57	0.19	0.29			0.31		
Control Delay	19.5	0.2	11.1			2.4		
Queue Delay	12.0	0.0	3.1			0.1		
Total Delay	31.4	0.2	14.3			2.5		
LOS	C	A	B			A		
Approach Delay		16.5	14.3		2.5			
Approach LOS		B	B		A			
Queue Length 50th (ft)	133	0	61			3		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	204	0	92			28		
Internal Link Dist (ft)		13	318		952			
Turn Bay Length (ft)						150		
Base Capacity (vph)	847	2080	1797			1582		
Starvation Cap Reductn	379	0	0			0		
Spillback Cap Reductn	0	0	1149			259		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.94	0.19	0.80			0.35		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 12.3		Intersection LOS: B	
Intersection Capacity Utilization 42.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	441	403	520	465
v/c Ratio	0.57	0.19	0.29	0.31
Control Delay	19.5	0.2	11.1	2.4
Queue Delay	12.0	0.0	3.1	0.1
Total Delay	31.4	0.2	14.3	2.5
Queue Length 50th (ft)	133	0	61	3
Queue Length 95th (ft)	204	0	92	28
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	847	2080	1797	1582
Starvation Cap Reductn	379	0	0	0
Spillback Cap Reductn	0	0	1149	259
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.19	0.80	0.35

Intersection Summary

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	568	20	70	614	0	18	0	62	0	0	0
Future Vol, veh/h	0	568	20	70	614	0	18	0	62	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	0	586	21	72	633	0	19	0	64	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	633	0	0	607	0	0	1374	1374	597	1406	1384	633
Stage 1	-	-	-	-	-	-	597	597	-	777	777	-
Stage 2	-	-	-	-	-	-	777	777	-	629	607	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	960	-	-	981	-	-	124	147	507	118	145	483
Stage 1	-	-	-	-	-	-	493	495	-	393	410	-
Stage 2	-	-	-	-	-	-	393	410	-	474	489	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	960	-	-	981	-	-	113	130	507	94	129	483
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	130	-	94	129	-
Stage 1	-	-	-	-	-	-	493	495	-	393	364	-
Stage 2	-	-	-	-	-	-	349	364	-	414	489	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	22.8	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	284	960	-	-	981	-	-	-
HCM Lane V/C Ratio	0.29	-	-	-	0.074	-	-	-
HCM Control Delay (s)	22.8	0	-	-	9	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	1.2	0	-	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	599	30	80	654	27	71
Future Vol, veh/h	599	30	80	654	27	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	611	31	82	667	28	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	642	0	1458	627
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	831	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	952	-	144	487
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	952	-	124	487
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	372	-

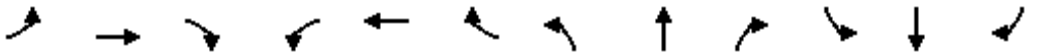
Approach	EB	WB	NB
HCM Control Delay, s	0	1	26
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	270	-	-	952	-
HCM Lane V/C Ratio	0.37	-	-	0.086	-
HCM Control Delay (s)	26	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	0.3	-

Kimley»Horn

DRAFT

2027 Build AM Peak



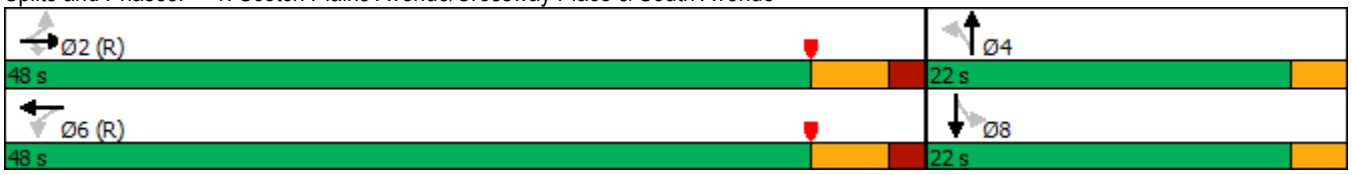
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	291	211	46	2	165	40	46	304	25	90	191	44
Future Volume (vph)	291	211	46	2	165	40	46	304	25	90	191	44
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.974			0.989			0.972	
Flt Protected		0.972					0.950			0.950		
Satd. Flow (prot)	0	1944	1700	0	1948	0	1900	1978	0	1900	1944	0
Flt Permitted		0.703			0.997		0.400			0.245		
Satd. Flow (perm)	0	1406	1700	0	1942	0	800	1978	0	490	1944	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		31			6			16	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	306	222	48	2	174	42	48	320	26	95	201	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	528	48	0	218	0	48	346	0	95	247	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		44.7	44.7		44.7		16.3	16.3		16.3	16.3	
Actuated g/C Ratio		0.64	0.64		0.64		0.23	0.23		0.23	0.23	
v/c Ratio		0.59	0.04		0.17		0.26	0.74		0.83	0.53	
Control Delay		17.8	4.5		5.3		24.5	34.5		77.3	25.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		17.8	4.5		5.3		24.5	34.5		77.3	25.8	
LOS		B	A		A		C	C		E	C	
Approach Delay		16.7			5.3			33.3			40.1	
Approach LOS		B			A			C			D	
Queue Length 50th (ft)		217	5		29		17	133		38	85	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		318	m11		59		43	212		#112	145	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		897	1102		1251		217	541		133	539	
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		0.59	0.04		0.17		0.22	0.64		0.71	0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 73.1%		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: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	528	48	218	48	346	95	247
v/c Ratio	0.59	0.04	0.17	0.26	0.74	0.83	0.53
Control Delay	17.8	4.5	5.3	24.5	34.5	77.3	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	4.5	5.3	24.5	34.5	77.3	25.8
Queue Length 50th (ft)	217	5	29	17	133	38	85
Queue Length 95th (ft)	318	m11	59	43	212	#112	145
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	897	1102	1251	217	541	133	539
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	0.59	0.04	0.17	0.22	0.64	0.71	0.46

Intersection Summary

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.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	391	92	760	196	92	373
Future Volume (vph)	391	92	760	196	92	373
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.974					0.850
Flt Protected				0.962	0.950	
Satd. Flow (prot)	1948	0	0	3656	1900	1700
Flt Permitted				0.548	0.950	
Satd. Flow (perm)	1948	0	0	2082	1900	1700
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	412	97	800	206	97	393
Shared Lane Traffic (%)						
Lane Group Flow (vph)	509	0	0	1006	97	393
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	10.0		9.0	9.0	7.0	9.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	37.2			52.9	8.5	23.8
Actuated g/C Ratio	0.53			0.76	0.12	0.34
v/c Ratio	0.49			1.15dl	0.42	0.68
Control Delay	14.2			4.9	33.7	25.2
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	14.2			4.9	33.7	25.2
LOS	B			A	C	C
Approach Delay	14.2			4.9	26.9	
Approach LOS	B			A	C	
Queue Length 50th (ft)	132			66	40	140

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	262			112	78	190
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	1036			1789	461	582
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	0.49			0.56	0.21	0.68

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad Street & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	509	1006	97	393
v/c Ratio	0.49	1.15dl	0.42	0.68
Control Delay	14.2	4.9	33.7	25.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.2	4.9	33.7	25.2
Queue Length 50th (ft)	132	66	40	140
Queue Length 95th (ft)	262	112	78	190
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1036	1789	461	582
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	0.49	0.56	0.21	0.68

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

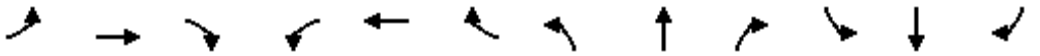
Site: 101 [Westfield RAB_Existing_AM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	18	0.0	19	0.0	0.665	16.5	LOS C	6.3	162.4	0.80	1.04	1.50	20.4
6	T1	308	4.0	328	4.0	0.665	16.7	LOS C	6.3	162.4	0.80	1.04	1.50	18.5
16	R2	350	4.0	372	4.0	0.665	11.7	LOS B	6.3	162.4	0.68	0.80	1.00	21.2
Approach		676	3.9	719	3.9	0.665	14.1	LOS B	6.3	162.4	0.74	0.91	1.24	19.9
North: SB - SR 28														
7	L2	542	5.0	577	5.0	0.657	13.6	LOS B	7.8	201.6	0.71	0.85	1.20	19.6
14	R2	524	5.0	557	5.0	0.657	10.1	LOS B	7.8	201.6	0.60	0.60	0.75	18.8
Approach		1066	5.0	1134	5.0	0.657	11.9	LOS B	7.8	201.6	0.65	0.73	0.98	19.3
West: EB - South Ave														
5u	U	2	0.0	2	0.0	1.142	98.8	LOS F	59.3	1524.4	1.00	3.26	7.43	5.0
5	L2	637	3.0	678	3.0	1.142	99.0	LOS F	59.3	1524.4	1.00	3.26	7.43	5.1
2	T1	440	5.0	468	5.0	1.142	55.6	LOS F	59.3	1524.4	0.80	1.98	4.17	9.9
Approach		1079	3.8	1148	3.8	1.142	81.3	LOS F	59.3	1524.4	0.92	2.74	6.10	6.5
All Vehicles		2821	4.3	3001	4.3	1.142	39.0	LOS E	59.3	1524.4	0.77	1.54	3.00	11.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

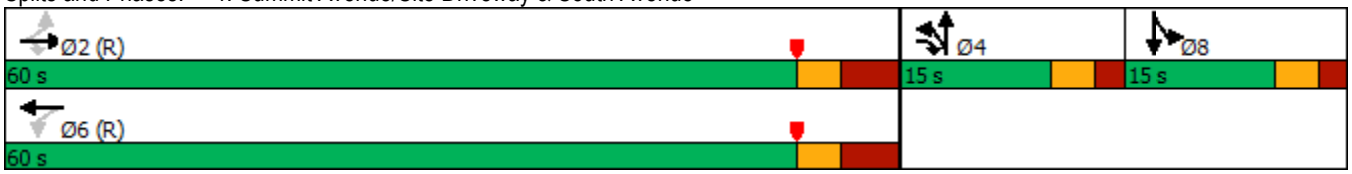


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	658	47	11	509	74	185	45	39	66	5	23
Future Volume (vph)	56	658	47	11	509	74	185	45	39	66	5	23
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		65	0		0	60		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.981			0.930			0.876	
Flt Protected		0.996			0.999		0.950			0.950		
Satd. Flow (prot)	0	1965	1700	0	3749	0	1956	1953	0	1995	1840	0
Flt Permitted		0.909			0.940		0.950			0.950		
Satd. Flow (perm)	0	1793	1700	0	3528	0	1956	1953	0	1995	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			43		30			39			24	
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		511			111			500			138	
Travel Time (s)		13.9			2.5			13.6			3.1	
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%	7%	5%	0%	5%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	58	685	49	11	530	77	193	47	41	69	5	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	743	49	0	618	0	193	88	0	69	29	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.9	74.9		56.9		10.0	10.0		8.5	8.5	
Actuated g/C Ratio		0.63	0.83		0.63		0.11	0.11		0.09	0.09	
v/c Ratio		0.66	0.03		0.28		0.89	0.35		0.37	0.15	
Control Delay		15.0	0.9		8.0		79.6	26.9		43.6	19.2	
Queue Delay		0.3	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		15.3	0.9		8.0		79.6	26.9		43.6	19.2	
LOS		B	A		A		E	C		D	B	
Approach Delay		14.4			8.0			63.1			36.4	
Approach LOS		B			A			E			D	
Queue Length 50th (ft)		260	1		75		110	26		38	3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		410	7		110		#233	70		78	28	
Internal Link Dist (ft)		431			31			420			58	
Turn Bay Length (ft)			65				60					
Base Capacity (vph)		1133	1422		2242		217	251		221	225	
Starvation Cap Reductn		80	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		0.71	0.03		0.28		0.89	0.35		0.31	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 81.1%		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: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	743	49	618	193	88	69	29
v/c Ratio	0.66	0.03	0.28	0.89	0.35	0.37	0.15
Control Delay	15.0	0.9	8.0	79.6	26.9	43.6	19.2
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	0.9	8.0	79.6	26.9	43.6	19.2
Queue Length 50th (ft)	260	1	75	110	26	38	3
Queue Length 95th (ft)	410	7	110	#233	70	78	28
Internal Link Dist (ft)	431		31		420		58
Turn Bay Length (ft)		65		60			
Base Capacity (vph)	1133	1422	2242	217	251	221	225
Starvation Cap Reductn	80	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	0.71	0.03	0.28	0.89	0.35	0.31	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	658	53	19	477	48	154
Future Vol, veh/h	658	53	19	477	48	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	7	8	0	5	4	0
Mvmt Flow	700	56	20	507	51	164

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	756	0	1022	728
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	294	-
Critical Hdwy	-	-	4.1	-	6.66	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.2	-	3.538	3.3
Pot Cap-1 Maneuver	-	-	864	-	243	427
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	726	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	864	-	235	427
Mov Cap-2 Maneuver	-	-	-	-	235	-
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	703	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	29.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	358	-	-	864	-
HCM Lane V/C Ratio	0.6	-	-	0.023	-
HCM Control Delay (s)	29.1	-	-	9.3	0.1
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	3.7	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	46	759	493	91	19	25
Future Vol, veh/h	46	759	493	91	19	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	5	5	0	0	5
Mvmt Flow	49	807	524	97	20	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	621	0	-	0	1478	311
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	905	-
Critical Hdwy	4.1	-	-	-	6.6	6.975
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3475
Pot Cap-1 Maneuver	969	-	-	-	129	678
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	398	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	969	-	-	-	117	678
Mov Cap-2 Maneuver	-	-	-	-	117	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	398	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	25.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	969	-	-	-	221
HCM Lane V/C Ratio	0.051	-	-	-	0.212
HCM Control Delay (s)	8.9	0	-	-	25.6
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Future Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.954						0.850			0.997	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1900	3625	0	0	0	1900	2000	1700	0	1900	1994	0
Flt Permitted	0.403					0.378				0.567		
Satd. Flow (perm)	806	3625	0	0	0	756	2000	1700	0	1134	1994	0
Right Turn on Red				Yes				Yes				Yes
Satd. Flow (RTOR)		1						126			1	
Link Speed (mph)		30					35				25	
Link Distance (ft)		446					926				398	
Travel Time (s)		10.1					18.0				10.9	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	218	420	180	5	16	22	331	120	11	224	665	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	605	0	0	0	38	331	120	0	235	677	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	8.4%	43.2%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max			None	None	None	None	None	None	None	
Act Effct Green (s)	38.1	30.2				36.8	26.7	26.7		41.5	32.6	
Actuated g/C Ratio	0.42	0.34				0.41	0.30	0.30		0.46	0.36	
v/c Ratio	0.54	0.50				0.10	0.56	0.20		0.41	0.93	
Control Delay	23.3	26.4				15.4	31.0	5.1		17.4	50.7	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	23.3	26.4				15.4	31.0	5.1		17.4	50.7	
LOS	C	C				B	C	A		B	D	
Approach Delay		25.6					23.4				42.1	
Approach LOS		C					C				D	
Queue Length 50th (ft)	79	156				12	162	0		80	398	



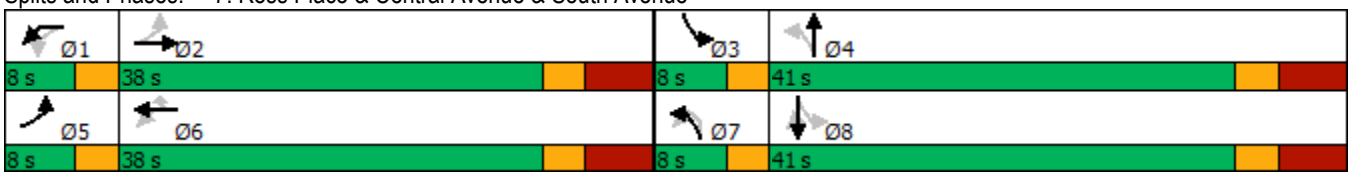
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	92	227	161	80
Future Volume (vph)	92	227	161	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1900	2000	1700	0
Flt Permitted	0.127			
Satd. Flow (perm)	254	2000	1700	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		792		
Travel Time (s)		21.6		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%
Adj. Flow (vph)	97	239	169	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	97	239	253	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	41.0	41.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	40.8	30.7	30.7	
Actuated g/C Ratio	0.45	0.34	0.34	
v/c Ratio	0.47	0.35	0.38	
Control Delay	20.6	24.1	13.1	
Queue Delay	0.0	0.0	0.0	
Total Delay	20.6	24.1	13.1	
LOS	C	C	B	
Approach Delay		18.8		
Approach LOS		B		
Queue Length 50th (ft)	31	106	53	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	128	210				30	248	35		129	#635	
Internal Link Dist (ft)		366					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	403	1222				374	674	656		567	739	
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	0.54	0.50				0.10	0.49	0.18		0.41	0.92	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.7			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 29.1		Intersection LOS: C	
Intersection Capacity Utilization 80.6%		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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	58	168	116	
Internal Link Dist (ft)		712		
Turn Bay Length (ft)	105			
Base Capacity (vph)	208	741	709	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.47	0.32	0.36	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	218	605	38	331	120	235	677	97	239	253
v/c Ratio	0.54	0.50	0.10	0.56	0.20	0.41	0.93	0.47	0.35	0.38
Control Delay	23.3	26.4	15.4	31.0	5.1	17.4	50.7	20.6	24.1	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	26.4	15.4	31.0	5.1	17.4	50.7	20.6	24.1	13.1
Queue Length 50th (ft)	79	156	12	162	0	80	398	31	106	53
Queue Length 95th (ft)	128	210	30	248	35	129	#635	58	168	116
Internal Link Dist (ft)		366		846			318		712	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	403	1222	374	674	656	567	739	208	741	709
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	0.54	0.50	0.10	0.49	0.18	0.41	0.92	0.47	0.32	0.36

Intersection Summary

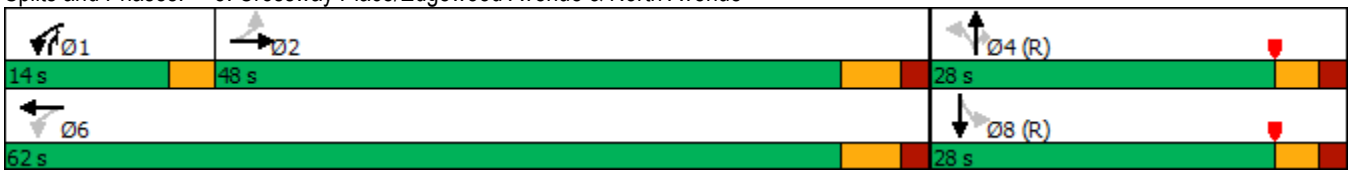
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

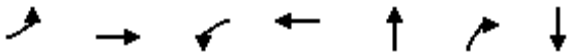
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	691	26	128	341	0	132	55	417	26	161	5
Future Volume (vph)	5	691	26	128	341	0	132	55	417	26	161	5
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995							0.850		0.997	
Flt Protected	0.950			0.950				0.966			0.993	
Satd. Flow (prot)	1900	1990	0	1900	2000	0	0	1932	1700	0	1980	0
Flt Permitted	0.547			0.146				0.585			0.940	
Satd. Flow (perm)	1094	1990	0	292	2000	0	0	1170	1700	0	1874	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3							140		1	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	5	727	27	135	359	0	139	58	439	27	169	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	754	0	135	359	0	0	197	439	0	201	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	48.0	48.0		14.0	62.0		28.0	28.0	14.0	28.0	28.0	
Total Split (%)	53.3%	53.3%		15.6%	68.9%		31.1%	31.1%	15.6%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	44.9	44.9		59.0	56.0			23.0	36.1		23.0	
Actuated g/C Ratio	0.50	0.50		0.66	0.62			0.26	0.40		0.26	
v/c Ratio	0.01	0.76		0.40	0.29			0.66	0.57		0.42	
Control Delay	12.4	24.8		9.4	8.6			42.2	17.0		31.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.4	24.8		9.4	8.6			42.2	17.0		31.0	
LOS	B	C		A	A			D	B		C	
Approach Delay		24.8			8.8			24.8			31.0	
Approach LOS		C			A			C			C	
Queue Length 50th (ft)	1	326		25	85			100	127		95	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	#514		45	130			#191	208		159	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	545	994		387	1244			299	816		479	
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	0.01	0.76		0.35	0.29			0.66	0.54		0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 21.6		Intersection LOS: C	
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: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	754	135	359	197	439	201
v/c Ratio	0.01	0.76	0.40	0.29	0.66	0.57	0.42
Control Delay	12.4	24.8	9.4	8.6	42.2	17.0	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	24.8	9.4	8.6	42.2	17.0	31.0
Queue Length 50th (ft)	1	326	25	85	100	127	95
Queue Length 95th (ft)	7	#514	45	130	#191	208	159
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	545	994	387	1244	299	816	479
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	0.01	0.76	0.35	0.29	0.66	0.54	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	745	641	156	200	13
Future Vol, veh/h	8	745	641	156	200	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	4	4	3	4	0
Mvmt Flow	8	776	668	163	208	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	831	0	-	0	1542	750
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	792	-
Critical Hdwy	4.1	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.2	-	-	-	3.536	3.3
Pot Cap-1 Maneuver	810	-	-	-	300	616
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	443	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	810	-	-	-	295	616
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	443	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	40
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	810	-	-	-	295	616
HCM Lane V/C Ratio	0.01	-	-	-	0.706	0.022
HCM Control Delay (s)	9.5	0	-	-	41.9	11
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	5	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	179	183	0	42	44
Future Vol, veh/h	0	179	183	0	42	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	1	3	0	6	0
Mvmt Flow	0	252	258	0	59	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	510	258
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	252	-
Critical Hdwy	-	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	0	-	-	0	516	786
Stage 1	0	-	-	0	776	-
Stage 2	0	-	-	0	781	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	516	786
Mov Cap-2 Maneuver	-	-	-	-	516	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	781	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

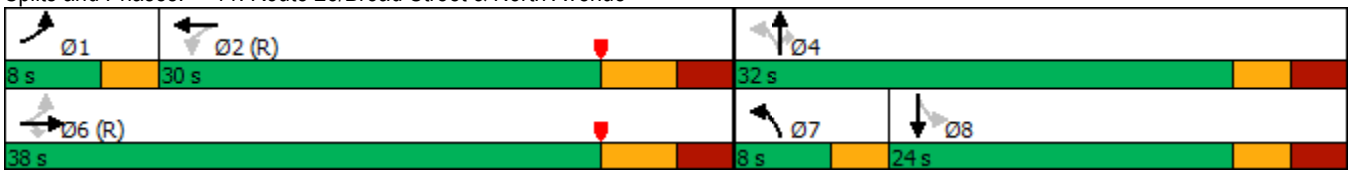
Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	626
HCM Lane V/C Ratio	-	-	0.193
HCM Control Delay (s)	-	-	12.1
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

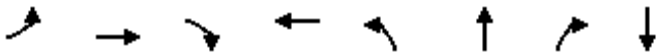
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	413	366	223	475	7	248	573	167	13	475	103
Future Volume (vph)	195	413	366	223	475	7	248	573	167	13	475	103
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.974	
Flt Protected	0.950				0.984		0.950				0.999	
Satd. Flow (prot)	1847	1509	1700	0	3758	0	1956	2039	1684	0	3714	0
Flt Permitted	0.233				0.710		0.218				0.823	
Satd. Flow (perm)	453	1509	1700	0	2711	0	449	2039	1684	0	3059	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			296		2						34	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		267			555			498			430	
Travel Time (s)		5.2			15.1			13.6			11.7	
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 (%)	8%	6%	5%	5%	4%	0%	2%	3%	6%	0%	5%	3%
Adj. Flow (vph)	212	449	398	242	516	8	270	623	182	14	516	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	212	449	398	0	766	0	270	623	182	0	642	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	36.1	32.1	32.1		23.5		27.9	24.9	24.9		16.9	
Actuated g/C Ratio	0.52	0.46	0.46		0.34		0.40	0.36	0.36		0.24	
v/c Ratio	0.62	0.65	0.42		0.84		0.94	0.86	0.30		0.84	
Control Delay	19.6	20.6	5.2		32.9		61.4	34.5	17.5		35.1	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	19.6	20.6	5.2		32.9		61.4	34.5	17.5		35.1	
LOS	B	C	A		C		E	C	B		D	
Approach Delay		14.6			32.9			38.4			35.1	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)	48	147	25		182		76	237	54		128	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#96	247	76		#271		#195	#409	99		#206	
Internal Link Dist (ft)		187			475			418			350	
Turn Bay Length (ft)	185											
Base Capacity (vph)	344	691	938		911		286	757	625		811	
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	0.62	0.65	0.42		0.84		0.94	0.82	0.29		0.79	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 29.5		Intersection LOS: C	
Intersection Capacity Utilization 107.9%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	212	449	398	766	270	623	182	642
v/c Ratio	0.62	0.65	0.42	0.84	0.94	0.86	0.30	0.84
Control Delay	19.6	20.6	5.2	32.9	61.4	34.5	17.5	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	20.6	5.2	32.9	61.4	34.5	17.5	35.1
Queue Length 50th (ft)	48	147	25	182	76	237	54	128
Queue Length 95th (ft)	#96	247	76	#271	#195	#409	99	#206
Internal Link Dist (ft)		187		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	344	691	938	911	286	757	625	811
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	0.62	0.65	0.42	0.84	0.94	0.82	0.29	0.79

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

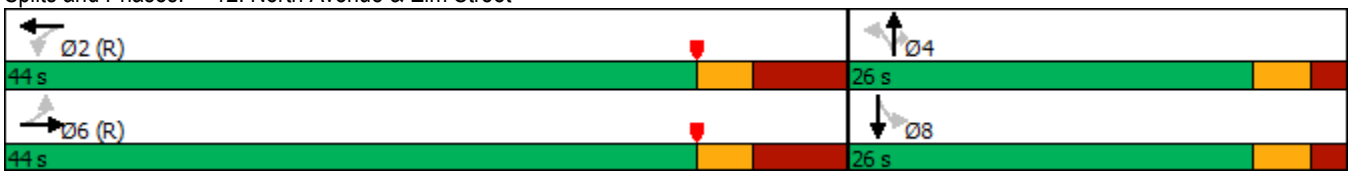
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	551	33	18	659	150	9	14	3	83	20	56
Future Volume (vph)	69	551	33	18	659	150	9	14	3	83	20	56
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.992			0.973				0.850		0.952	
Flt Protected		0.995			0.999			0.981			0.975	
Satd. Flow (prot)	0	3719	0	0	3723	0	0	1864	1700	0	1736	0
Flt Permitted		0.752			0.930			0.894			0.821	
Satd. Flow (perm)	0	2811	0	0	3466	0	0	1699	1700	0	1462	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			56				78		40	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			460			167			176	
Travel Time (s)		4.4			12.5			3.8			4.0	
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%	7%	0%	0%	5%	1%	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	77	612	37	20	732	167	10	16	3	92	22	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	726	0	0	919	0	0	26	3	0	176	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		10.0	10.0	10.0	10.0	10.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			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	None	
Act Effct Green (s)		45.1			45.1			11.9	11.9		11.9	
Actuated g/C Ratio		0.64			0.64			0.17	0.17		0.17	
v/c Ratio		0.40			0.41			0.09	0.01		0.63	
Control Delay		10.2			7.9			22.7	0.0		29.9	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		10.2			7.9			22.7	0.0		29.9	
LOS		B			A			C	A		C	
Approach Delay		10.2			7.9			20.4			29.9	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		77			76			10	0		56	
Queue Length 95th (ft)		m172			m146			27	0		109	
Internal Link Dist (ft)		83			380			87			96	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1816			2254			509	564		466	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.40			0.41			0.05	0.01		0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			
* User Entered Value			

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

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	726	919	26	3	176
v/c Ratio	0.40	0.41	0.09	0.01	0.63
Control Delay	10.2	7.9	22.7	0.0	29.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	7.9	22.7	0.0	29.9
Queue Length 50th (ft)	77	76	10	0	56
Queue Length 95th (ft)	m172	m146	27	0	109
Internal Link Dist (ft)	83	380	87		96
Turn Bay Length (ft)					
Base Capacity (vph)	1816	2254	509	564	466
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.40	0.41	0.05	0.01	0.38

Intersection Summary

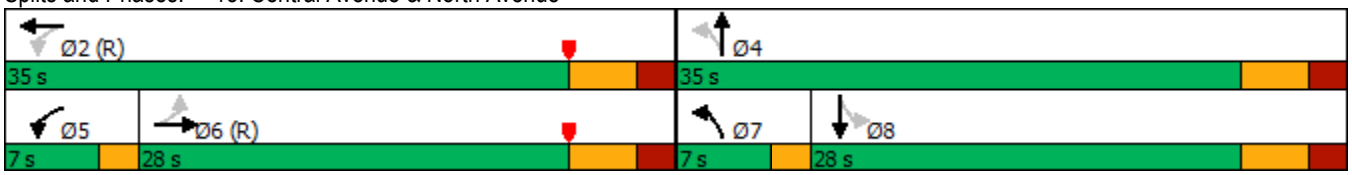
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Future Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.969			0.995			0.980			0.996	
Flt Protected		0.998			0.988			0.988			0.998	
Satd. Flow (prot)	0	3675	0	0	3736	0	0	3679	0	0	3777	0
Flt Permitted		0.913			0.612			0.660			0.904	
Satd. Flow (perm)	0	3362	0	0	2314	0	0	2458	0	0	3421	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					6			30				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		221			706			792			210	
Travel Time (s)		6.0			13.8			21.6			5.7	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	20	469	125	185	566	28	253	616	135	16	462	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	614	0	0	779	0	0	1004	0	0	492	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		4.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		22.4			29.5			29.3			22.3	
Actuated g/C Ratio		0.32			0.42			0.42			0.32	
v/c Ratio		0.57			0.77			0.94			0.45	
Control Delay		16.6			23.3			36.7			20.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.6			23.3			36.7			20.6	
LOS		B			C			D			C	
Approach Delay		16.6			23.3			36.7			20.6	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)		108			123			168			87	
Queue Length 95th (ft)		68			171			#294			128	
Internal Link Dist (ft)		141			626			712			130	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1076			1010			1074			1094	
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		0.57			0.77			0.93			0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 89.0%		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.			

Splits and Phases: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	614	779	1004	492
v/c Ratio	0.57	0.77	0.94	0.45
Control Delay	16.6	23.3	36.7	20.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.6	23.3	36.7	20.6
Queue Length 50th (ft)	108	123	168	87
Queue Length 95th (ft)	68	171	#294	128
Internal Link Dist (ft)	141	626	712	130
Turn Bay Length (ft)				
Base Capacity (vph)	1076	1010	1074	1094
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	0.57	0.77	0.93	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	543	0	0	580	36	5	41	10	21	0	118
Future Vol, veh/h	61	543	0	0	580	36	5	41	10	21	0	118
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	64	572	0	0	611	38	5	43	11	22	0	124

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	649	0	-	-	-	0	1392	1349	572	1357	1330	630
Stage 1	-	-	-	-	-	-	700	700	-	630	630	-
Stage 2	-	-	-	-	-	-	692	649	-	727	700	-
Critical Hdwy	4.15	-	-	-	-	-	7.15	6.55	6.25	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.545	4.045	3.345	3.545	4.045	3.345
Pot Cap-1 Maneuver	923	-	0	0	-	-	118	149	514	124	153	476
Stage 1	-	-	0	0	-	-	425	437	-	465	470	-
Stage 2	-	-	0	0	-	-	429	461	-	411	437	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	923	-	-	-	-	-	83	139	514	88	142	476
Mov Cap-2 Maneuver	-	-	-	-	-	-	83	139	-	88	142	-
Stage 1	-	-	-	-	-	-	396	407	-	433	470	-
Stage 2	-	-	-	-	-	-	317	461	-	335	407	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	44.2	30.1
HCM LOS			E	D

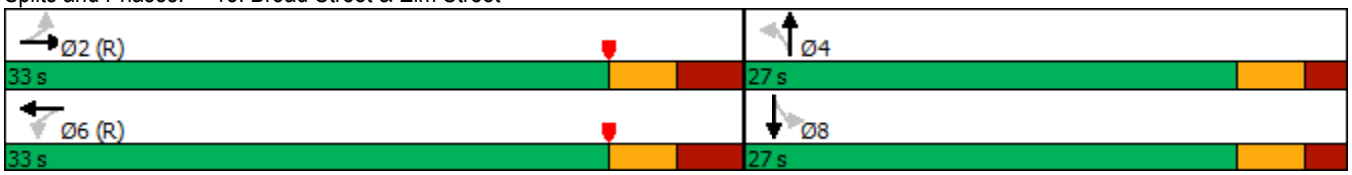
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	149	923	-	-	-	286
HCM Lane V/C Ratio	0.396	0.07	-	-	-	0.512
HCM Control Delay (s)	44.2	9.2	-	-	-	30.1
HCM Lane LOS	E	A	-	-	-	D
HCM 95th %tile Q(veh)	1.7	0.2	-	-	-	2.7

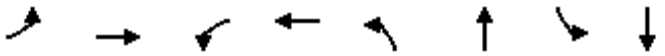
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	528	24	55	542	81	11	28	28	61	66	68
Future Volume (vph)	22	528	24	55	542	81	11	28	28	61	66	68
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.981			0.925			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1900	1988	0	1900	1962	0	1900	1850	0	1900	1846	0
Flt Permitted	0.371			0.417			0.667			0.719		
Satd. Flow (perm)	742	1988	0	834	1962	0	1334	1850	0	1438	1846	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			16			29			72	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	556	25	58	571	85	12	29	29	64	69	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	581	0	58	656	0	12	58	0	64	141	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	44.0	44.0		44.0	44.0		8.6	8.6		8.6	8.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.14	0.14		0.14	0.14	
v/c Ratio	0.04	0.40		0.09	0.45		0.06	0.20		0.31	0.43	
Control Delay	4.2	5.5		3.6	6.1		21.7	15.1		26.5	16.7	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	4.2	5.5		3.6	6.4		21.7	15.1		26.5	16.7	
LOS	A	A		A	A		C	B		C	B	
Approach Delay		5.5			6.1			16.2			19.8	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	2	73		3	139		4	9		21	23	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	10	153		18	232		15	35		49	63	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	544	1459		611	1443		489	696		527	722	
Starvation Cap Reductn	0	0		0	268		0	0		0	0	
Spillback Cap Reductn	0	80		0	0		0	15		11	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.42		0.09	0.56		0.02	0.09		0.12	0.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	23	581	58	656	12	58	64	141
v/c Ratio	0.04	0.40	0.09	0.45	0.06	0.20	0.31	0.43
Control Delay	4.2	5.5	3.6	6.1	21.7	15.1	26.5	16.7
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	4.2	5.5	3.6	6.4	21.7	15.1	26.5	16.7
Queue Length 50th (ft)	2	73	3	139	4	9	21	23
Queue Length 95th (ft)	10	153	18	232	15	35	49	63
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	544	1459	611	1443	489	696	527	722
Starvation Cap Reductn	0	0	0	268	0	0	0	0
Spillback Cap Reductn	0	80	0	0	0	15	11	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.42	0.09	0.56	0.02	0.09	0.12	0.20

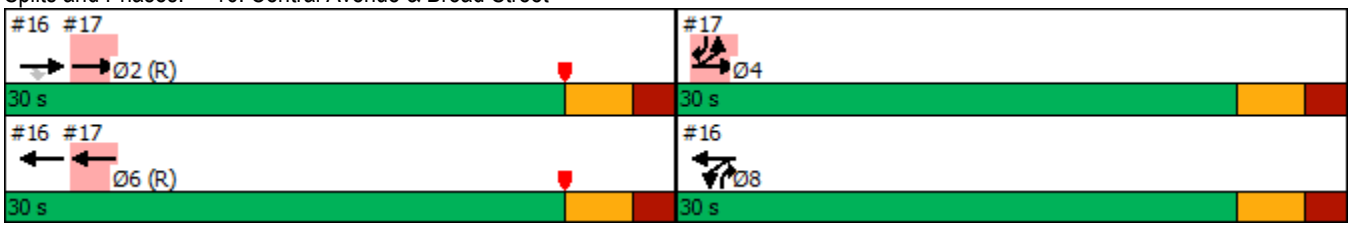
Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	556	56	372	632	0	536		
Future Volume (vph)	556	56	372	632	0	536		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2000	1700	1900	2000	0	1730		
Flt Permitted			0.950					
Satd. Flow (perm)	2000	1700	1900	2000	0	1730		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		59				173		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	728			
Travel Time (s)	8.7			2.8	19.9			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Adj. Flow (vph)	585	59	392	665	0	564		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	585	59	392	665	0	564		
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0			5.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	24.0	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	25.3	25.3	24.7	60.0		24.7		
Actuated g/C Ratio	0.42	0.42	0.41	1.00		0.41		
v/c Ratio	0.69	0.08	0.50	0.33		0.69		
Control Delay	25.0	8.8	19.2	0.7		15.1		
Queue Delay	27.3	0.0	6.4	0.0		0.6		
Total Delay	52.4	8.8	25.6	0.7		15.7		
LOS	D	A	C	A		B		
Approach Delay	48.4			10.0	15.7			
Approach LOS	D			A	B			
Queue Length 50th (ft)	213	2	121	2		106		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	296	30	197	8		210		
Internal Link Dist (ft)	238			23	648			
Turn Bay Length (ft)			130					
Base Capacity (vph)	842	750	791	1976		821		
Starvation Cap Reductn	178	0	340	0		0		
Spillback Cap Reductn	274	0	0	91		63		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.03	0.08	0.87	0.35		0.74		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

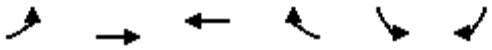
Splits and Phases: 16: Central Avenue & Broad Street





Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	585	59	392	665	564
v/c Ratio	0.69	0.08	0.50	0.33	0.69
Control Delay	25.0	8.8	19.2	0.7	15.1
Queue Delay	27.3	0.0	6.4	0.0	0.6
Total Delay	52.4	8.8	25.6	0.7	15.7
Queue Length 50th (ft)	213	2	121	2	106
Queue Length 95th (ft)	296	30	197	8	210
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	842	750	791	1976	821
Starvation Cap Reductn	178	0	340	0	0
Spillback Cap Reductn	274	0	0	91	63
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.03	0.08	0.87	0.35	0.74

Intersection Summary



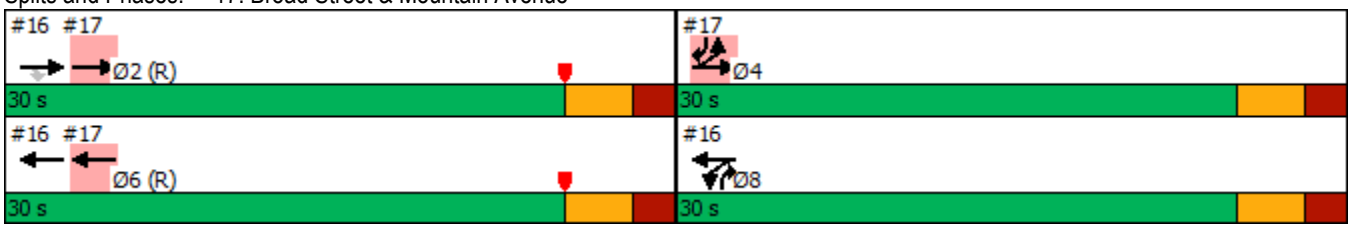
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	660	400	550	21	0	453		
Future Volume (vph)	660	400	550	21	0	453		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.995			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1900	2000	3781	0	0	2992		
Flt Permitted	0.950							
Satd. Flow (perm)	1900	2000	3781	0	0	2992		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			8			310		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	392		630			
Travel Time (s)		2.5	10.7		17.2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Adj. Flow (vph)	695	421	579	22	0	477		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	695	421	601	0	0	477		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	5.0
Minimum Split (s)	24.0		30.0			24.0	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.0		3.0			3.0	3.0	3.0
All-Red Time (s)	2.0		2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	5.0		5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	24.7	60.0	25.3			24.7		
Actuated g/C Ratio	0.41	1.00	0.42			0.41		
v/c Ratio	0.89	0.21	0.38			0.34		
Control Delay	29.9	0.2	12.7			4.9		
Queue Delay	49.6	0.0	0.9			0.1		
Total Delay	79.4	0.2	13.6			5.0		
LOS	E	A	B			A		
Approach Delay		49.5	13.6		5.0			
Approach LOS		D	B		A			
Queue Length 50th (ft)	230	0	74			20		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	#417	m0	110			48		
Internal Link Dist (ft)		13	312		550			
Turn Bay Length (ft)						150		
Base Capacity (vph)	791	1976	1598			1427		
Starvation Cap Reductn	251	0	0			0		
Spillback Cap Reductn	0	0	674			195		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	1.29	0.21	0.65			0.39		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 55.8%		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: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	695	421	601	477
v/c Ratio	0.89	0.21	0.38	0.34
Control Delay	29.9	0.2	12.7	4.9
Queue Delay	49.6	0.0	0.9	0.1
Total Delay	79.4	0.2	13.6	5.0
Queue Length 50th (ft)	230	0	74	20
Queue Length 95th (ft)	#417	m0	110	48
Internal Link Dist (ft)		13	312	
Turn Bay Length (ft)				150
Base Capacity (vph)	791	1976	1598	1427
Starvation Cap Reductn	251	0	0	0
Spillback Cap Reductn	0	0	674	195
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.29	0.21	0.65	0.39

Intersection Summary

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.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	708	540	0	0	18
Future Vol, veh/h	0	708	540	0	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	745	568	0	0	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	284
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.975
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3475
Pot Cap-1 Maneuver	0	-	-	0	0	706
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	706
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	706
HCM Lane V/C Ratio	-	-	0.027
HCM Control Delay (s)	-	-	10.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	730	13	45	719	0	6	0	19	0	0	0
Future Vol, veh/h	0	730	13	45	719	0	6	0	19	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	95	95	95	92	95	92	95	92	92	92
Heavy Vehicles, %	2	5	5	5	5	2	5	2	5	2	2	2
Mvmt Flow	0	768	14	47	757	0	6	0	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	757	0	0	782	0	0	1626	1626	775	1636	1633	757
Stage 1	-	-	-	-	-	-	775	775	-	851	851	-
Stage 2	-	-	-	-	-	-	851	851	-	785	782	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.15	6.52	6.25	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.545	4.018	3.345	3.518	4.018	3.318
Pot Cap-1 Maneuver	854	-	-	823	-	-	81	102	393	81	101	408
Stage 1	-	-	-	-	-	-	386	408	-	355	376	-
Stage 2	-	-	-	-	-	-	350	376	-	386	405	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	854	-	-	823	-	-	75	92	393	71	91	408
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	92	-	71	91	-
Stage 1	-	-	-	-	-	-	386	408	-	355	339	-
Stage 2	-	-	-	-	-	-	315	339	-	366	405	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	26.3	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	195	854	-	-	823	-	-	-
HCM Lane V/C Ratio	0.135	-	-	-	0.058	-	-	-
HCM Control Delay (s)	26.3	0	-	-	9.6	0	-	0
HCM Lane LOS	D	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.5	0	-	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	729	20	52	756	9	22
Future Vol, veh/h	729	20	52	756	9	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	767	21	55	796	9	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	788	0	1684	778
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	906	-
Critical Hdwy	-	-	4.15	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.245	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	818	-	102	392
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	389	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	818	-	90	392
Mov Cap-2 Maneuver	-	-	-	-	90	-
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	342	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	26.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	199	-	-	818	-
HCM Lane V/C Ratio	0.164	-	-	0.067	-
HCM Control Delay (s)	26.6	-	-	9.7	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	912	806	1	5	2
Future Vol, veh/h	0	912	806	1	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	960	848	1	5	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	849	0	-	0	1809	849
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	960	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	776	-	-	-	85	356
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	367	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	776	-	-	-	85	356
Mov Cap-2 Maneuver	-	-	-	-	85	-
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	367	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	40.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	776	-	-	-	109
HCM Lane V/C Ratio	-	-	-	-	0.068
HCM Control Delay (s)	0	-	-	-	40.4
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	199	0	2	161	0	4
Future Vol, veh/h	199	0	2	161	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	216	0	2	175	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	395	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	179	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1354	-	610	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1354	-	609	824
Mov Cap-2 Maneuver	-	-	-	-	609	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	850	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	824	-	-	1354	-
HCM Lane V/C Ratio	0.005	-	-	0.002	-
HCM Control Delay (s)	9.4	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	585	0	1	725	0	7
Future Vol, veh/h	585	0	1	725	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	636	0	1	788	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	636	0	-	318
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	943	-	0	678
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	943	-	-	678
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	678	-	-	943	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	10.4	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Kimley»Horn

DRAFT

2027 Build PM Peak

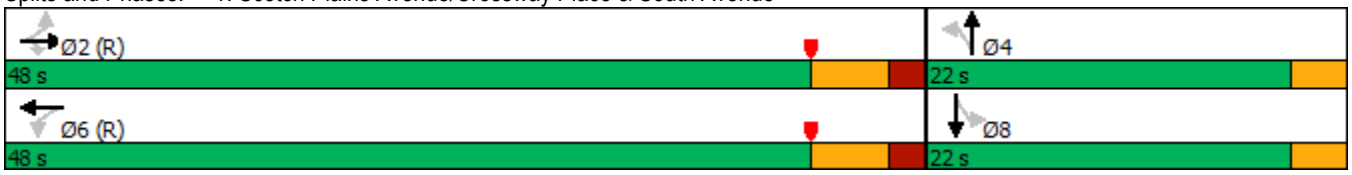
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	290	56	31	302	91	36	211	15	50	236	145
Future Volume (vph)	82	290	56	31	302	91	36	211	15	50	236	145
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.971			0.990			0.943	
Flt Protected		0.989			0.996		0.950			0.950		
Satd. Flow (prot)	0	2036	1750	0	1991	0	1956	2038	0	1956	1941	0
Flt Permitted		0.829			0.955		0.237			0.427		
Satd. Flow (perm)	0	1707	1750	0	1909	0	488	2038	0	879	1941	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		35			5			44	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	86	305	59	33	318	96	38	222	16	53	248	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	391	59	0	447	0	38	238	0	53	401	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		44.1	44.1		44.1		16.9	16.9		16.9	16.9	
Actuated g/C Ratio		0.63	0.63		0.63		0.24	0.24		0.24	0.24	
v/c Ratio		0.36	0.05		0.37		0.32	0.48		0.25	0.80	
Control Delay		11.8	4.6		7.2		29.0	25.2		23.7	34.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		11.8	4.6		7.2		29.0	25.2		23.7	34.8	
LOS		B	A		A		C	C		C	C	
Approach Delay		10.9			7.2			25.7			33.5	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		127	5		80		13	82		18	139	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		207	m15		132		39	143		46	#242	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		1074	1123		1214		132	556		238	558	
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		0.36	0.05		0.37		0.29	0.43		0.22	0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.7		Intersection LOS: B	
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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	391	59	447	38	238	53	401
v/c Ratio	0.36	0.05	0.37	0.32	0.48	0.25	0.80
Control Delay	11.8	4.6	7.2	29.0	25.2	23.7	34.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	4.6	7.2	29.0	25.2	23.7	34.8
Queue Length 50th (ft)	127	5	80	13	82	18	139
Queue Length 95th (ft)	207	m15	132	39	143	46	#242
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	1074	1123	1214	132	556	238	558
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	0.36	0.05	0.37	0.29	0.43	0.22	0.72

Intersection Summary

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.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	290	112	694	466	195	412
Future Volume (vph)	290	112	694	466	195	412
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.962					0.850
Flt Protected				0.971	0.950	
Satd. Flow (prot)	1981	0	0	3798	1956	1750
Flt Permitted				0.583	0.950	
Satd. Flow (perm)	1981	0	0	2281	1956	1750
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	305	118	731	491	205	434
Shared Lane Traffic (%)						
Lane Group Flow (vph)	423	0	0	1222	205	434
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	9.0		10.0	9.0	7.0	10.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	34.2			47.4	11.6	26.8
Actuated g/C Ratio	0.49			0.68	0.17	0.38
v/c Ratio	0.44			1.08dl	0.63	0.65
Control Delay	14.4			9.6	35.5	22.2
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	14.4			9.6	35.5	22.2
LOS	B			A	D	C
Approach Delay	14.4			9.6	26.5	
Approach LOS	B			A	C	
Queue Length 50th (ft)	111			110	83	149

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	209			186	135	209
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	967			1698	475	670
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	0.44			0.72	0.43	0.65

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad St & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	423	1222	205	434
v/c Ratio	0.44	1.08dl	0.63	0.65
Control Delay	14.4	9.6	35.5	22.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.4	9.6	35.5	22.2
Queue Length 50th (ft)	111	110	83	149
Queue Length 95th (ft)	209	186	135	209
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	967	1698	475	670
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	0.44	0.72	0.43	0.65

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

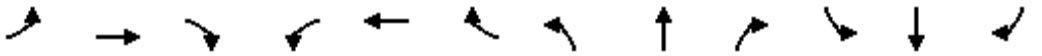
Site: 101 [Westfield RAB_Existing_PM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.560	12.5	LOS B	4.4	111.2	0.73	0.88	1.14	22.7
6	T1	419	2.0	428	2.0	0.560	12.6	LOS B	4.4	111.2	0.73	0.88	1.14	21.0
16	R2	370	3.0	378	3.0	0.560	10.0	LOS B	4.4	111.2	0.66	0.72	0.84	22.1
Approach		803	2.4	820	2.4	0.560	11.4	LOS B	4.4	111.2	0.70	0.81	1.00	21.5
North: SB - SR 28														
7	L2	507	2.0	517	2.0	0.546	11.0	LOS B	4.3	110.0	0.66	0.76	0.97	20.9
14	R2	573	2.0	585	2.0	0.617	12.8	LOS B	6.1	154.3	0.72	0.88	1.18	17.4
Approach		1080	2.0	1102	2.0	0.617	12.0	LOS B	6.1	154.3	0.69	0.83	1.08	19.3
West: EB - South Ave														
5u	U	2	0.0	2	0.0	1.023	57.6	LOS F	40.2	1018.3	1.00	2.38	4.75	7.3
5	L2	563	1.0	574	1.0	1.023	57.7	LOS F	40.2	1018.3	1.00	2.38	4.75	7.5
2	T1	410	3.0	418	3.0	1.023	46.7	LOS F	40.2	1018.3	0.89	1.97	3.86	11.1
Approach		975	1.8	995	1.8	1.023	53.1	LOS F	40.2	1018.3	0.95	2.21	4.38	8.8
All Vehicles		2858	2.1	2917	2.1	1.023	25.8	LOS D	40.2	1018.3	0.78	1.29	2.18	14.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

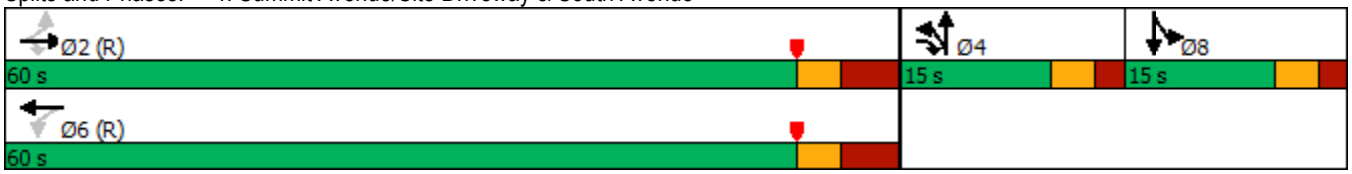


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	637	56	28	627	57	101	23	43	131	21	92
Future Volume (vph)	34	637	56	28	627	57	101	23	43	131	21	92
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	0		70	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.988			0.902			0.878	
Flt Protected		0.998			0.998		0.950			0.950		
Satd. Flow (prot)	0	2052	1785	0	3866	0	1956	1894	0	1995	1814	0
Flt Permitted		0.938			0.908		0.950			0.950		
Satd. Flow (perm)	0	1928	1785	0	3517	0	1956	1894	0	1995	1814	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			58		17			45			96	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			156			500			138	
Travel Time (s)		13.9			3.5			13.6			3.8	
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 (%)	5%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Adj. Flow (vph)	35	664	58	29	653	59	105	24	45	136	22	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	699	58	0	741	0	105	69	0	136	118	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.8	73.0		56.8		9.1	9.1		9.4	9.4	
Actuated g/C Ratio		0.63	0.81		0.63		0.10	0.10		0.10	0.10	
v/c Ratio		0.57	0.04		0.33		0.53	0.30		0.65	0.43	
Control Delay		13.1	0.7		8.9		48.3	21.1		53.9	16.8	
Queue Delay		0.3	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		13.4	0.7		8.9		48.3	21.1		53.9	16.8	
LOS		B	A		A		D	C		D	B	
Approach Delay		12.5			8.9			37.6			36.7	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)		236	0		103		57	12		75	12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		346	7		138		109	51		#144	61	
Internal Link Dist (ft)		431			76			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)		1217	1474		2227		217	250		221	286	
Starvation Cap Reductn		135	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		0.65	0.04		0.33		0.48	0.28		0.62	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 78.7%		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.			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	699	58	741	105	69	136	118
v/c Ratio	0.57	0.04	0.33	0.53	0.30	0.65	0.43
Control Delay	13.1	0.7	8.9	48.3	21.1	53.9	16.8
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	0.7	8.9	48.3	21.1	53.9	16.8
Queue Length 50th (ft)	236	0	103	57	12	75	12
Queue Length 95th (ft)	346	7	138	109	51	#144	61
Internal Link Dist (ft)	431		76		420		58
Turn Bay Length (ft)							
Base Capacity (vph)	1217	1474	2227	217	250	221	286
Starvation Cap Reductn	135	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	0.65	0.04	0.33	0.48	0.28	0.62	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	718	47	29	586	35	89
Future Vol, veh/h	718	47	29	586	35	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	0	3	2	0	1
Mvmt Flow	725	47	29	592	35	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	772	0	1103	749
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	-	-	4.145	-	6.6	6.215
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2285	-	3.5	3.3095
Pot Cap-1 Maneuver	-	-	835	-	222	413
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	687	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	835	-	210	413
Mov Cap-2 Maneuver	-	-	-	-	210	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	651	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	324	-	-	835	-
HCM Lane V/C Ratio	0.387	-	-	0.035	-
HCM Control Delay (s)	22.9	-	-	9.5	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	732	565	40	62	56
Future Vol, veh/h	17	732	565	40	62	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	18	755	582	41	64	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	623	0	-	0	1394	312
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	791	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	968	-	-	-	146	690
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	968	-	-	-	141	690
Mov Cap-2 Maneuver	-	-	-	-	141	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	450	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	37.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	968	-	-	-	227
HCM Lane V/C Ratio	0.018	-	-	-	0.536
HCM Control Delay (s)	8.8	0	-	-	37.8
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	2.8

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Future Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948						0.850			0.992	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1956	3708	0	0	0	1956	2059	1750	0	1956	2042	0
Flt Permitted	0.257					0.231				0.124		
Satd. Flow (perm)	529	3708	0	0	0	476	2059	1750	0	255	2042	0
Right Turn on Red				Yes				Yes				Yes
Satd. Flow (RTOR)		1						138			3	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	215	520	268	5	32	54	453	201	5	203	617	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	793	0	0	0	86	453	201	0	208	651	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	8.4%	43.2%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max			None	None	None	None	None	None	None	
Act Effct Green (s)	39.0	30.1				38.3	28.3	28.3		42.2	32.2	
Actuated g/C Ratio	0.42	0.33				0.41	0.31	0.31		0.46	0.35	
v/c Ratio	0.72	0.66				0.31	0.72	0.32		1.00	0.92	
Control Delay	33.7	30.5				18.1	36.1	10.2		85.5	48.8	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	33.7	30.5				18.1	36.1	10.2		85.5	48.8	
LOS	C	C				B	D	B		F	D	
Approach Delay		31.2					27.0				57.7	
Approach LOS		C					C				E	
Queue Length 50th (ft)	77	217				29	238	27		~72	370	



Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	177	638	183	80
Future Volume (vph)	177	638	183	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1956	2059	1750	0
Flt Permitted	0.124			
Satd. Flow (perm)	255	2059	1750	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%
Adj. Flow (vph)	186	672	193	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	186	672	277	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	41.0	41.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	42.2	32.2	32.2	
Actuated g/C Ratio	0.46	0.35	0.35	
v/c Ratio	0.89	0.94	0.40	
Control Delay	60.6	52.7	14.3	
Queue Delay	0.0	0.0	0.0	
Total Delay	60.6	52.7	14.3	
LOS	E	D	B	
Approach Delay		44.6		
Approach LOS		D		
Queue Length 50th (ft)	61	388	64	

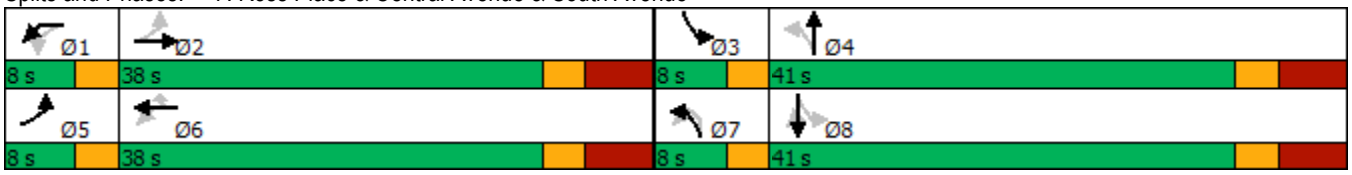
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	#146	283				56	349	79		#210	#586	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	299	1206				277	669	662		208	732	
Starvation Cap Reductn	0	0				0	0	0		0	0	
Spillback Cap Reductn	0	0				0	0	0		0	0	
Storage Cap Reductn	0	0				0	0	0		0	0	
Reduced v/c Ratio	0.72	0.66				0.31	0.68	0.30		1.00	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 92.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 40.5		Intersection LOS: D	
Intersection Capacity Utilization 91.0%		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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#175	#613	132	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	208	736	707	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.89	0.91	0.39	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	793	86	453	201	208	651	186	672	277
v/c Ratio	0.72	0.66	0.31	0.72	0.32	1.00	0.92	0.89	0.94	0.40
Control Delay	33.7	30.5	18.1	36.1	10.2	85.5	48.8	60.6	52.7	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	30.5	18.1	36.1	10.2	85.5	48.8	60.6	52.7	14.3
Queue Length 50th (ft)	77	217	29	238	27	~72	370	61	388	64
Queue Length 95th (ft)	#146	283	56	349	79	#210	#586	#175	#613	132
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	299	1206	277	669	662	208	732	208	736	707
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	0.72	0.66	0.31	0.68	0.30	1.00	0.89	0.89	0.91	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

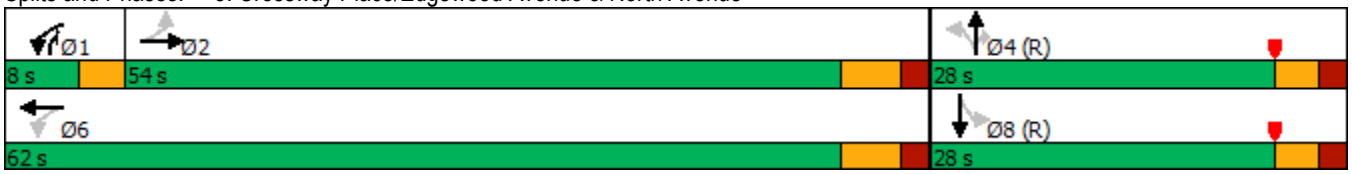
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

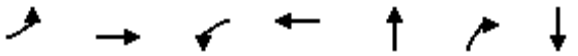
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	594	41	367	684	5	92	60	227	10	35	15
Future Volume (vph)	5	594	41	367	684	5	92	60	227	10	35	15
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999				0.850		0.966	
Flt Protected	0.950			0.950				0.971			0.991	
Satd. Flow (prot)	1956	2038	0	1956	2057	0	0	1999	1750	0	1971	0
Flt Permitted	0.317			0.235				0.782			0.948	
Satd. Flow (perm)	653	2038	0	484	2057	0	0	1610	1750	0	1885	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			1				236		16	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	625	43	386	720	5	97	63	239	11	37	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	668	0	386	725	0	0	160	239	0	64	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		8.0	62.0		28.0	28.0	8.0	28.0	28.0	
Total Split (%)	60.0%	60.0%		8.9%	68.9%		31.1%	31.1%	8.9%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	48.0	48.0		59.0	56.0			23.0	33.0		23.0	
Actuated g/C Ratio	0.53	0.53		0.66	0.62			0.26	0.37		0.26	
v/c Ratio	0.01	0.61		0.97	0.57			0.39	0.30		0.13	
Control Delay	10.2	17.5		51.5	12.1			31.1	4.0		21.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.2	17.5		51.5	12.1			31.1	4.0		21.4	
LOS	B	B		D	B			C	A		C	
Approach Delay		17.4			25.8			14.9			21.4	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	1	246		84	218			75	1		21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	357		#218	314			133	47		52	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	348	1089		399	1280			411	791		493	
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	0.01	0.61		0.97	0.57			0.39	0.30		0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 75.6%		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: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	668	386	725	160	239	64
v/c Ratio	0.01	0.61	0.97	0.57	0.39	0.30	0.13
Control Delay	10.2	17.5	51.5	12.1	31.1	4.0	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	17.5	51.5	12.1	31.1	4.0	21.4
Queue Length 50th (ft)	1	246	84	218	75	1	21
Queue Length 95th (ft)	7	357	#218	314	133	47	52
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	348	1089	399	1280	411	791	493
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	0.01	0.61	0.97	0.57	0.39	0.30	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	10.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	670	758	150	232	36
Future Vol, veh/h	6	670	758	150	232	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	728	824	163	252	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	987	0	-	0	1648	906
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	742	-
Critical Hdwy	4.12	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	700	-	-	-	275	542
Stage 1	-	-	-	-	394	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	700	-	-	-	270	542
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	471	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	70.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	700	-	-	-	270	542
HCM Lane V/C Ratio	0.009	-	-	-	0.934	0.072
HCM Control Delay (s)	10.2	0	-	-	79.8	12.2
HCM Lane LOS	B	A	-	-	F	B
HCM 95th %tile Q(veh)	0	-	-	-	8.7	0.2

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	193	202	0	52	39
Future Vol, veh/h	0	193	202	0	52	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	230	240	0	62	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	470	240
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	556	804
Stage 1	0	-	-	0	805	-
Stage 2	0	-	-	0	813	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	556	804
Mov Cap-2 Maneuver	-	-	-	-	556	-
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

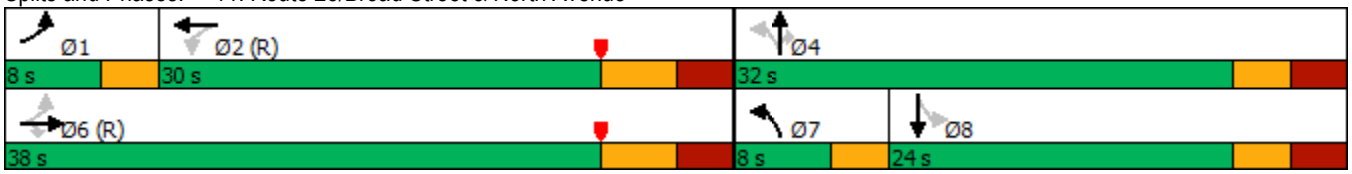
Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	641
HCM Lane V/C Ratio	-	-	0.169
HCM Control Delay (s)	-	-	11.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

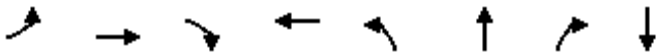
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	395	400	240	530	10	282	505	169	35	439	137
Future Volume (vph)	166	395	400	240	530	10	282	505	169	35	439	137
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.966	
Flt Protected	0.950				0.985		0.950				0.997	
Satd. Flow (prot)	1956	1538	1750	0	3809	0	1956	2059	1785	0	3721	0
Flt Permitted	0.211				0.724		0.219				0.831	
Satd. Flow (perm)	434	1538	1750	0	2800	0	451	2059	1785	0	3101	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			318		2						52	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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
Heavy Vehicles (%)	2%	4%	2%	3%	3%	0%	2%	2%	0%	0%	3%	5%
Adj. Flow (vph)	173	411	417	250	552	10	294	526	176	36	457	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	411	417	0	812	0	294	526	176	0	636	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	36.3	32.3	32.3		23.7		27.7	24.7	24.7		16.7	
Actuated g/C Ratio	0.52	0.46	0.46		0.34		0.40	0.35	0.35		0.24	
v/c Ratio	0.50	0.58	0.43		0.85		1.03	0.72	0.28		0.82	
Control Delay	14.9	18.5	4.9		29.4		82.8	26.1	17.2		32.5	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	14.9	18.5	4.9		29.4		82.8	26.1	17.2		32.5	
LOS	B	B	A		C		F	C	B		C	
Approach Delay		12.2			29.4			41.2			32.5	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)	38	129	24		196		84	186	52		122	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	70	217	75		#290		#222	291	95		#182	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185											
Base Capacity (vph)	345	709	978		951		286	764	663		836	
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	0.50	0.58	0.43		0.85		1.03	0.69	0.27		0.76	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 106.1%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	173	411	417	812	294	526	176	636
v/c Ratio	0.50	0.58	0.43	0.85	1.03	0.72	0.28	0.82
Control Delay	14.9	18.5	4.9	29.4	82.8	26.1	17.2	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	18.5	4.9	29.4	82.8	26.1	17.2	32.5
Queue Length 50th (ft)	38	129	24	196	84	186	52	122
Queue Length 95th (ft)	70	217	75	#290	#222	291	95	#182
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	345	709	978	951	286	764	663	836
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	0.50	0.58	0.43	0.85	1.03	0.69	0.27	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

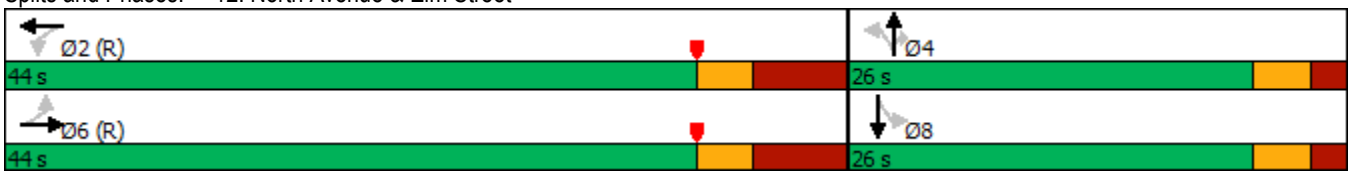
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	499	33	38	730	163	35	28	18	105	26	174
Future Volume (vph)	66	499	33	38	730	163	35	28	18	105	26	174
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.992			0.974				0.850		0.923	
Flt Protected		0.994			0.998			0.973			0.983	
Satd. Flow (prot)	0	3838	0	0	3789	0	0	1849	1700	0	1695	0
Flt Permitted		0.725			0.900			0.767			0.860	
Satd. Flow (perm)	0	2800	0	0	3417	0	0	1457	1700	0	1483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			53				78		98	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
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 (%)	0%	3%	0%	0%	3%	0%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	69	520	34	40	760	170	36	29	19	109	27	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	623	0	0	970	0	0	65	19	0	317	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0	26.0	26.0	26.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	Max	Max	
Act Effct Green (s)		36.0			36.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.51			0.51			0.30	0.30		0.30	
v/c Ratio		0.43			0.54			0.15	0.03		0.62	
Control Delay		13.3			14.1			19.1	0.1		20.4	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		13.3			14.1			19.1	0.1		20.4	
LOS		B			B			B	A		C	
Approach Delay		13.3			14.1			14.8			20.4	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)		92			135			21	0		82	
Queue Length 95th (ft)		m97			m130			50	0		167	
Internal Link Dist (ft)		83			399			113			96	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1445			1783			437	564		513	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.43			0.54			0.15	0.03		0.62	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 80.3%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

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

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	623	970	65	19	317
v/c Ratio	0.43	0.54	0.15	0.03	0.62
Control Delay	13.3	14.1	19.1	0.1	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	14.1	19.1	0.1	20.4
Queue Length 50th (ft)	92	135	21	0	82
Queue Length 95th (ft)	m97	m130	50	0	167
Internal Link Dist (ft)	83	399	113		96
Turn Bay Length (ft)					
Base Capacity (vph)	1445	1783	437	564	513
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.54	0.15	0.03	0.62

Intersection Summary

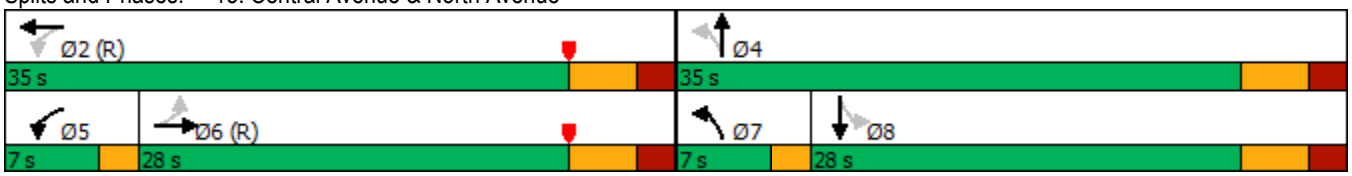
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Future Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.962			0.990			0.966			0.996	
Flt Protected		0.997			0.989			0.989			0.996	
Satd. Flow (prot)	0	3752	0	0	3830	0	0	3737	0	0	3881	0
Flt Permitted		0.839			0.562			0.556			0.748	
Satd. Flow (perm)	0	3157	0	0	2176	0	0	2101	0	0	2914	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					12			68				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	41	521	193	233	713	65	223	571	235	60	703	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	755	0	0	1011	0	0	1029	0	0	785	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		22.4			29.4			29.4			22.4	
Actuated g/C Ratio		0.32			0.42			0.42			0.32	
v/c Ratio		0.75			1.06			1.08			0.84	
Control Delay		20.1			68.9			74.0			32.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		20.1			68.9			74.0			32.5	
LOS		C			E			E			C	
Approach Delay		20.1			68.9			74.0			32.5	
Approach LOS		C			E			E			C	
Queue Length 50th (ft)		91			~191			~192			163	
Queue Length 95th (ft)		106			#342			#347			#259	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1010			953			954			932	
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		0.75			1.06			1.08			0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 52.1		Intersection LOS: D	
Intersection Capacity Utilization 106.3%		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.			

Splits and Phases: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	755	1011	1029	785
v/c Ratio	0.75	1.06	1.08	0.84
Control Delay	20.1	68.9	74.0	32.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.1	68.9	74.0	32.5
Queue Length 50th (ft)	91	~191	~192	163
Queue Length 95th (ft)	106	#342	#347	#259
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	1010	953	954	932
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	0.75	1.06	1.08	0.84

Intersection Summary

~ 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.

Intersection	
Int Delay, s/veh	21.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	662	0	0	520	55	26	42	15	36	0	114
Future Vol, veh/h	127	662	0	0	520	55	26	42	15	36	0	114
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	134	697	0	0	547	58	27	44	16	38	0	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	605	0	-	-	-	0	1601	1570	697	1571	1541	576
Stage 1	-	-	-	-	-	-	965	965	-	576	576	-
Stage 2	-	-	-	-	-	-	636	605	-	995	965	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	973	-	0	0	-	-	85	111	441	90	115	517
Stage 1	-	-	0	0	-	-	306	333	-	503	502	-
Stage 2	-	-	0	0	-	-	466	487	-	295	333	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	973	-	-	-	-	-	58	96	441	50	99	517
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	96	-	50	99	-
Stage 1	-	-	-	-	-	-	264	287	-	434	502	-
Stage 2	-	-	-	-	-	-	358	487	-	207	287	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0	170.8	126.7
HCM LOS			F	F

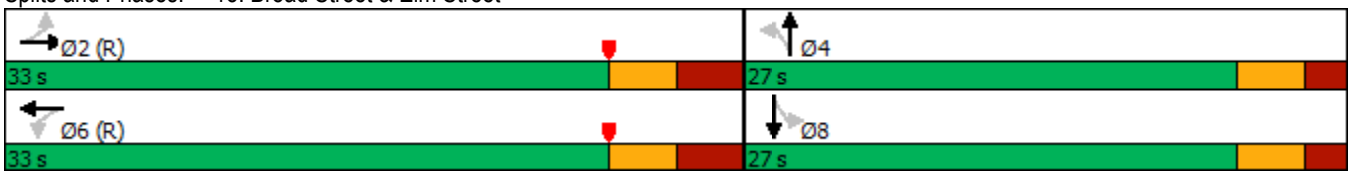
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	90	973	-	-	-	159
HCM Lane V/C Ratio	0.971	0.137	-	-	-	0.993
HCM Control Delay (s)	170.8	9.3	-	-	-	126.7
HCM Lane LOS	F	A	-	-	-	F
HCM 95th %tile Q(veh)	5.6	0.5	-	-	-	7.6

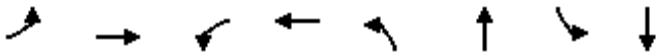
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	592	65	66	459	76	28	72	56	128	92	89
Future Volume (vph)	62	592	65	66	459	76	28	72	56	128	92	89
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.979			0.934			0.926	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1956	2028	0	1956	2016	0	1956	1923	0	1956	1906	0
Flt Permitted	0.402			0.316			0.595			0.671		
Satd. Flow (perm)	828	2028	0	651	2016	0	1225	1923	0	1381	1906	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			18			59			92	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	65	623	68	69	483	80	29	76	59	135	97	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	691	0	69	563	0	29	135	0	135	191	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	37.5	37.5		37.5	37.5		11.5	11.5		11.5	11.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.19	0.19		0.19	0.19	
v/c Ratio	0.13	0.54		0.17	0.44		0.12	0.33		0.51	0.44	
Control Delay	6.6	9.2		7.2	8.1		19.2	13.8		27.7	13.9	
Queue Delay	0.0	0.2		0.0	0.5		0.0	0.0		0.0	0.0	
Total Delay	6.6	9.4		7.2	8.5		19.2	13.8		27.7	13.9	
LOS	A	A		A	A		B	B		C	B	
Approach Delay		9.1			8.4			14.8			19.6	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	8	116		10	118		9	24		45	31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	28	254		37	207		24	56		81	70	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	517	1272		407	1267		449	742		506	757	
Starvation Cap Reductn	0	0		0	306		0	0		0	0	
Spillback Cap Reductn	0	109		0	0		0	21		11	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.59		0.17	0.59		0.06	0.19		0.27	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 73.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	691	69	563	29	135	135	191
v/c Ratio	0.13	0.54	0.17	0.44	0.12	0.33	0.51	0.44
Control Delay	6.6	9.2	7.2	8.1	19.2	13.8	27.7	13.9
Queue Delay	0.0	0.2	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	6.6	9.4	7.2	8.5	19.2	13.8	27.7	13.9
Queue Length 50th (ft)	8	116	10	118	9	24	45	31
Queue Length 95th (ft)	28	254	37	207	24	56	81	70
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	517	1272	407	1267	449	742	506	757
Starvation Cap Reductn	0	0	0	306	0	0	0	0
Spillback Cap Reductn	0	109	0	0	0	21	11	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.59	0.17	0.59	0.06	0.19	0.27	0.25

Intersection Summary

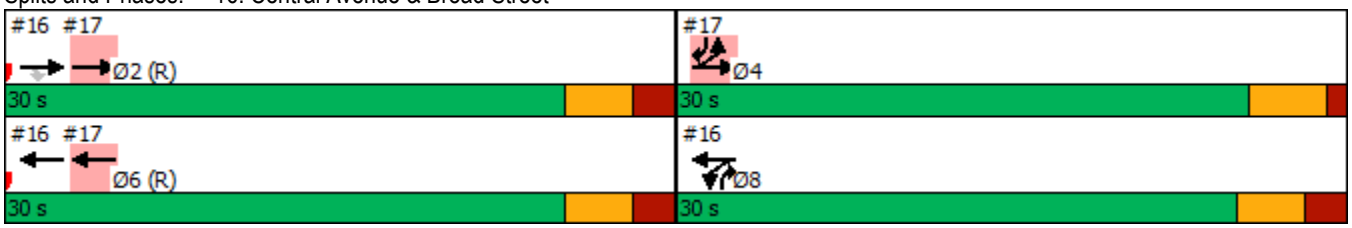
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	689	87	567	551	0	426		
Future Volume (vph)	689	87	567	551	0	426		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	2059	1750	1956	2059	0	1781		
Flt Permitted			0.950					
Satd. Flow (perm)	2059	1750	1956	2059	0	1781		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		92				109		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	725	92	597	580	0	448		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	725	92	597	580	0	448		
Turn Type	NA	Perm	Prot	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0			7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	25.9	25.9	24.1	60.0		24.1		
Actuated g/C Ratio	0.43	0.43	0.40	1.00		0.40		
v/c Ratio	0.82	0.11	0.76	0.28		0.58		
Control Delay	26.7	5.7	25.7	0.3		13.5		
Queue Delay	43.6	0.0	28.3	0.0		0.2		
Total Delay	70.2	5.7	54.0	0.3		13.7		
LOS	E	A	D	A		B		
Approach Delay	63.0			27.5	13.7			
Approach LOS	E			C	B			
Queue Length 50th (ft)	238	5	217	0		85		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	#421	m27	#320	0		163		
Internal Link Dist (ft)	238			23	636			
Turn Bay Length (ft)			130					
Base Capacity (vph)	889	808	815	2057		805		
Starvation Cap Reductn	94	0	238	0		0		
Spillback Cap Reductn	220	0	0	37		45		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	1.08	0.11	1.03	0.29		0.59		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 36.9		Intersection LOS: D	
Intersection Capacity Utilization 69.6%		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: 16: Central Avenue & Broad Street

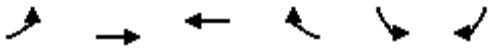




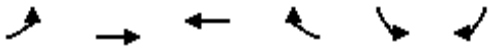
Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	725	92	597	580	448
v/c Ratio	0.82	0.11	0.76	0.28	0.58
Control Delay	26.7	5.7	25.7	0.3	13.5
Queue Delay	43.6	0.0	28.3	0.0	0.2
Total Delay	70.2	5.7	54.0	0.3	13.7
Queue Length 50th (ft)	238	5	217	0	85
Queue Length 95th (ft)	#421	m27	#320	0	163
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	889	808	815	2057	805
Starvation Cap Reductn	94	0	238	0	0
Spillback Cap Reductn	220	0	0	37	45
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.08	0.11	1.03	0.29	0.59

Intersection Summary

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.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	523	585	593	26	0	524		
Future Volume (vph)	523	585	593	26	0	524		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.994			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1956	2059	3888	0	0	3080		
Flt Permitted	0.950							
Satd. Flow (perm)	1956	2059	3888	0	0	3080		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			9			268		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	551	616	624	27	0	552		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	551	616	651	0	0	552		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	24.6	60.0	25.9			24.6		
Actuated g/C Ratio	0.41	1.00	0.43			0.41		
v/c Ratio	0.69	0.30	0.39			0.39		
Control Delay	19.7	0.3	12.6			6.8		
Queue Delay	53.8	0.0	55.5			0.1		
Total Delay	73.5	0.3	68.1			6.9		
LOS	E	A	E			A		
Approach Delay		34.8	68.1		6.9			
Approach LOS		C	E		A			
Queue Length 50th (ft)	165	0	81			35		

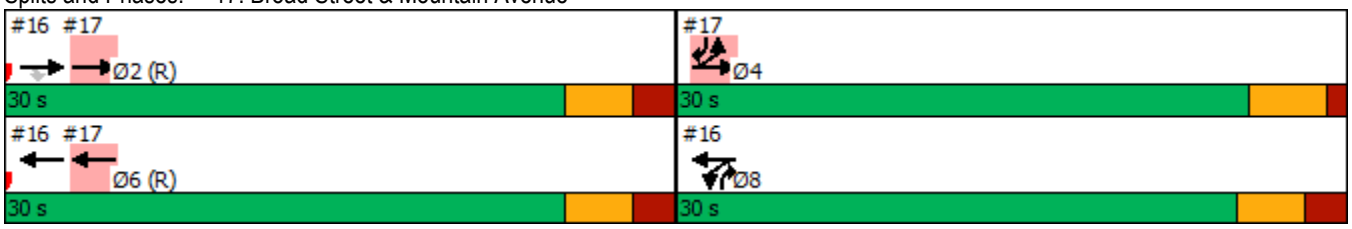


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	m234	m0	118			67		
Internal Link Dist (ft)		13	318		952			
Turn Bay Length (ft)						150		
Base Capacity (vph)	831	2057	1686			1463		
Starvation Cap Reductn	347	0	0			0		
Spillback Cap Reductn	0	0	1236			211		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	1.14	0.30	1.45			0.44		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 37.4		Intersection LOS: D	
Intersection Capacity Utilization 49.7%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	551	616	651	552
v/c Ratio	0.69	0.30	0.39	0.39
Control Delay	19.7	0.3	12.6	6.8
Queue Delay	53.8	0.0	55.5	0.1
Total Delay	73.5	0.3	68.1	6.9
Queue Length 50th (ft)	165	0	81	35
Queue Length 95th (ft)	m234	m0	118	67
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	831	2057	1686	1463
Starvation Cap Reductn	347	0	0	0
Spillback Cap Reductn	0	0	1236	211
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.14	0.30	1.45	0.44

Intersection Summary

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	760	673	0	0	59
Future Vol, veh/h	0	760	673	0	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	800	708	0	0	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	354
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	0	643
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	643
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	643
HCM Lane V/C Ratio	-	-	0.097
HCM Control Delay (s)	-	-	11.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	572	10	36	837	0	16	0	55	0	0	0
Future Vol, veh/h	0	572	10	36	837	0	16	0	55	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	602	11	38	881	0	17	0	58	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	881	0	0	613	0	0	1565	1565	608	1594	1570	881
Stage 1	-	-	-	-	-	-	608	608	-	957	957	-
Stage 2	-	-	-	-	-	-	957	957	-	637	613	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	767	-	-	966	-	-	90	111	496	86	111	346
Stage 1	-	-	-	-	-	-	483	486	-	310	336	-
Stage 2	-	-	-	-	-	-	310	336	-	465	483	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	767	-	-	966	-	-	85	102	496	71	102	346
Mov Cap-2 Maneuver	-	-	-	-	-	-	85	102	-	71	102	-
Stage 1	-	-	-	-	-	-	483	486	-	310	310	-
Stage 2	-	-	-	-	-	-	286	310	-	411	483	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	27	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	237	767	-	-	966	-	-	-
HCM Lane V/C Ratio	0.315	-	-	-	0.039	-	-	-
HCM Control Delay (s)	27	0	-	-	8.9	0	-	0
HCM Lane LOS	D	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	1.3	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	18	43	846	25	65
Future Vol, veh/h	610	18	43	846	25	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	642	19	45	891	26	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	661	0	1633	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	981	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	927	-	111	468
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	363	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	927	-	100	468
Mov Cap-2 Maneuver	-	-	-	-	100	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	328	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	31
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	231	-	-	927	-
HCM Lane V/C Ratio	0.41	-	-	0.049	-
HCM Control Delay (s)	31	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	901	890	3	2	1
Future Vol, veh/h	1	901	890	3	2	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	948	937	3	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	940	0	-	0	1889	939
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	950	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	729	-	-	-	77	320
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	376	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	729	-	-	-	77	320
Mov Cap-2 Maneuver	-	-	-	-	77	-
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	41.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	729	-	-	-	103
HCM Lane V/C Ratio	0.001	-	-	-	0.031
HCM Control Delay (s)	9.9	0	-	-	41.1
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	0	2	153	0	2
Future Vol, veh/h	260	0	2	153	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	0	2	166	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	283	0	453	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	170	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1279	-	565	756
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	860	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1279	-	564	756
Mov Cap-2 Maneuver	-	-	-	-	564	-
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	858	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	756	-	-	1279	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9.8	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	581	0	2	832	0	18
Future Vol, veh/h	581	0	2	832	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	632	0	2	904	0	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	632	0	-	316
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	947	-	0	680
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	947	-	-	680
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

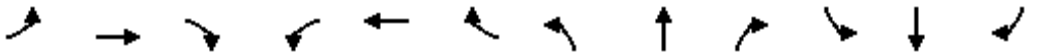
Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	680	-	-	947	-
HCM Lane V/C Ratio	0.029	-	-	0.002	-
HCM Control Delay (s)	10.5	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Kimley»Horn

DRAFT

2027 Build Saturday
Midday Peak



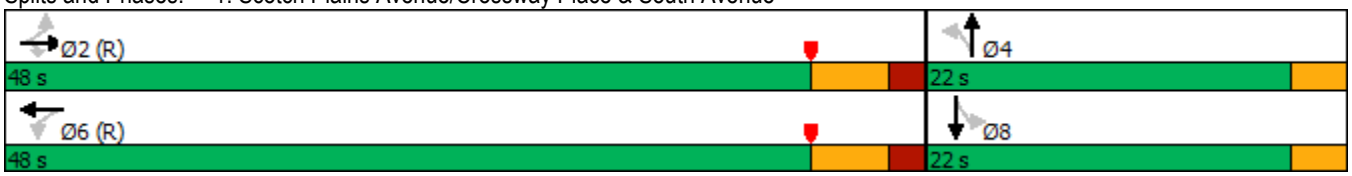
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	374	45	30	355	74	43	184	21	62	157	121
Future Volume (vph)	152	374	45	30	355	74	43	184	21	62	157	121
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.985			0.935	
Flt Protected		0.986			0.997		0.950			0.950		
Satd. Flow (prot)	0	2065	1785	0	2039	0	1995	2040	0	1975	1964	0
Flt Permitted		0.748			0.950		0.288			0.419		
Satd. Flow (perm)	0	1566	1785	0	1943	0	605	2040	0	871	1964	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		25			8			54	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	1%	0%	0%	4%	0%	1%	0%	1%	5%	1%	0%	0%
Adj. Flow (vph)	158	390	47	31	370	77	45	192	22	65	164	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	548	47	0	478	0	45	214	0	65	290	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		47.1	47.1		47.1		13.9	13.9		13.9	13.9	
Actuated g/C Ratio		0.67	0.67		0.67		0.20	0.20		0.20	0.20	
v/c Ratio		0.52	0.04		0.36		0.38	0.52		0.38	0.67	
Control Delay		13.1	4.7		6.3		31.9	27.8		29.2	28.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		13.1	4.7		6.3		31.9	27.8		29.2	28.2	
LOS		B	A		A		C	C		C	C	
Approach Delay		12.5			6.3			28.5			28.4	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		155	1		69		17	80		25	94	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		279	m22		146		43	128		54	154	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		1053	1216		1315		164	559		236	572	
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		0.52	0.04		0.36		0.27	0.38		0.28	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 84.5%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	548	47	478	45	214	65	290
v/c Ratio	0.52	0.04	0.36	0.38	0.52	0.38	0.67
Control Delay	13.1	4.7	6.3	31.9	27.8	29.2	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	4.7	6.3	31.9	27.8	29.2	28.2
Queue Length 50th (ft)	155	1	69	17	80	25	94
Queue Length 95th (ft)	279	m22	146	43	128	54	154
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	1053	1216	1315	164	559	236	572
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	0.52	0.04	0.36	0.27	0.38	0.28	0.51

Intersection Summary

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

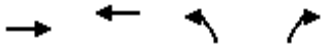
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	405	73	406	420	108	305
Future Volume (vph)	405	73	406	420	108	305
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.979					0.850
Flt Protected				0.976	0.950	
Satd. Flow (prot)	2019	0	0	3875	1995	1785
Flt Permitted				0.586	0.950	
Satd. Flow (perm)	2019	0	0	2327	1995	1785
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	12%	1%	0%	0%	0%
Adj. Flow (vph)	413	74	414	429	110	311
Shared Lane Traffic (%)						
Lane Group Flow (vph)	487	0	0	843	110	311
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	7.0		10.0	9.0	7.0	10.0
Minimum Split (s)	33.0		13.0	35.0	22.0	13.0
Total Split (s)	33.0		13.0	46.0	24.0	13.0
Total Split (%)	47.1%		18.6%	65.7%	34.3%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	39.5			52.7	8.7	21.5
Actuated g/C Ratio	0.56			0.75	0.12	0.31
v/c Ratio	0.43			0.44	0.45	0.57
Control Delay	11.5			4.2	33.8	23.7
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.5			4.2	33.8	23.7
LOS	B			A	C	C
Approach Delay	11.5			4.2	26.3	
Approach LOS	B			A	C	
Queue Length 50th (ft)	117			52	45	107

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	207			89	86	164
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	1139			1912	541	548
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	0.43			0.44	0.20	0.57

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Broad St & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	487	843	110	311
v/c Ratio	0.43	0.44	0.45	0.57
Control Delay	11.5	4.2	33.8	23.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.5	4.2	33.8	23.7
Queue Length 50th (ft)	117	52	45	107
Queue Length 95th (ft)	207	89	86	164
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1139	1912	541	548
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	0.43	0.44	0.20	0.57

Intersection Summary

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Existing_SAT (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.646	14.4	LOS B	6.5	166.1	0.77	0.99	1.35	21.5
6	T1	348	0.0	378	0.0	0.646	14.4	LOS B	6.5	166.1	0.77	0.99	1.35	19.7
16	R2	358	7.0	389	7.0	0.646	10.5	LOS B	6.5	166.1	0.64	0.73	0.91	22.1
Approach		720	3.5	782	3.5	0.646	12.4	LOS B	6.5	166.1	0.71	0.86	1.13	20.8
North: SB - SR 28														
7	L2	368	0.0	400	0.0	0.445	8.6	LOS A	2.5	63.0	0.58	0.54	0.63	22.6
14	R2	356	0.0	387	0.0	0.445	7.2	LOS A	2.5	63.0	0.53	0.47	0.53	21.0
Approach		724	0.0	787	0.0	0.445	7.9	LOS A	2.5	63.0	0.55	0.51	0.58	21.9
West: EB - South Ave														
5	L2	482	0.0	524	0.0	0.758	17.6	LOS C	12.6	315.3	0.85	1.17	1.72	13.7
2	T1	390	1.0	424	1.0	0.758	12.3	LOS B	12.6	315.3	0.68	0.83	1.16	21.7
Approach		872	0.4	948	0.4	0.758	15.2	LOS C	12.6	315.3	0.77	1.02	1.47	16.8
All Vehicles		2316	1.3	2517	1.3	0.758	12.1	LOS B	12.6	315.3	0.68	0.81	1.09	19.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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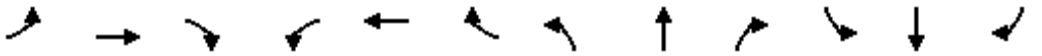
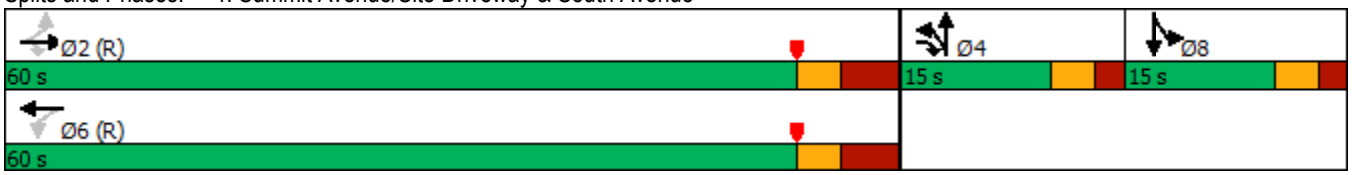


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	618	43	28	561	15	98	14	41	34	3	38
Future Volume (vph)	17	618	43	28	561	15	98	14	41	34	3	38
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	0		70	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.996			0.889			0.860	
Flt Protected		0.999			0.998		0.950			0.950		
Satd. Flow (prot)	0	2098	1785	0	3966	0	1995	1867	0	1995	1806	0
Flt Permitted		0.977			0.905		0.950			0.950		
Satd. Flow (perm)	0	2052	1785	0	3597	0	1995	1867	0	1995	1806	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			45		5			43			40	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			169			500			138	
Travel Time (s)		13.9			3.8			13.6			3.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	18	644	45	29	584	16	102	15	43	35	3	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	662	45	0	629	0	102	58	0	35	43	0
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA		Split	NA	
Protected Phases		2	4		6		4	4		8	8	
Permitted Phases	2		2	6								
Detector Phase	2	2	4	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	12.0		12.0	12.0	
Total Split (s)	60.0	60.0	15.0	60.0	60.0		15.0	15.0		15.0	15.0	
Total Split (%)	66.7%	66.7%	16.7%	66.7%	66.7%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	4.0	4.0	2.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.0	5.0		7.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	None	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		62.5	75.8		62.5		9.1	9.1		7.6	7.6	
Actuated g/C Ratio		0.69	0.84		0.69		0.10	0.10		0.08	0.08	
v/c Ratio		0.46	0.03		0.25		0.51	0.26		0.21	0.23	
Control Delay		10.0	0.7		7.3		47.4	19.2		41.1	16.9	
Queue Delay		0.2	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		10.2	0.7		7.3		47.4	19.2		41.1	16.9	
LOS		B	A		A		D	B		D	B	
Approach Delay		9.6			7.3			37.2			27.7	
Approach LOS		A			A			D			C	
Queue Length 50th (ft)		190	0		77		55	8		19	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		296	6		112		106	43		47	32	
Internal Link Dist (ft)		431			89			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)		1426	1517		2501		221	245		221	236	
Starvation Cap Reductn		206	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		0.54	0.03		0.25		0.46	0.24		0.16	0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	662	45	629	102	58	35	43
v/c Ratio	0.46	0.03	0.25	0.51	0.26	0.21	0.23
Control Delay	10.0	0.7	7.3	47.4	19.2	41.1	16.9
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	0.7	7.3	47.4	19.2	41.1	16.9
Queue Length 50th (ft)	190	0	77	55	8	19	2
Queue Length 95th (ft)	296	6	112	106	43	47	32
Internal Link Dist (ft)	431		89		420		58
Turn Bay Length (ft)							
Base Capacity (vph)	1426	1517	2501	221	245	221	236
Starvation Cap Reductn	206	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	0.54	0.03	0.25	0.46	0.24	0.16	0.18

Intersection Summary

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	651	43	32	554	43	105
Future Vol, veh/h	651	43	32	554	43	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	664	44	33	565	44	107

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	708	0	1035	686
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	349	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	900	-	245	451
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	900	-	232	451
Mov Cap-2 Maneuver	-	-	-	-	232	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	654	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	22.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	354	-	-	900	-
HCM Lane V/C Ratio	0.427	-	-	0.036	-
HCM Control Delay (s)	22.5	-	-	9.2	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	694	586	29	33	60
Future Vol, veh/h	28	694	586	29	33	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	30	746	630	31	35	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	661	0	-	0	1452	331
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	806	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	937	-	-	-	134	671
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	443	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	937	-	-	-	127	671
Mov Cap-2 Maneuver	-	-	-	-	127	-
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	443	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	26.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	937	-	-	-	266
HCM Lane V/C Ratio	0.032	-	-	-	0.376
HCM Control Delay (s)	9	0	-	-	26.5
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Future Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949						0.850			0.982	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1995	3737	0	0	0	1995	2100	1767	0	1976	2017	0
Flt Permitted	0.372					0.335				0.319		
Satd. Flow (perm)	781	3737	0	0	0	704	2100	1767	0	663	2017	0
Right Turn on Red				Yes				Yes				Yes
Satd. Flow (RTOR)		2						208			8	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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%	0%	0%	0%	1%	0%	1%	2%	4%
Adj. Flow (vph)	140	415	204	11	61	63	394	264	4	159	485	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	630	0	0	0	124	394	264	0	163	553	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	8.4%	43.2%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max			None	None	None	None	None	None	None	
Act Effct Green (s)	40.1	30.1				40.1	30.1	30.1		38.5	28.5	
Actuated g/C Ratio	0.44	0.33				0.44	0.33	0.33		0.42	0.31	
v/c Ratio	0.34	0.51				0.32	0.57	0.36		0.46	0.87	
Control Delay	17.3	26.8				17.2	29.7	7.9		19.3	43.7	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	17.3	26.8				17.2	29.7	7.9		19.3	43.7	
LOS	B	C				B	C	A		B	D	
Approach Delay		25.0					20.4				38.2	
Approach LOS		C					C				D	
Queue Length 50th (ft)	46	157				40	192	23		53	291	



Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	235	403	117	75
Future Volume (vph)	235	403	117	75
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1995	2059	1774	0
Flt Permitted	0.144			
Satd. Flow (perm)	302	2059	1774	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	1%	0%
Adj. Flow (vph)	245	420	122	78
Shared Lane Traffic (%)				
Lane Group Flow (vph)	245	420	200	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	41.0	41.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	38.5	28.5	28.5	
Actuated g/C Ratio	0.42	0.31	0.31	
v/c Ratio	1.11	0.65	0.31	
Control Delay	114.6	31.8	10.4	
Queue Delay	0.0	0.0	0.0	
Total Delay	114.6	31.8	10.4	
LOS	F	C	B	
Approach Delay		50.3		
Approach LOS		D		
Queue Length 50th (ft)	~97	205	30	

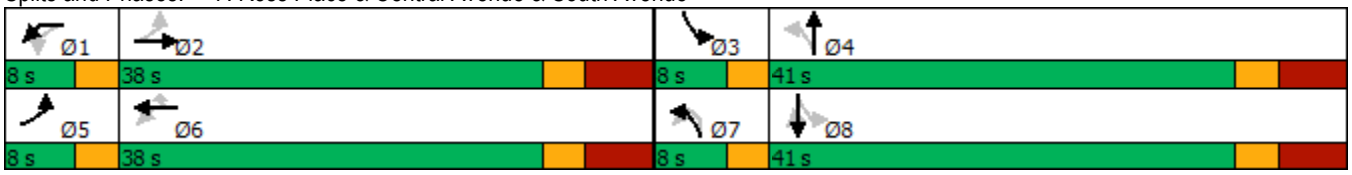
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	85	217				76	295	82		91	#430	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	412	1240				382	696	725		354	740	
Starvation Cap Reductn	0	0				0	0	0		0	0	
Spillback Cap Reductn	0	0				0	0	0		0	0	
Storage Cap Reductn	0	0				0	0	0		0	0	
Reduced v/c Ratio	0.34	0.51				0.32	0.57	0.36		0.46	0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 90.7			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 33.8		Intersection LOS: C	
Intersection Capacity Utilization 82.3%		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.

Splits and Phases: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#231	303	80	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	221	751	727	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	1.11	0.56	0.28	

Intersection Summary

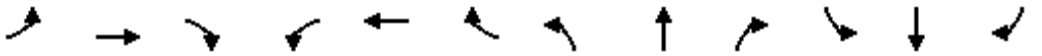


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	140	630	124	394	264	163	553	245	420	200
v/c Ratio	0.34	0.51	0.32	0.57	0.36	0.46	0.87	1.11	0.65	0.31
Control Delay	17.3	26.8	17.2	29.7	7.9	19.3	43.7	114.6	31.8	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	26.8	17.2	29.7	7.9	19.3	43.7	114.6	31.8	10.4
Queue Length 50th (ft)	46	157	40	192	23	53	291	~97	205	30
Queue Length 95th (ft)	85	217	76	295	82	91	#430	#231	303	80
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	412	1240	382	696	725	354	740	221	751	727
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	0.34	0.51	0.32	0.57	0.36	0.46	0.75	1.11	0.56	0.28

Intersection Summary

~ 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.

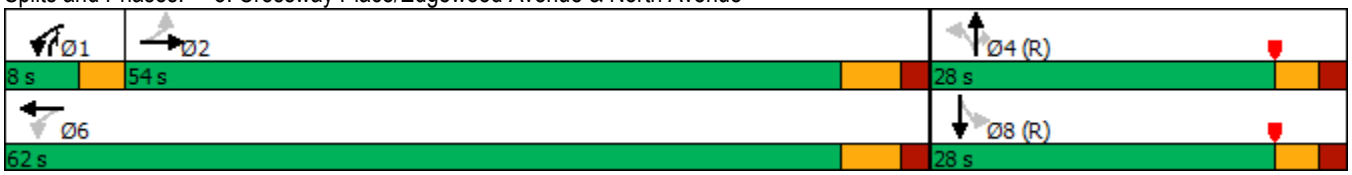


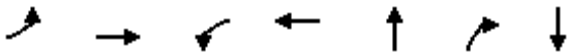
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	482	50	255	532	17	67	58	306	5	58	13
Future Volume (vph)	6	482	50	255	532	17	67	58	306	5	58	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.995				0.850		0.977	
Flt Protected	0.950			0.950				0.974			0.997	
Satd. Flow (prot)	1995	2052	0	1995	2050	0	0	2045	1750	0	2046	0
Flt Permitted	0.418			0.303				0.803			0.985	
Satd. Flow (perm)	878	2052	0	636	2050	0	0	1686	1750	0	2021	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			3				309		11	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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%	2%	0%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	6	518	54	274	572	18	72	62	329	5	62	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	572	0	274	590	0	0	134	329	0	81	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		8.0	62.0		28.0	28.0	8.0	28.0	28.0	
Total Split (%)	60.0%	60.0%		8.9%	68.9%		31.1%	31.1%	8.9%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	48.0	48.0		59.0	56.0			23.0	33.0		23.0	
Actuated g/C Ratio	0.53	0.53		0.66	0.62			0.26	0.37		0.26	
v/c Ratio	0.01	0.52		0.56	0.46			0.31	0.39		0.15	
Control Delay	10.0	15.5		11.2	10.4			29.5	4.6		23.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.0	15.5		11.2	10.4			29.5	4.6		23.6	
LOS	A	B		B	B			C	A		C	
Approach Delay		15.4			10.7			11.8			23.6	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	2	195		55	160			62	7		31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	285		87	234			112	61		67	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	468	1098		492	1276			430	837		524	
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	0.01	0.52		0.56	0.46			0.31	0.39		0.15	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Crossway Place/Edgewood Avenue & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	6	572	274	590	134	329	81
v/c Ratio	0.01	0.52	0.56	0.46	0.31	0.39	0.15
Control Delay	10.0	15.5	11.2	10.4	29.5	4.6	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	15.5	11.2	10.4	29.5	4.6	23.6
Queue Length 50th (ft)	2	195	55	160	62	7	31
Queue Length 95th (ft)	7	285	87	234	112	61	67
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	468	1098	492	1276	430	837	524
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	0.01	0.52	0.56	0.46	0.31	0.39	0.15

Intersection Summary

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	632	602	149	161	35
Future Vol, veh/h	14	632	602	149	161	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	14	652	621	154	166	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	775	0	-	0	1378	698
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	680	-
Critical Hdwy	4.1	-	-	-	4.4	4.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	850	-	-	-	346	642
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	507	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	850	-	-	-	337	642
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	507	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	23
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	850	-	-	-	337	642
HCM Lane V/C Ratio	0.017	-	-	-	0.493	0.056
HCM Control Delay (s)	9.3	0	-	-	25.6	10.9
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	-	-	-	2.6	0.2

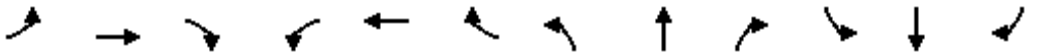
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	169	164	0	49	17
Future Vol, veh/h	0	169	164	0	49	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	0	0
Mvmt Flow	0	188	182	0	54	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	370	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	634	866
Stage 1	0	-	-	0	854	-
Stage 2	0	-	-	0	849	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	634	866
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	849	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	681
HCM Lane V/C Ratio	-	-	0.108
HCM Control Delay (s)	-	-	10.9
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

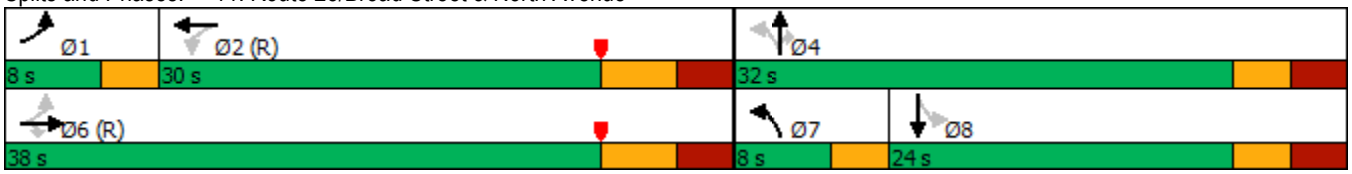


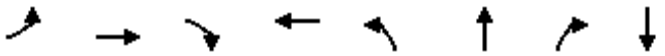
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	338	340	189	449	12	246	417	160	47	378	109
Future Volume (vph)	126	338	340	189	449	12	246	417	160	47	378	109
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.997				0.850		0.969	
Flt Protected	0.950				0.986		0.950				0.996	
Satd. Flow (prot)	1975	1600	1767	0	3795	0	1995	2100	1785	0	3816	0
Flt Permitted	0.302				0.748		0.271				0.866	
Satd. Flow (perm)	628	1600	1767	0	2879	0	569	2100	1785	0	3318	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			351		3						44	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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%	0%	1%	2%	4%	0%	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	130	348	351	195	463	12	254	430	165	48	390	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	348	351	0	670	0	254	430	165	0	550	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	38.0	38.0	30.0	30.0		8.0	32.0	32.0	24.0	24.0	
Total Split (%)	11.4%	54.3%	54.3%	42.9%	42.9%		11.4%	45.7%	45.7%	34.3%	34.3%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	37.2	33.2	33.2		26.2		26.8	23.8	23.8		15.8	
Actuated g/C Ratio	0.53	0.47	0.47		0.37		0.38	0.34	0.34		0.23	
v/c Ratio	0.29	0.46	0.34		0.62		0.80	0.60	0.27		0.70	
Control Delay	10.8	15.5	2.6		19.9		36.5	22.8	17.5		27.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Delay	10.8	15.5	2.6		19.9		36.5	22.8	17.5		27.9	
LOS	B	B	A		B		D	C	B		C	
Approach Delay		9.3			19.9			25.9			27.9	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	27	98	0		111		73	148	50		103	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	55	172	42		196		#152	226	90		150	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185											
Base Capacity (vph)	445	758	1022		1077		319	780	663		885	
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	0.29	0.46	0.34		0.62		0.80	0.55	0.25		0.62	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 6 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 20.1		Intersection LOS: C	
Intersection Capacity Utilization 93.0%		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: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	130	348	351	670	254	430	165	550
v/c Ratio	0.29	0.46	0.34	0.62	0.80	0.60	0.27	0.70
Control Delay	10.8	15.5	2.6	19.9	36.5	22.8	17.5	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	15.5	2.6	19.9	36.5	22.8	17.5	27.9
Queue Length 50th (ft)	27	98	0	111	73	148	50	103
Queue Length 95th (ft)	55	172	42	196	#152	226	90	150
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185							
Base Capacity (vph)	445	758	1022	1077	319	780	663	885
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	0.29	0.46	0.34	0.62	0.80	0.55	0.25	0.62

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

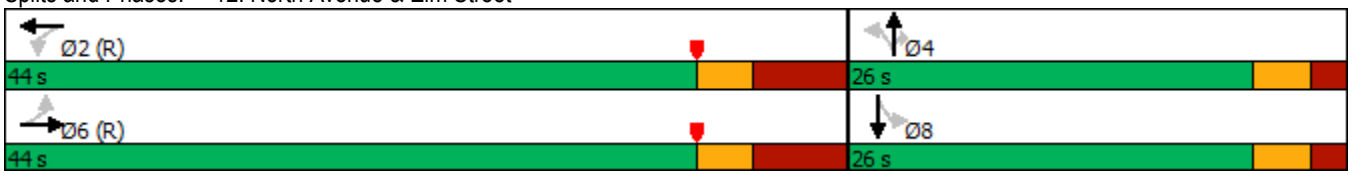
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	486	49	43	632	132	1	1	68	128	27	92
Future Volume (vph)	24	486	49	43	632	132	1	1	68	128	27	92
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2000	2000	2000	2000	2000	2000
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	*0.95	1.00	1.00	*0.95	1.00
Frt		0.987			0.975				0.850		0.950	
Flt Protected		0.998			0.997			0.976			0.975	
Satd. Flow (prot)	0	3930	0	0	3879	0	0	1854	1700	0	1760	0
Flt Permitted		0.896			0.891			0.911			0.836	
Satd. Flow (perm)	0	3529	0	0	3466	0	0	1731	1700	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			48				78		44	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	491	49	43	638	133	1	1	69	129	27	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	564	0	0	814	0	0	2	69	0	249	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0	26.0	26.0	26.0	
Total Split (s)	44.0	44.0		44.0	44.0		26.0	26.0	26.0	26.0	26.0	
Total Split (%)	62.9%	62.9%		62.9%	62.9%		37.1%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	5.0	5.0		5.0	5.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		8.0			8.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	Max	Max	
Act Effct Green (s)		36.0			36.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.51			0.51			0.30	0.30		0.30	
v/c Ratio		0.31			0.45			0.00	0.12		0.52	
Control Delay		9.6			11.8			17.0	4.9		21.0	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		9.6			11.8			17.0	4.9		21.0	
LOS		A			B			B	A		C	
Approach Delay		9.6			11.8			5.3			21.0	
Approach LOS		A			B			A			C	
Queue Length 50th (ft)		28			101			1	0		74	
Queue Length 95th (ft)		110			m143			5	22		145	
Internal Link Dist (ft)		83			399			113			96	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1825			1805			519	564		483	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.31			0.45			0.00	0.12		0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 72.5%		ICU Level of Service C	
Analysis Period (min) 15			
* User Entered Value			

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

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	564	814	2	69	249
v/c Ratio	0.31	0.45	0.00	0.12	0.52
Control Delay	9.6	11.8	17.0	4.9	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	11.8	17.0	4.9	21.0
Queue Length 50th (ft)	28	101	1	0	74
Queue Length 95th (ft)	110	m143	5	22	145
Internal Link Dist (ft)	83	399	113		96
Turn Bay Length (ft)					
Base Capacity (vph)	1825	1805	519	564	483
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.45	0.00	0.12	0.52

Intersection Summary

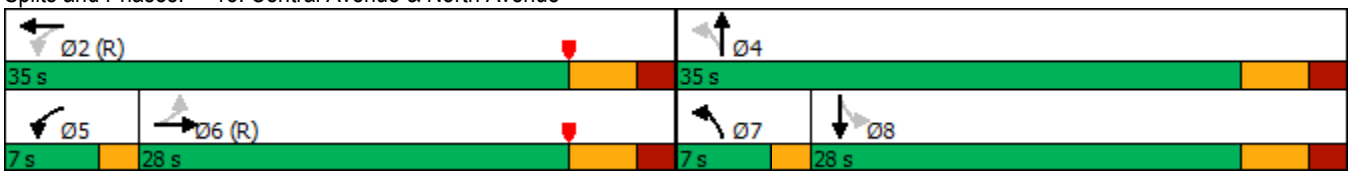
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Future Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. 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
Frt		0.954			0.989			0.971			0.991	
Flt Protected		0.994			0.987			0.988			0.996	
Satd. Flow (prot)	0	3784	0	0	3895	0	0	3813	0	0	3932	0
Flt Permitted		0.753			0.576			0.635			0.809	
Satd. Flow (perm)	0	2866	0	0	2273	0	0	2451	0	0	3194	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					14			51				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	0%
Adj. Flow (vph)	79	403	215	222	548	60	223	504	174	45	466	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	0	830	0	0	901	0	0	542	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	15.6	15.6		7.1	15.6		7.1	12.6		12.6	12.6	
Total Split (s)	28.0	28.0		7.0	35.0		7.0	35.0		28.0	28.0	
Total Split (%)	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Recall Mode	C-Max	C-Max		Min	C-Max		Min	None		None	None	
Act Effct Green (s)		23.4			30.6			28.2			21.2	
Actuated g/C Ratio		0.33			0.44			0.40			0.30	
v/c Ratio		0.73			0.80			0.86			0.56	
Control Delay		22.1			24.3			27.7			22.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		22.1			24.3			27.7			22.8	
LOS		C			C			C			C	
Approach Delay		22.1			24.3			27.7			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		101			131			139			99	
Queue Length 95th (ft)		112			#200			#208			145	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		956			1039			1086			1022	
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		0.73			0.80			0.83			0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 69.4 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 94.0%		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: 13: Central Avenue & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	697	830	901	542
v/c Ratio	0.73	0.80	0.86	0.56
Control Delay	22.1	24.3	27.7	22.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.1	24.3	27.7	22.8
Queue Length 50th (ft)	101	131	139	99
Queue Length 95th (ft)	112	#200	#208	145
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	956	1039	1086	1022
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	0.73	0.80	0.83	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

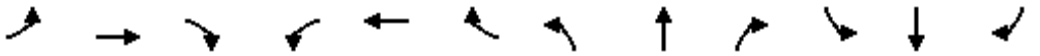
Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	142	453	1	0	371	72	17	47	76	6	0	166
Future Vol, veh/h	142	453	1	0	371	72	17	47	76	6	0	166
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	128	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	0	3	0	0	0	0	0	1
Mvmt Flow	153	487	1	0	399	77	18	51	82	6	0	178

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	476	0	0	-	-	0	1321	1270	488	1298	1232	438
Stage 1	-	-	-	-	-	-	794	794	-	438	438	-
Stage 2	-	-	-	-	-	-	527	476	-	860	794	-
Critical Hdwy	4.1	-	-	-	-	-	7.1	6.5	6.2	7.1	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.309
Pot Cap-1 Maneuver	1097	-	-	0	-	-	135	170	584	140	179	621
Stage 1	-	-	-	0	-	-	384	403	-	601	582	-
Stage 2	-	-	-	0	-	-	538	560	-	353	403	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1097	-	-	-	-	-	86	146	584	79	154	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	146	-	79	154	-
Stage 1	-	-	-	-	-	-	331	347	-	517	582	-
Stage 2	-	-	-	-	-	-	383	560	-	223	347	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	53.4	16.3
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	215	1097	-	-	-	-	501
HCM Lane V/C Ratio	0.7	0.139	-	-	-	-	0.369
HCM Control Delay (s)	53.4	8.8	-	-	-	-	16.3
HCM Lane LOS	F	A	-	-	-	-	C
HCM 95th %tile Q(veh)	4.5	0.5	-	-	-	-	1.7

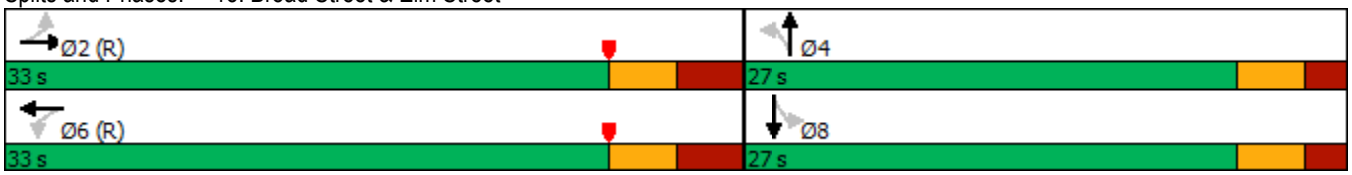


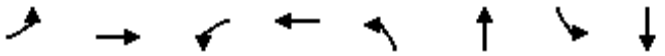
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	369	73	33	304	79	51	149	86	118	115	81
Future Volume (vph)	75	369	73	33	304	79	51	149	86	118	115	81
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.969			0.945			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	2048	0	1995	2035	0	1995	1985	0	1995	1970	0
Flt Permitted	0.520			0.474			0.567			0.471		
Satd. Flow (perm)	1092	2048	0	995	2035	0	1191	1985	0	989	1970	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			28			55			66	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	78	384	76	34	317	82	53	155	90	123	120	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	460	0	34	399	0	53	245	0	123	204	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	37.3	37.3		37.3	37.3		11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.20	0.20		0.20	0.20	
v/c Ratio	0.11	0.36		0.05	0.31		0.23	0.57		0.64	0.47	
Control Delay	6.5	7.0		6.5	7.6		21.0	21.3		36.7	16.9	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	6.5	7.0		6.5	7.9		21.0	21.3		36.7	16.9	
LOS	A	A		A	A		C	C		D	B	
Approach Delay		7.0			7.8			21.3			24.4	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	10	63		5	81		16	62		42	44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	32	145		22	152		37	107		80	83	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	679	1282		619	1276		436	762		362	764	
Starvation Cap Reductn	0	0		0	406		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	0.11	0.36		0.05	0.46		0.12	0.32		0.34	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	460	34	399	53	245	123	204
v/c Ratio	0.11	0.36	0.05	0.31	0.23	0.57	0.64	0.47
Control Delay	6.5	7.0	6.5	7.6	21.0	21.3	36.7	16.9
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	6.5	7.0	6.5	7.9	21.0	21.3	36.7	16.9
Queue Length 50th (ft)	10	63	5	81	16	62	42	44
Queue Length 95th (ft)	32	145	22	152	37	107	80	83
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	679	1282	619	1276	436	762	362	764
Starvation Cap Reductn	0	0	0	406	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	0.11	0.36	0.05	0.46	0.12	0.32	0.34	0.27

Intersection Summary



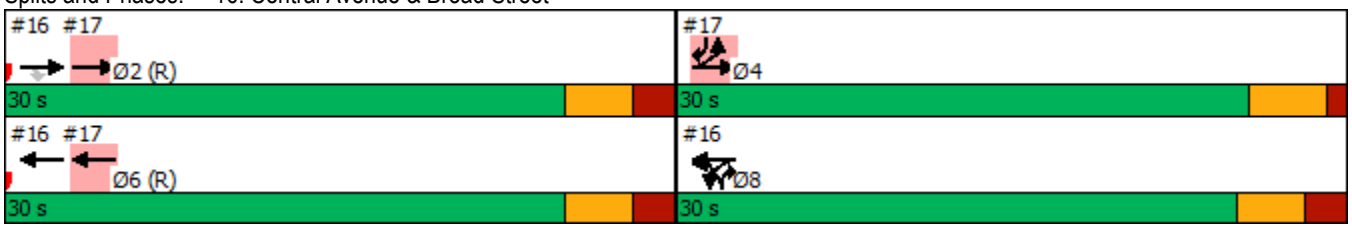
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	429	159	480	422	1	383		
Future Volume (vph)	429	159	480	422	1	383		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950		0.950			
Satd. Flow (prot)	2100	1785	1995	2100	0	1817		
Flt Permitted			0.950		0.950			
Satd. Flow (perm)	2100	1785	1995	2100	0	1817		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		166				270		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	447	166	500	440	1	399		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	447	166	500	440	1	399		
Turn Type	NA	Perm	Prot	NA	Prot	Over		
Protected Phases	2		8!	6 8!	8!	8	4	6
Permitted Phases		2						
Detector Phase	2	2	8	6 8	8	8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0		7.0	7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0		30.0	30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0		30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None		None	None	None	C-Max
Act Effct Green (s)	27.3	27.3	22.7	60.0	0.0	22.7		
Actuated g/C Ratio	0.46	0.46	0.38	1.00	0.00	0.38		
v/c Ratio	0.47	0.18	0.66	0.21	no cap	0.47		
Control Delay	14.6	4.7	23.9	0.2		6.2		
Queue Delay	0.4	0.0	15.6	0.0		0.1		
Total Delay	15.1	4.7	39.4	0.2	Error	6.3		
LOS	B	A	D	A	F	A		
Approach Delay	12.3			21.1	Err			
Approach LOS	B			C	F			
Queue Length 50th (ft)	109	0	171	0	0	28		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	189	41	261	0	0	79		
Internal Link Dist (ft)	238			23	636			
Turn Bay Length (ft)			130					
Base Capacity (vph)	957	903	831	2080	1	914		
Starvation Cap Reductn	152	0	318	0	0	0		
Spillback Cap Reductn	178	0	0	0	0	62		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.57	0.18	0.97	0.21	1.00	0.47		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: Err			
Intersection Signal Delay: Err		Intersection LOS: F	
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

! Phase conflict between lane groups.

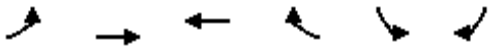
Splits and Phases: 16: Central Avenue & Broad Street



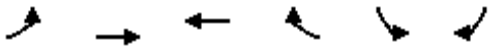


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	447	166	500	440	1	399
v/c Ratio	0.47	0.18	0.66	0.21	no cap	0.47
Control Delay	14.6	4.7	23.9	0.2		6.2
Queue Delay	0.4	0.0	15.6	0.0		0.1
Total Delay	15.1	4.7	39.4	0.2	Error	6.3
Queue Length 50th (ft)	109	0	171	0	0	28
Queue Length 95th (ft)	189	41	261	0	0	79
Internal Link Dist (ft)	238			23	636	
Turn Bay Length (ft)			130			
Base Capacity (vph)	957	903	831	2080	1	914
Starvation Cap Reductn	152	0	318	0	0	0
Spillback Cap Reductn	178	0	0	0	0	62
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.18	0.97	0.21	1.00	0.47

Intersection Summary



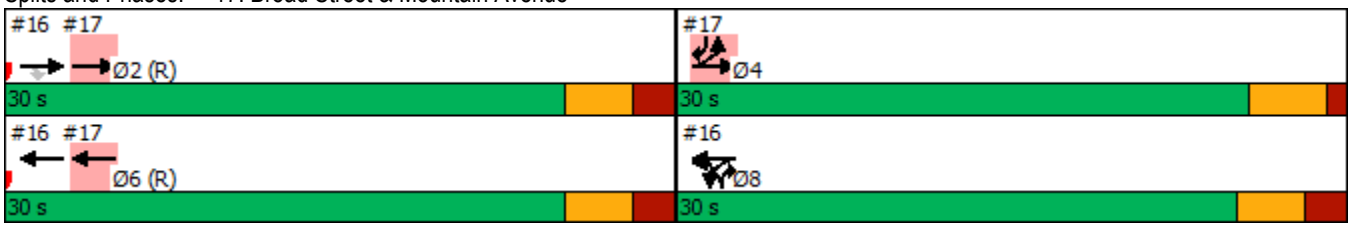
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	424	387	459	40	0	446		
Future Volume (vph)	424	387	459	40	0	446		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.988			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1995	2100	3942	0	0	3142		
Flt Permitted	0.950							
Satd. Flow (perm)	1995	2100	3942	0	0	3142		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			18			437		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	437	399	473	41	0	460		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	437	399	514	0	0	460		
Turn Type	Prot	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases								
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	23.2	60.0	27.3			23.2		
Actuated g/C Ratio	0.39	1.00	0.46			0.39		
v/c Ratio	0.57	0.19	0.28			0.31		
Control Delay	19.4	0.2	11.1			2.3		
Queue Delay	10.8	0.0	3.0			0.1		
Total Delay	30.2	0.2	14.1			2.3		
LOS	C	A	B			A		
Approach Delay		15.9	14.1		2.3			
Approach LOS		B	B		A			
Queue Length 50th (ft)	132	0	60			2		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	200	0	91			27		
Internal Link Dist (ft)		13	318		952			
Turn Bay Length (ft)						150		
Base Capacity (vph)	847	2080	1806			1586		
Starvation Cap Reductn	378	0	0			0		
Spillback Cap Reductn	0	0	1160			263		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.93	0.19	0.80			0.35		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: Err			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 41.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	437	399	514	460
v/c Ratio	0.57	0.19	0.28	0.31
Control Delay	19.4	0.2	11.1	2.3
Queue Delay	10.8	0.0	3.0	0.1
Total Delay	30.2	0.2	14.1	2.3
Queue Length 50th (ft)	132	0	60	2
Queue Length 95th (ft)	200	0	91	27
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	847	2080	1806	1586
Starvation Cap Reductn	378	0	0	0
Spillback Cap Reductn	0	0	1160	263
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.93	0.19	0.80	0.35

Intersection Summary

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	671	606	0	0	12
Future Vol, veh/h	0	671	606	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	685	618	0	0	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	309
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	0	0	693
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	693
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	693
HCM Lane V/C Ratio	-	-	0.018
HCM Control Delay (s)	-	-	10.3
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	559	10	36	606	0	8	0	28	0	0	0
Future Vol, veh/h	0	559	10	36	606	0	8	0	28	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	0	576	10	37	625	0	8	0	29	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	625	0	0	586	0	0	1280	1280	581	1295	1285	625
Stage 1	-	-	-	-	-	-	581	581	-	699	699	-
Stage 2	-	-	-	-	-	-	699	699	-	596	586	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	966	-	-	999	-	-	144	167	517	141	166	488
Stage 1	-	-	-	-	-	-	503	503	-	434	445	-
Stage 2	-	-	-	-	-	-	434	445	-	494	500	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	966	-	-	999	-	-	138	157	517	127	157	488
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	157	-	127	157	-
Stage 1	-	-	-	-	-	-	503	503	-	434	420	-
Stage 2	-	-	-	-	-	-	409	420	-	466	500	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	17.7	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	321	966	-	-	999	-	-	-
HCM Lane V/C Ratio	0.116	-	-	-	0.037	-	-	-
HCM Control Delay (s)	17.7	0	-	-	8.7	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	568	18	44	625	13	33
Future Vol, veh/h	568	18	44	625	13	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	580	18	45	638	13	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	598	0	1317	589
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	728	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	989	-	175	512
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	989	-	163	512
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	448	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	989	-
HCM Lane V/C Ratio	0.147	-	-	0.045	-
HCM Control Delay (s)	18.2	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	800	804	3	2	1
Future Vol, veh/h	1	800	804	3	2	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	851	855	3	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	858	0	-	0	1710	857
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	853	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	791	-	-	-	101	360
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	421	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	791	-	-	-	101	360
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	32.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	791	-	-	-	133
HCM Lane V/C Ratio	0.001	-	-	-	0.024
HCM Control Delay (s)	9.6	0	-	-	32.7
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	0	2	168	0	2
Future Vol, veh/h	167	0	2	168	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	186	0	2	187	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	186	0	377	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	191	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1401	-	629	861
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1401	-	628	861
Mov Cap-2 Maneuver	-	-	-	-	628	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	844	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	861	-	-	1401	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9.2	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	614	0	2	800	0	4
Future Vol, veh/h	614	0	2	800	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	640	0	2	833	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	640	0	-	320
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	954	-	0	682
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	954	-	-	682
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	682	-	-	954	-
HCM Lane V/C Ratio	0.006	-	-	0.002	-
HCM Control Delay (s)	10.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Kimley»Horn

DRAFT

2027 Build Conditions + Mitigation AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	291	211	46	2	165	40	46	304	25	90	191	44
Future Volume (vph)	291	211	46	2	165	40	46	304	25	90	191	44
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.974			0.989			0.972	
Flt Protected		0.972					0.950			0.950		
Satd. Flow (prot)	0	1944	1700	0	1948	0	1900	1978	0	1900	1944	0
Flt Permitted		0.703			0.997		0.424			0.258		
Satd. Flow (perm)	0	1406	1700	0	1942	0	848	1978	0	516	1944	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48		25			6			18	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	306	222	48	2	174	42	48	320	26	95	201	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	528	48	0	218	0	48	346	0	95	247	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	42.0	42.0	42.0	42.0	42.0		28.0	28.0		28.0	28.0	
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		43.3	43.3		43.3		17.7	17.7		17.7	17.7	
Actuated g/C Ratio		0.62	0.62		0.62		0.25	0.25		0.25	0.25	
v/c Ratio		0.61	0.04		0.18		0.22	0.69		0.73	0.49	
Control Delay		19.9	5.8		6.5		21.3	29.8		54.0	22.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		19.9	5.8		6.5		21.3	29.8		54.0	22.9	
LOS		B	A		A		C	C		D	C	
Approach Delay		18.7			6.5			28.8			31.6	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		217	5		30		17	133		38	84	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		337	m15		75		37	186		#91	127	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		869	1069		1211		302	710		184	705	
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		0.61	0.04		0.18		0.16	0.49		0.52	0.35	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 22.5 Intersection LOS: C
Intersection Capacity Utilization 73.1% 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: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	528	48	218	48	346	95	247
v/c Ratio	0.61	0.04	0.18	0.22	0.69	0.73	0.49
Control Delay	19.9	5.8	6.5	21.3	29.8	54.0	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	5.8	6.5	21.3	29.8	54.0	22.9
Queue Length 50th (ft)	217	5	30	17	133	38	84
Queue Length 95th (ft)	337	m15	75	37	186	#91	127
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	869	1069	1211	302	710	184	705
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	0.61	0.04	0.18	0.16	0.49	0.52	0.35

Intersection Summary

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.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	391	92	760	196	92	373
Future Volume (vph)	391	92	760	196	92	373
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.974					0.850
Flt Protected				0.962	0.950	
Satd. Flow (prot)	1948	0	0	3656	1900	1700
Flt Permitted				0.548	0.950	
Satd. Flow (perm)	1948	0	0	2082	1900	1700
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	412	97	800	206	97	393
Shared Lane Traffic (%)						
Lane Group Flow (vph)	509	0	0	1006	97	393
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	10.0		9.0	9.0	7.0	9.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	37.2			52.9	8.5	23.8
Actuated g/C Ratio	0.53			0.76	0.12	0.34
v/c Ratio	0.49			1.15dl	0.42	0.68
Control Delay	14.2			4.9	33.7	25.2
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	14.2			4.9	33.7	25.2
LOS	B			A	C	C
Approach Delay	14.2			4.9	26.9	
Approach LOS	B			A	C	
Queue Length 50th (ft)	132			66	40	140

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	262			112	78	190
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	1036			1789	461	582
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	0.49			0.56	0.21	0.68

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad Street & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	509	1006	97	393
v/c Ratio	0.49	1.15dl	0.42	0.68
Control Delay	14.2	4.9	33.7	25.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.2	4.9	33.7	25.2
Queue Length 50th (ft)	132	66	40	140
Queue Length 95th (ft)	262	112	78	190
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1036	1789	461	582
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	0.49	0.56	0.21	0.68

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Existing_AM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	18	0.0	19	0.0	0.665	16.5	LOS C	6.3	162.4	0.80	1.04	1.50	20.4
6	T1	308	4.0	328	4.0	0.665	16.7	LOS C	6.3	162.4	0.80	1.04	1.50	18.5
16	R2	350	4.0	372	4.0	0.665	11.7	LOS B	6.3	162.4	0.68	0.80	1.00	21.2
Approach		676	3.9	719	3.9	0.665	14.1	LOS B	6.3	162.4	0.74	0.91	1.24	19.9
North: SB - SR 28														
7	L2	542	5.0	577	5.0	0.657	13.6	LOS B	7.8	201.6	0.71	0.85	1.20	19.6
14	R2	524	5.0	557	5.0	0.657	10.1	LOS B	7.8	201.6	0.60	0.60	0.75	18.8
Approach		1066	5.0	1134	5.0	0.657	11.9	LOS B	7.8	201.6	0.65	0.73	0.98	19.3
West: EB - South Ave														
5u	U	2	0.0	2	0.0	1.142	98.8	LOS F	59.3	1524.4	1.00	3.26	7.43	5.0
5	L2	637	3.0	678	3.0	1.142	99.0	LOS F	59.3	1524.4	1.00	3.26	7.43	5.1
2	T1	440	5.0	468	5.0	1.142	55.6	LOS F	59.3	1524.4	0.80	1.98	4.17	9.9
Approach		1079	3.8	1148	3.8	1.142	81.3	LOS F	59.3	1524.4	0.92	2.74	6.10	6.5
All Vehicles		2821	4.3	3001	4.3	1.142	39.0	LOS E	59.3	1524.4	0.77	1.54	3.00	11.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	658	47	11	509	74	185	45	39	66	5	23
Future Volume (vph)	56	658	47	11	509	74	185	45	39	66	5	23
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		100	0		0	60		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.981			0.930			0.876	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	1945	0	1995	1974	0	1956	1953	0	1995	1840	0
Flt Permitted	0.263			0.165			0.738			0.700		
Satd. Flow (perm)	552	1945	0	346	1974	0	1519	1953	0	1470	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			11			41			24	
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		511			153			500			138	
Travel Time (s)		13.9			3.5			13.6			3.1	
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%	7%	5%	0%	5%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	58	685	49	11	530	77	193	47	41	69	5	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	734	0	11	607	0	193	88	0	69	29	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	2		1	2			4			8	
Permitted Phases	2			2			4			8		
Detector Phase	1	2		1	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	9.5	19.0		9.5	19.0		19.0	19.0		19.0	19.0	
Total Split (s)	10.0	52.0		10.0	52.0		24.0	24.0		24.0	24.0	
Total Split (%)	10.5%	54.7%		10.5%	54.7%		25.3%	25.3%		25.3%	25.3%	
Yellow Time (s)	3.5	3.0		3.5	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0		4.5	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	54.8	48.8		54.8	48.8		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.58	0.51		0.58	0.51		0.18	0.18		0.18	0.18	
v/c Ratio	0.14	0.73		0.04	0.60		0.72	0.23		0.27	0.08	
Control Delay	3.3	16.8		6.7	22.5		52.7	20.7		35.9	15.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	3.3	16.8		6.7	22.5		52.7	20.7		35.9	15.1	
LOS	A	B		A	C		D	C		D	B	
Approach Delay		15.8			22.2			42.7			29.7	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)	2	83		1	184		110	24		36	3	

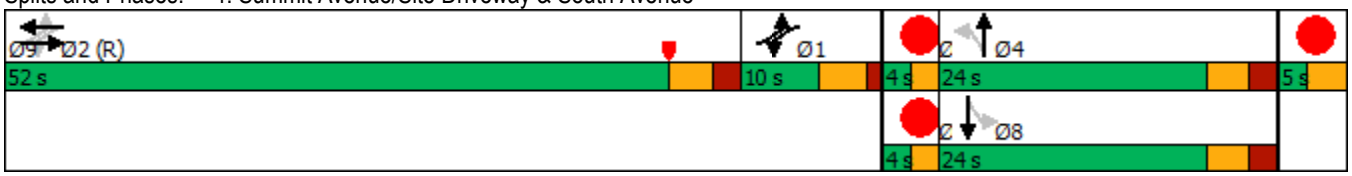
Lane Group	Ø3	Ø7	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	3	7	9
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	5.0
Total Split (s)	4.0	4.0	5.0
Total Split (%)	4%	4%	5%
Yellow Time (s)	2.0	2.0	3.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	5	493		m4	456		182	64		74	26	
Internal Link Dist (ft)		431			73			420			58	
Turn Bay Length (ft)							60					
Base Capacity (vph)	401	1001		295	1019		303	423		294	387	
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	0.14	0.73		0.04	0.60		0.64	0.21		0.23	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

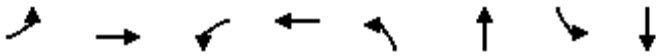
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue



Lane Group	Ø3	Ø7	Ø9
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	58	734	11	607	193	88	69	29
v/c Ratio	0.14	0.73	0.04	0.60	0.72	0.23	0.27	0.08
Control Delay	3.3	16.8	6.7	22.5	52.7	20.7	35.9	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	16.8	6.7	22.5	52.7	20.7	35.9	15.1
Queue Length 50th (ft)	2	83	1	184	110	24	36	3
Queue Length 95th (ft)	5	493	m4	456	182	64	74	26
Internal Link Dist (ft)		431		73		420		58
Turn Bay Length (ft)					60			
Base Capacity (vph)	401	1001	295	1019	303	423	294	387
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	0.14	0.73	0.04	0.60	0.64	0.21	0.23	0.07

Intersection Summary

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

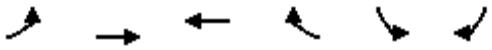
Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	658	53	19	477	48	154
Future Vol, veh/h	658	53	19	477	48	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	7	8	0	5	4	0
Mvmt Flow	700	56	20	507	51	164

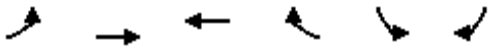
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	756	0	1275	728
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	864	-	182	427
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	864	-	176	427
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	558	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	36.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	864	-
HCM Lane V/C Ratio	0.674	-	-	0.023	-
HCM Control Delay (s)	36.7	-	-	9.3	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	4.6	-	-	0.1	-



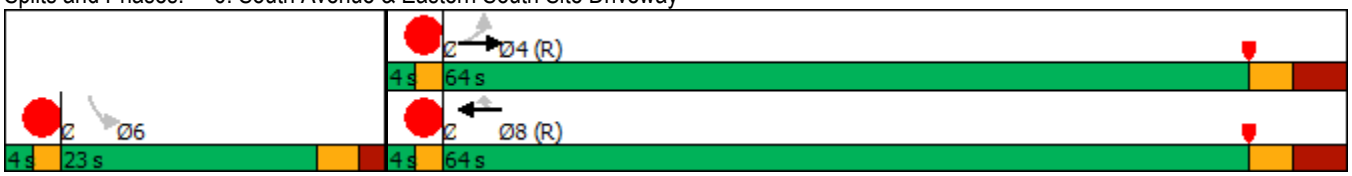
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	46	759	493	91	19	25			
Future Volume (vph)	46	759	493	91	19	25			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			150	0	0			
Storage Lanes	0			1	1	0			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt				0.850	0.922				
Flt Protected		0.997			0.979				
Satd. Flow (prot)	0	1999	2000	1785	1843	0			
Flt Permitted		0.945			0.979				
Satd. Flow (perm)	0	1895	2000	1785	1843	0			
Right Turn on Red				Yes		Yes			
Satd. Flow (RTOR)				97	27				
Link Speed (mph)		30	30		25				
Link Distance (ft)		320	446		143				
Travel Time (s)		7.3	10.1		3.9				
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94			
Heavy Vehicles (%)	0%	5%	5%	0%	0%	5%			
Bus Blockages (#/hr)	5	0	0	0	0	0			
Adj. Flow (vph)	49	807	524	97	20	27			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	856	524	97	47	0			
Turn Type	Perm	NA	NA	Perm	Perm				
Protected Phases		4	8				3	5	7
Permitted Phases	4			8	6				
Detector Phase	4	4	8	8	6				
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0		1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0	23.0	19.0		4.0	4.0	4.0
Total Split (s)	64.0	64.0	64.0	64.0	23.0		4.0	4.0	4.0
Total Split (%)	67.4%	67.4%	67.4%	67.4%	24.2%		4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0	4.0	2.0		0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0				
Total Lost Time (s)		7.0	7.0	7.0	5.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max		None	None	None
Act Effct Green (s)		57.8	57.8	57.8	18.8				
Actuated g/C Ratio		0.61	0.61	0.61	0.20				
v/c Ratio		0.74	0.43	0.09	0.12				
Control Delay		13.9	9.2	2.1	18.7				
Queue Delay		0.0	0.5	0.0	0.0				
Total Delay		13.9	9.7	2.1	18.7				
LOS		B	A	A	B				
Approach Delay		13.9	8.5		18.7				
Approach LOS		B	A		B				



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 50th (ft)		186	141	0	10				
Queue Length 95th (ft)		336	198	14	40				
Internal Link Dist (ft)		240	366		63				
Turn Bay Length (ft)				150					
Base Capacity (vph)		1153	1217	1123	386				
Starvation Cap Reductn		2	317	0	0				
Spillback Cap Reductn		0	0	0	0				
Storage Cap Reductn		0	0	0	0				
Reduced v/c Ratio		0.74	0.58	0.09	0.12				

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: South Avenue & Eastern South Site Driveway





Lane Group	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	856	524	97	47
v/c Ratio	0.74	0.43	0.09	0.12
Control Delay	13.9	9.2	2.1	18.7
Queue Delay	0.0	0.5	0.0	0.0
Total Delay	13.9	9.7	2.1	18.7
Queue Length 50th (ft)	186	141	0	10
Queue Length 95th (ft)	336	198	14	40
Internal Link Dist (ft)	240	366		63
Turn Bay Length (ft)			150	
Base Capacity (vph)	1153	1217	1123	386
Starvation Cap Reductn	2	317	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.58	0.09	0.12

Intersection Summary

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Future Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.954						0.850			0.997	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1900	3625	0	0	0	1900	2000	1700	0	1900	1994	0
Flt Permitted	0.403					0.384				0.562		
Satd. Flow (perm)	806	3625	0	0	0	768	2000	1700	0	1124	1994	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		1									1	
Link Speed (mph)		30					35				25	
Link Distance (ft)		446					926				398	
Travel Time (s)		10.1					18.0				10.9	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	218	420	180	5	16	22	331	120	11	224	665	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	605	0	0	0	38	331	120	0	235	677	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	8.4%	8.4%	43.2%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None	None	None	None	None	
Act Effct Green (s)	42.5	34.5				40.8	30.7	30.7		42.3	33.3	
Actuated g/C Ratio	0.45	0.36				0.43	0.32	0.32		0.45	0.35	
v/c Ratio	0.51	0.46				0.10	0.51	0.22		0.43	0.97	
Control Delay	9.6	16.1				15.2	29.8	25.2		18.8	59.0	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	9.6	16.1				15.2	29.8	25.2		18.8	59.0	
LOS	A	B				B	C	C		B	E	
Approach Delay		14.4					27.5				48.6	
Approach LOS		B					C				D	
Queue Length 50th (ft)	36	123				12	162	53		80	398	



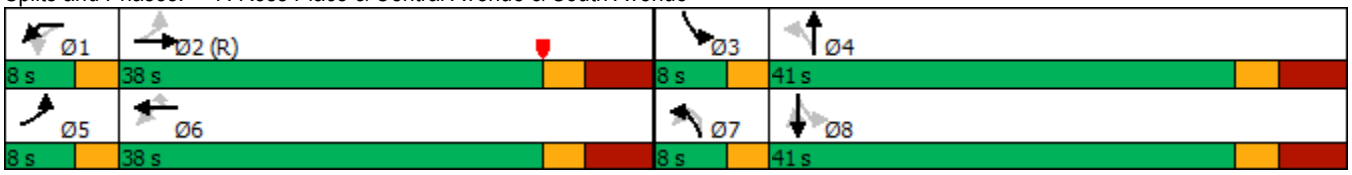
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	92	227	161	80
Future Volume (vph)	92	227	161	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1900	2000	1700	0
Flt Permitted	0.124			
Satd. Flow (perm)	248	2000	1700	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		792		
Travel Time (s)		21.6		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%
Adj. Flow (vph)	97	239	169	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	97	239	253	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	41.7	31.7	31.7	
Actuated g/C Ratio	0.44	0.33	0.33	
v/c Ratio	0.49	0.36	0.39	
Control Delay	22.5	25.4	13.3	
Queue Delay	0.0	0.0	0.0	
Total Delay	22.5	25.4	13.3	
LOS	C	C	B	
Approach Delay		19.7		
Approach LOS		B		
Queue Length 50th (ft)	31	106	53	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	m42	161				30	248	97		129	#635	
Internal Link Dist (ft)		366					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	424	1317				390	646	549		541	699	
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	0.51	0.46				0.10	0.51	0.22		0.43	0.97	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 28.9	Intersection LOS: C
Intersection Capacity Utilization 80.6%	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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	58	168	116	
Internal Link Dist (ft)		712		
Turn Bay Length (ft)	105			
Base Capacity (vph)	196	694	672	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.49	0.34	0.38	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	218	605	38	331	120	235	677	97	239	253
v/c Ratio	0.51	0.46	0.10	0.51	0.22	0.43	0.97	0.49	0.36	0.39
Control Delay	9.6	16.1	15.2	29.8	25.2	18.8	59.0	22.5	25.4	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	16.1	15.2	29.8	25.2	18.8	59.0	22.5	25.4	13.3
Queue Length 50th (ft)	36	123	12	162	53	80	398	31	106	53
Queue Length 95th (ft)	m42	161	30	248	97	129	#635	58	168	116
Internal Link Dist (ft)		366		846			318		712	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	424	1317	390	646	549	541	699	196	694	672
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	0.51	0.46	0.10	0.51	0.22	0.43	0.97	0.49	0.34	0.38

Intersection Summary

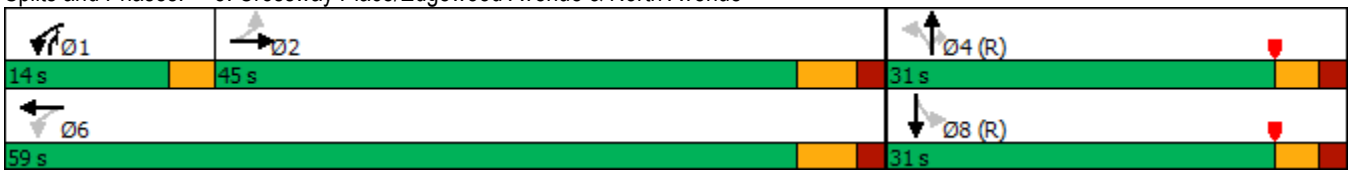
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

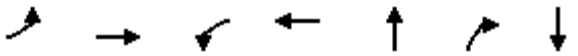
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	691	26	128	341	0	132	55	417	26	161	5
Future Volume (vph)	5	691	26	128	341	0	132	55	417	26	161	5
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995							0.850		0.997	
Flt Protected	0.950			0.950				0.966			0.993	
Satd. Flow (prot)	1900	1990	0	1900	2000	0	0	1932	1700	0	1980	0
Flt Permitted	0.547			0.109				0.607			0.942	
Satd. Flow (perm)	1094	1990	0	218	2000	0	0	1214	1700	0	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3							119		1	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	5	727	27	135	359	0	139	58	439	27	169	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	754	0	135	359	0	0	197	439	0	201	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	45.0	45.0		14.0	59.0		31.0	31.0	14.0	31.0	31.0	
Total Split (%)	50.0%	50.0%		15.6%	65.6%		34.4%	34.4%	15.6%	34.4%	34.4%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	41.7	41.7		56.0	53.0			26.0	39.3		26.0	
Actuated g/C Ratio	0.46	0.46		0.62	0.59			0.29	0.44		0.29	
v/c Ratio	0.01	0.82		0.47	0.31			0.56	0.54		0.37	
Control Delay	14.2	30.3		12.8	10.1			34.5	15.8		27.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	14.2	30.3		12.8	10.1			34.5	15.8		27.8	
LOS	B	C		B	B			C	B		C	
Approach Delay		30.2			10.9			21.6			27.8	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	2	354		28	94			95	128		90	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	8	#603		55	144			167	204		151	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	507	923		341	1177			350	856		543	
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	0.01	0.82		0.40	0.31			0.56	0.51		0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 22.8		Intersection LOS: C	
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: 8: Crossway Place/Edgewood Avenue & North Avenue

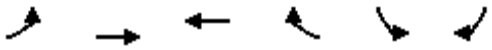




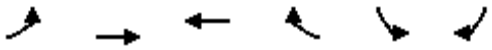
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	754	135	359	197	439	201
v/c Ratio	0.01	0.82	0.47	0.31	0.56	0.54	0.37
Control Delay	14.2	30.3	12.8	10.1	34.5	15.8	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	30.3	12.8	10.1	34.5	15.8	27.8
Queue Length 50th (ft)	2	354	28	94	95	128	90
Queue Length 95th (ft)	8	#603	55	144	167	204	151
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	507	923	341	1177	350	856	543
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	0.01	0.82	0.40	0.31	0.56	0.51	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	8	745	641	156	200	13			
Future Volume (vph)	8	745	641	156	200	13			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			0	0	50			
Storage Lanes	0			0	1	1			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt			0.974			0.850			
Flt Protected		0.999			0.950				
Satd. Flow (prot)	0	2018	1970	0	1918	1785			
Flt Permitted		0.992			0.950				
Satd. Flow (perm)	0	2004	1970	0	1918	1785			
Right Turn on Red				No		Yes			
Satd. Flow (RTOR)						9			
Link Speed (mph)		35	35		25				
Link Distance (ft)		178	120		163				
Travel Time (s)		3.5	2.3		4.4				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96			
Heavy Vehicles (%)	0%	4%	4%	3%	4%	0%			
Adj. Flow (vph)	8	776	668	163	208	14			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	784	831	0	208	14			
Turn Type	Perm	NA	NA		Prot	Perm			
Protected Phases		4	8		6		3	5	7
Permitted Phases	4					6			
Detector Phase	4	4	8		6	6			
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0		5.0	5.0	1.0	1.0	1.0
Minimum Split (s)	30.5	30.5	30.5		19.5	19.5	4.0	4.0	4.0
Total Split (s)	69.0	69.0	69.0		23.0	23.0	4.0	4.0	4.0
Total Split (%)	69.0%	69.0%	69.0%		23.0%	23.0%	4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	2.0	2.0	2.0
All-Red Time (s)	2.5	2.5	2.5		2.5	2.5	0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			
Total Lost Time (s)		5.5	5.5		5.5	5.5			
Lead/Lag	Lag	Lag	Lag		Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max		Max	Max	None	None	None
Act Effct Green (s)		65.9	65.9		19.9	19.9			
Actuated g/C Ratio		0.66	0.66		0.20	0.20			
v/c Ratio		0.59	0.64		0.55	0.04			
Control Delay		12.2	12.0		42.8	22.8			
Queue Delay		0.2	4.4		0.0	0.0			
Total Delay		12.4	16.4		42.8	22.8			
LOS		B	B		D	C			
Approach Delay		12.4	16.4		41.5				
Approach LOS		B	B		D				
Queue Length 50th (ft)		237	236		118	3			

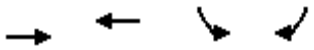


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 95th (ft)		386	374		200	20			
Internal Link Dist (ft)		98	40		83				
Turn Bay Length (ft)						50			
Base Capacity (vph)		1320	1297		381	362			
Starvation Cap Reductn		0	381		0	0			
Spillback Cap Reductn		88	0		0	0			
Storage Cap Reductn		0	0		0	0			
Reduced v/c Ratio		0.64	0.91		0.55	0.04			

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: North Avenue & Clark Street





Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	784	831	208	14
v/c Ratio	0.59	0.64	0.55	0.04
Control Delay	12.2	12.0	42.8	22.8
Queue Delay	0.2	4.4	0.0	0.0
Total Delay	12.4	16.4	42.8	22.8
Queue Length 50th (ft)	237	236	118	3
Queue Length 95th (ft)	386	374	200	20
Internal Link Dist (ft)	98	40	83	
Turn Bay Length (ft)				50
Base Capacity (vph)	1320	1297	381	362
Starvation Cap Reductn	0	381	0	0
Spillback Cap Reductn	88	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.91	0.55	0.04

Intersection Summary

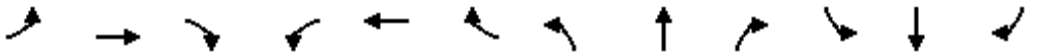
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	179	183	0	42	44
Future Vol, veh/h	0	179	183	0	42	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	1	3	0	6	0
Mvmt Flow	0	252	258	0	59	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	510	258
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	252	-
Critical Hdwy	-	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	0	-	-	0	516	786
Stage 1	0	-	-	0	776	-
Stage 2	0	-	-	0	781	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	516	786
Mov Cap-2 Maneuver	-	-	-	-	516	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	781	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	626
HCM Lane V/C Ratio	-	-	0.193
HCM Control Delay (s)	-	-	12.1
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

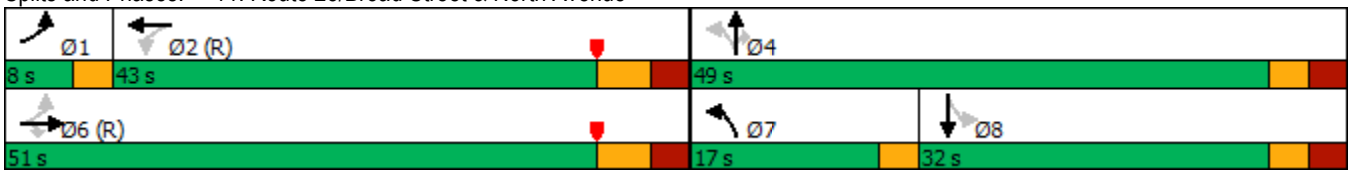


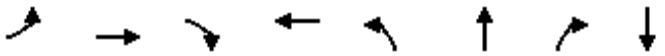
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	413	366	223	475	7	248	573	167	13	475	103
Future Volume (vph)	195	413	366	223	475	7	248	573	167	13	475	103
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		125	0		0	0		0	0		75
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.974	
Flt Protected	0.950				0.984		0.950				0.999	
Satd. Flow (prot)	1847	1509	1700	0	3758	0	1956	2039	1684	0	3714	0
Flt Permitted	0.236				0.696		0.180				0.917	
Satd. Flow (perm)	459	1509	1700	0	2658	0	371	2039	1684	0	3409	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			342		1						24	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		267			555			498			430	
Travel Time (s)		5.2			15.1			13.6			11.7	
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 (%)	8%	6%	5%	5%	4%	0%	2%	3%	6%	0%	5%	3%
Adj. Flow (vph)	212	449	398	242	516	8	270	623	182	14	516	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	212	449	398	0	766	0	270	623	182	0	642	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	51.0	51.0	43.0	43.0		17.0	49.0	49.0	32.0	32.0	
Total Split (%)	8.0%	51.0%	51.0%	43.0%	43.0%		17.0%	49.0%	49.0%	32.0%	32.0%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	51.4	47.4	47.4		37.4		42.6	39.6	39.6		23.3	
Actuated g/C Ratio	0.51	0.47	0.47		0.37		0.43	0.40	0.40		0.23	
v/c Ratio	0.64	0.63	0.40		0.77		0.73	0.77	0.27		0.79	
Control Delay	23.4	22.7	3.8		32.6		31.2	33.2	20.8		42.2	
Queue Delay	0.0	1.1	0.4		0.0		1.1	0.0	0.0		1.1	
Total Delay	23.4	23.8	4.2		32.6		32.3	33.2	20.8		43.3	
LOS	C	C	A		C		C	C	C		D	
Approach Delay		16.4			32.6			30.9			43.3	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	78	240	33		235		108	327	74		192	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#133	358	47		305		167	449	121		252	
Internal Link Dist (ft)		187			475			418			350	
Turn Bay Length (ft)	185		125									
Base Capacity (vph)	332	714	985		995		379	876	724		904	
Starvation Cap Reductn	0	103	219		0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0		22	0	0		97	
Storage Cap Reductn	0	0	0		0		0	0	0		0	
Reduced v/c Ratio	0.64	0.73	0.52		0.77		0.76	0.71	0.25		0.80	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 29.1		Intersection LOS: C	
Intersection Capacity Utilization 107.9%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 11: Route 28/Broad Street & North Avenue

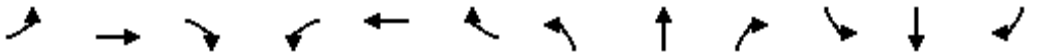




Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	212	449	398	766	270	623	182	642
v/c Ratio	0.64	0.63	0.40	0.77	0.73	0.77	0.27	0.79
Control Delay	23.4	22.7	3.8	32.6	31.2	33.2	20.8	42.2
Queue Delay	0.0	1.1	0.4	0.0	1.1	0.0	0.0	1.1
Total Delay	23.4	23.8	4.2	32.6	32.3	33.2	20.8	43.3
Queue Length 50th (ft)	78	240	33	235	108	327	74	192
Queue Length 95th (ft)	#133	358	47	305	167	449	121	252
Internal Link Dist (ft)		187		475		418		350
Turn Bay Length (ft)	185		125					
Base Capacity (vph)	332	714	985	995	379	876	724	904
Starvation Cap Reductn	0	103	219	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	22	0	0	97
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.73	0.52	0.77	0.76	0.71	0.25	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



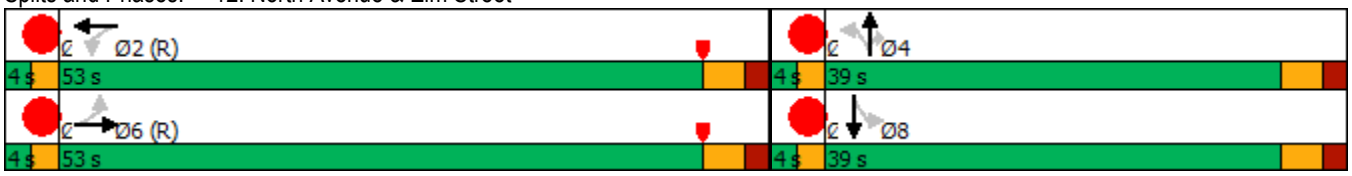
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	551	33	18	659	150	9	14	3	83	20	56
Future Volume (vph)	69	551	33	18	659	150	9	14	3	83	20	56
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.973				0.850		0.952	
Flt Protected		0.995			0.999			0.981			0.975	
Satd. Flow (prot)	0	3719	0	0	3723	0	0	2060	1785	0	1919	0
Flt Permitted		0.750			0.931			0.893			0.822	
Satd. Flow (perm)	0	2803	0	0	3470	0	0	1875	1785	0	1618	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			36				65		30	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			460			167			176	
Travel Time (s)		4.4			12.5			3.8			4.0	
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%	7%	0%	0%	5%	1%	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	77	612	37	20	732	167	10	16	3	92	22	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	726	0	0	919	0	0	26	3	0	176	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		19.0	19.0	19.0	19.0	19.0	
Total Split (s)	53.0	53.0		53.0	53.0		39.0	39.0	39.0	39.0	39.0	
Total Split (%)	53.0%	53.0%		53.0%	53.0%		39.0%	39.0%	39.0%	39.0%	39.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0			5.0			5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		62.5			62.5			16.0	16.0		16.0	
Actuated g/C Ratio		0.62			0.62			0.16	0.16		0.16	
v/c Ratio		0.41			0.42			0.09	0.01		0.62	
Control Delay		9.2			8.1			35.0	0.0		41.8	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		9.2			8.1			35.0	0.0		41.8	
LOS		A			A			C	A		D	
Approach Delay		9.2			8.1			31.4			41.8	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		81			82			15	0		89	
Queue Length 95th (ft)		157			m173			36	0		149	
Internal Link Dist (ft)		83			380			87			96	
Turn Bay Length (ft)												

Lane Group	Ø1	Ø3	Ø5	Ø7
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Heavy Vehicles (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	3	5	7
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	1.0	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0	4.0
Total Split (%)	4%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1753			2180			637	649		569	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.41			0.42			0.04	0.00		0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 12.1		Intersection LOS: B	
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: 12: North Avenue & Elm Street



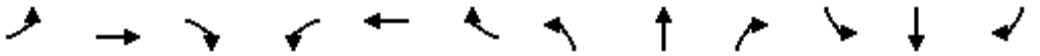
Lane Group	Ø1	Ø3	Ø5	Ø7
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	726	919	26	3	176
v/c Ratio	0.41	0.42	0.09	0.01	0.62
Control Delay	9.2	8.1	35.0	0.0	41.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	8.1	35.0	0.0	41.8
Queue Length 50th (ft)	81	82	15	0	89
Queue Length 95th (ft)	157	m173	36	0	149
Internal Link Dist (ft)	83	380	87		96
Turn Bay Length (ft)					
Base Capacity (vph)	1753	2180	637	649	569
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.41	0.42	0.04	0.00	0.31

Intersection Summary

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

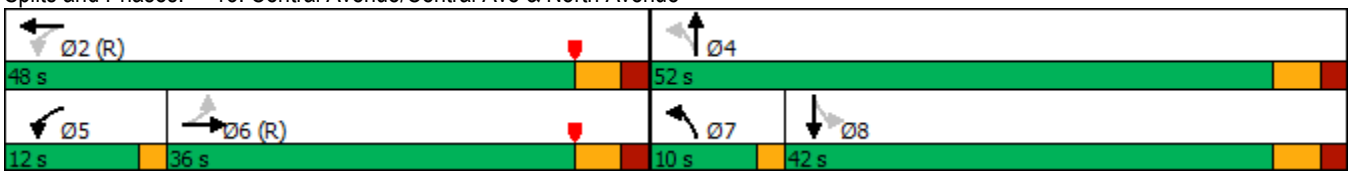


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Future Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. 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
Frt		0.969			0.995			0.980			0.996	
Flt Protected		0.998			0.988			0.988			0.998	
Satd. Flow (prot)	0	3675	0	0	3736	0	0	3679	0	0	3777	0
Flt Permitted		0.910			0.585			0.647			0.904	
Satd. Flow (perm)	0	3351	0	0	2212	0	0	2409	0	0	3421	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					5			23				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		221			706			792			210	
Travel Time (s)		6.0			13.8			21.6			5.7	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	20	469	125	185	566	28	253	616	135	16	462	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	614	0	0	779	0	0	1004	0	0	492	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	36.0	36.0		12.0	48.0		10.0	52.0		42.0	42.0	
Total Split (%)	36.0%	36.0%		12.0%	48.0%		10.0%	52.0%		42.0%	42.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)		30.4			44.1			44.7			34.7	
Actuated g/C Ratio		0.30			0.44			0.45			0.35	
v/c Ratio		0.60			0.71			0.88			0.41	
Control Delay		30.5			25.9			33.4			25.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		30.5			25.9			33.4			25.8	
LOS		C			C			C			C	
Approach Delay		30.5			25.9			33.4			25.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		175			184			234			121	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		244			238			297			165	
Internal Link Dist (ft)		141			626			712			130	
Turn Bay Length (ft)												
Base Capacity (vph)		1018			1100			1185			1245	
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		0.60			0.71			0.85			0.40	

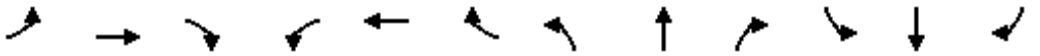
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 89.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 13: Central Avenue/Central Ave & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	614	779	1004	492
v/c Ratio	0.60	0.71	0.88	0.41
Control Delay	30.5	25.9	33.4	25.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	30.5	25.9	33.4	25.8
Queue Length 50th (ft)	175	184	234	121
Queue Length 95th (ft)	244	238	297	165
Internal Link Dist (ft)	141	626	712	130
Turn Bay Length (ft)				
Base Capacity (vph)	1018	1100	1185	1245
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	0.60	0.71	0.85	0.40

Intersection Summary

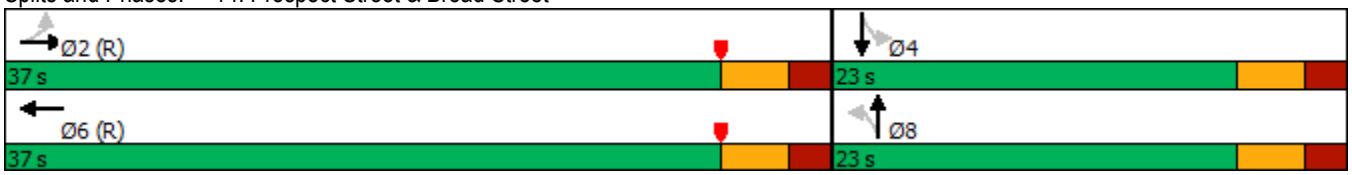


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	543	0	0	580	36	5	41	10	21	0	118
Future Volume (vph)	61	543	0	0	580	36	5	41	10	21	0	118
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	128		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.992			0.975			0.885	
Flt Protected	0.950							0.996			0.993	
Satd. Flow (prot)	1900	2000	0	0	1984	0	0	1942	0	0	1758	0
Flt Permitted	0.378							0.953			0.935	
Satd. Flow (perm)	756	2000	0	0	1984	0	0	1858	0	0	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					8			11			124	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		430			482			224			309	
Travel Time (s)		11.7			13.1			6.1			7.0	
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 (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	64	572	0	0	611	38	5	43	11	22	0	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	572	0	0	649	0	0	59	0	0	146	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		
Detector Phase	2	2			6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	18.0	18.0			18.0		10.0	10.0		23.0	23.0	
Total Split (s)	37.0	37.0			37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%			61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max			C-Max		None	None		None	None	
Act Effct Green (s)	45.7	45.7			45.7			7.4			7.4	
Actuated g/C Ratio	0.76	0.76			0.76			0.12			0.12	
v/c Ratio	0.11	0.38			0.43			0.25			0.47	
Control Delay	3.9	4.5			2.8			22.1			12.3	
Queue Delay	0.0	0.3			0.0			0.0			0.0	
Total Delay	3.9	4.7			2.9			22.1			12.3	
LOS	A	A			A			C			B	
Approach Delay		4.6			2.9			22.1			12.3	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	5	61			31			16			7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	19	133			65			42			48	
Internal Link Dist (ft)		350			402			144			229	
Turn Bay Length (ft)	128											
Base Capacity (vph)	575	1522			1512			565			583	
Starvation Cap Reductn	0	377			63			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.11	0.50			0.45			0.10			0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 59.5 (99%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: Prospect Street & Broad Street



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	64	572	649	59	146
v/c Ratio	0.11	0.38	0.43	0.25	0.47
Control Delay	3.9	4.5	2.8	22.1	12.3
Queue Delay	0.0	0.3	0.0	0.0	0.0
Total Delay	3.9	4.7	2.9	22.1	12.3
Queue Length 50th (ft)	5	61	31	16	7
Queue Length 95th (ft)	19	133	65	42	48
Internal Link Dist (ft)		350	402	144	229
Turn Bay Length (ft)	128				
Base Capacity (vph)	575	1522	1512	565	583
Starvation Cap Reductn	0	377	63	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.50	0.45	0.10	0.25

Intersection Summary

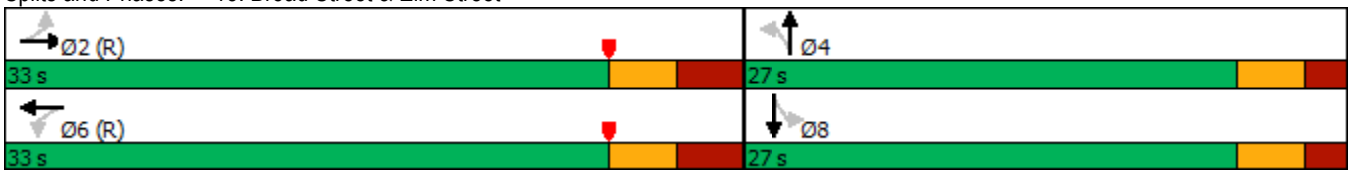
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	528	24	55	542	81	11	28	28	61	66	68
Future Volume (vph)	22	528	24	55	542	81	11	28	28	61	66	68
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.981			0.925			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1900	1988	0	1900	1962	0	1900	1850	0	1900	1846	0
Flt Permitted	0.371			0.417			0.667			0.719		
Satd. Flow (perm)	742	1988	0	834	1962	0	1334	1850	0	1438	1846	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			16			29			72	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	556	25	58	571	85	12	29	29	64	69	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	581	0	58	656	0	12	58	0	64	141	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	44.0	44.0		44.0	44.0		8.6	8.6		8.6	8.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.14	0.14		0.14	0.14	
v/c Ratio	0.04	0.40		0.09	0.45		0.06	0.20		0.31	0.43	
Control Delay	3.4	3.8		3.6	6.1		21.7	15.1		26.5	16.7	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	3.4	3.8		3.6	6.4		21.7	15.1		26.5	16.7	
LOS	A	A		A	A		C	B		C	B	
Approach Delay		3.8			6.1			16.2			19.8	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	2	50		3	139		4	9		21	23	

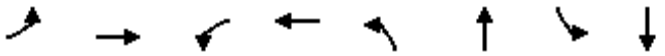
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m5	78		18	232		15	35		49	63	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	544	1459		611	1443		489	696		527	722	
Starvation Cap Reductn	0	0		0	268		0	0		0	0	
Spillback 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	0.40		0.09	0.56		0.02	0.08		0.12	0.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	23	581	58	656	12	58	64	141
v/c Ratio	0.04	0.40	0.09	0.45	0.06	0.20	0.31	0.43
Control Delay	3.4	3.8	3.6	6.1	21.7	15.1	26.5	16.7
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	3.4	3.8	3.6	6.4	21.7	15.1	26.5	16.7
Queue Length 50th (ft)	2	50	3	139	4	9	21	23
Queue Length 95th (ft)	m5	78	18	232	15	35	49	63
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	544	1459	611	1443	489	696	527	722
Starvation Cap Reductn	0	0	0	268	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	0.40	0.09	0.56	0.02	0.08	0.12	0.20

Intersection Summary

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

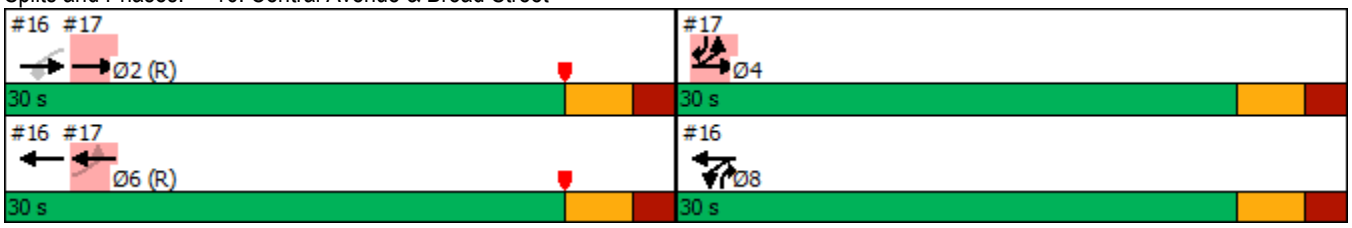


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	556	56	372	632	0	536		
Future Volume (vph)	556	56	372	632	0	536		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	3800	1700	1900	2000	0	1730		
Flt Permitted			0.402					
Satd. Flow (perm)	3800	1700	804	2000	0	1730		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		59				173		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	728			
Travel Time (s)	8.7			2.8	19.9			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Adj. Flow (vph)	585	59	392	665	0	564		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	585	59	392	665	0	564		
Turn Type	NA	Perm	D.P+P	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2	2					
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0			5.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	24.0	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	26.9	26.9	50.0	60.0		23.1		
Actuated g/C Ratio	0.45	0.45	0.83	1.00		0.38		
v/c Ratio	0.34	0.07	0.36	0.33		0.73		
Control Delay	15.5	7.2	2.9	0.7		16.6		
Queue Delay	0.0	0.0	0.4	0.0		0.2		
Total Delay	15.6	7.2	3.3	0.7		16.7		
LOS	B	A	A	A		B		
Approach Delay	14.8			1.7	16.7			
Approach LOS	B			A	B			
Queue Length 50th (ft)	97	1	3	2		106		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	141	30	28	8		210		
Internal Link Dist (ft)	238			23	648			
Turn Bay Length (ft)			130					
Base Capacity (vph)	1701	793	1139	2000		821		
Starvation Cap Reductn	0	0	340	0		0		
Spillback Cap Reductn	156	0	0	91		20		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	0.38	0.07	0.49	0.35		0.70		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBWB and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 9.2		Intersection LOS: A	
Intersection Capacity Utilization 52.3%		ICU Level of Service A	
Analysis Period (min) 15			

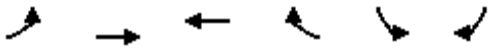
Splits and Phases: 16: Central Avenue & Broad Street



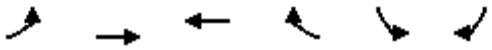


Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	585	59	392	665	564
v/c Ratio	0.34	0.07	0.36	0.33	0.73
Control Delay	15.5	7.2	2.9	0.7	16.6
Queue Delay	0.0	0.0	0.4	0.0	0.2
Total Delay	15.6	7.2	3.3	0.7	16.7
Queue Length 50th (ft)	97	1	3	2	106
Queue Length 95th (ft)	141	30	28	8	210
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	1701	793	1139	2000	821
Starvation Cap Reductn	0	0	340	0	0
Spillback Cap Reductn	156	0	0	91	20
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.07	0.49	0.35	0.70

Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	660	400	550	21	0	453		
Future Volume (vph)	660	400	550	21	0	453		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.995			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1900	2000	3781	0	0	2992		
Flt Permitted	0.392							
Satd. Flow (perm)	784	2000	3781	0	0	2992		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			8			310		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	392		630			
Travel Time (s)		2.5	10.7		17.2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%		
Adj. Flow (vph)	695	421	579	22	0	477		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	695	421	601	0	0	477		
Turn Type	D.P+P	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases	6							
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	5.0
Minimum Split (s)	24.0		30.0			24.0	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.0		3.0			3.0	3.0	3.0
All-Red Time (s)	2.0		2.0			2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	5.0		5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	50.0	60.0	26.9			23.1		
Actuated g/C Ratio	0.83	1.00	0.45			0.38		
v/c Ratio	0.64	0.21	0.35			0.35		
Control Delay	8.3	0.2	12.1			5.0		
Queue Delay	1.5	0.0	0.0			0.0		
Total Delay	9.8	0.2	12.1			5.0		
LOS	A	A	B			A		
Approach Delay		6.2	12.1		5.0			
Approach LOS		A	B		A			
Queue Length 50th (ft)	92	0	74			20		

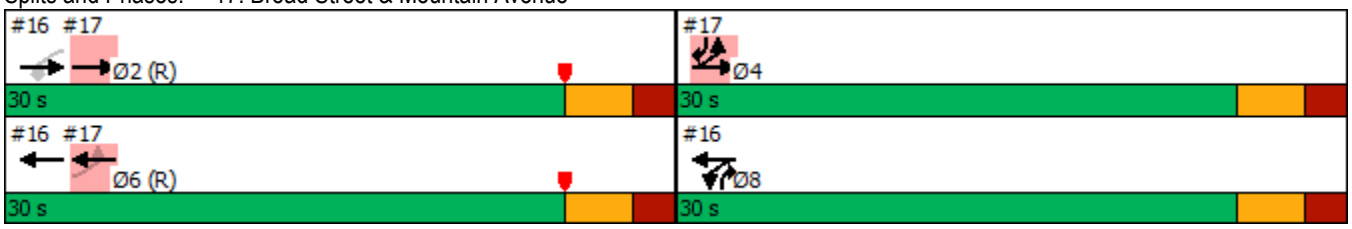


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	126	m0	110			48		
Internal Link Dist (ft)		13	312		550			
Turn Bay Length (ft)						150		
Base Capacity (vph)	1131	2000	1697			1427		
Starvation Cap Reductn	251	0	0			0		
Spillback Cap Reductn	0	0	0			0		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.79	0.21	0.35			0.33		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 25 (42%), Referenced to phase 2:EBWB and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 7.6		Intersection LOS: A	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	695	421	601	477
v/c Ratio	0.64	0.21	0.35	0.35
Control Delay	8.3	0.2	12.1	5.0
Queue Delay	1.5	0.0	0.0	0.0
Total Delay	9.8	0.2	12.1	5.0
Queue Length 50th (ft)	92	0	74	20
Queue Length 95th (ft)	126	m0	110	48
Internal Link Dist (ft)		13	312	
Turn Bay Length (ft)				150
Base Capacity (vph)	1131	2000	1697	1427
Starvation Cap Reductn	251	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.21	0.35	0.33

Intersection Summary

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↗
Traffic Vol, veh/h	0	708	540	0	0	18
Future Vol, veh/h	0	708	540	0	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	745	568	0	0	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	568
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.345
Pot Cap-1 Maneuver	0	-	-	0	0	517
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	517
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	517
HCM Lane V/C Ratio	-	-	0.037
HCM Control Delay (s)	-	-	12.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	730	13	45	719	6	19
Future Vol, veh/h	730	13	45	719	6	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	768	14	47	757	6	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	782	0	1626	775
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	851	-
Critical Hdwy	-	-	4.15	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.245	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	823	-	111	393
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	414	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	823	-	100	393
Mov Cap-2 Maneuver	-	-	-	-	100	-
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	373	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	231	-	-	823	-
HCM Lane V/C Ratio	0.114	-	-	0.058	-
HCM Control Delay (s)	22.6	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	729	20	52	756	9	22
Future Vol, veh/h	729	20	52	756	9	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	767	21	55	796	9	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	788	0	1684	778
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	906	-
Critical Hdwy	-	-	4.15	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.245	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	818	-	102	392
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	389	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	818	-	90	392
Mov Cap-2 Maneuver	-	-	-	-	90	-
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	342	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	26.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	199	-	-	818	-
HCM Lane V/C Ratio	0.164	-	-	0.067	-
HCM Control Delay (s)	26.6	-	-	9.7	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	912	806	1	5	2
Future Vol, veh/h	0	912	806	1	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	960	848	1	5	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	849	0	-	0	1809	849
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	960	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	776	-	-	-	85	356
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	367	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	776	-	-	-	85	356
Mov Cap-2 Maneuver	-	-	-	-	85	-
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	367	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	40.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	776	-	-	-	109
HCM Lane V/C Ratio	-	-	-	-	0.068
HCM Control Delay (s)	0	-	-	-	40.4
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	199	0	2	161	0	4
Future Vol, veh/h	199	0	2	161	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	216	0	2	175	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	395	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	179	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1354	-	610	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1354	-	609	824
Mov Cap-2 Maneuver	-	-	-	-	609	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	850	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	824	-	-	1354	-
HCM Lane V/C Ratio	0.005	-	-	0.002	-
HCM Control Delay (s)	9.4	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	585	0	1	725	0	7
Future Vol, veh/h	585	0	1	725	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	636	0	1	788	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	636	0	-	318
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	943	-	0	678
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	943	-	-	678
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	678	-	-	943	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	10.4	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Kimley»Horn

DRAFT

2027 Build Conditions + Mitigation PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	290	56	31	302	91	36	211	15	50	236	145
Future Volume (vph)	82	290	56	31	302	91	36	211	15	50	236	145
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.971			0.990			0.943	
Flt Protected		0.989			0.996		0.950			0.950		
Satd. Flow (prot)	0	2036	1750	0	1991	0	1956	2038	0	1956	1941	0
Flt Permitted		0.821			0.951		0.360			0.533		
Satd. Flow (perm)	0	1690	1750	0	1901	0	741	2038	0	1097	1941	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		45			10			82	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	86	305	59	33	318	96	38	222	16	53	248	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	391	59	0	447	0	38	238	0	53	401	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		19.9	19.9		19.9		11.1	11.1		11.1	11.1	
Actuated g/C Ratio		0.50	0.50		0.50		0.28	0.28		0.28	0.28	
v/c Ratio		0.47	0.07		0.46		0.19	0.42		0.17	0.67	
Control Delay		9.7	2.7		8.5		12.4	13.0		11.5	15.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		9.7	2.7		8.5		12.4	13.0		11.5	15.8	
LOS		A	A		A		B	B		B	B	
Approach Delay		8.8			8.5			12.9			15.3	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		55	0		55		6	38		8	57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		112	12		112		21	77		25	118	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		840	900		968		240	669		356	686	
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		0.47	0.07		0.46		0.16	0.36		0.15	0.58	

Intersection Summary			
Area Type:	Other		
Cycle Length: 40			
Actuated Cycle Length: 40			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 80.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	391	59	447	38	238	53	401
v/c Ratio	0.47	0.07	0.46	0.19	0.42	0.17	0.67
Control Delay	9.7	2.7	8.5	12.4	13.0	11.5	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	2.7	8.5	12.4	13.0	11.5	15.8
Queue Length 50th (ft)	55	0	55	6	38	8	57
Queue Length 95th (ft)	112	12	112	21	77	25	118
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	840	900	968	240	669	356	686
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	0.47	0.07	0.46	0.16	0.36	0.15	0.58

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	290	112	694	466	195	412
Future Volume (vph)	290	112	694	466	195	412
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.962					0.850
Flt Protected				0.971	0.950	
Satd. Flow (prot)	1981	0	0	3798	1956	1750
Flt Permitted				0.583	0.950	
Satd. Flow (perm)	1981	0	0	2281	1956	1750
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	305	118	731	491	205	434
Shared Lane Traffic (%)						
Lane Group Flow (vph)	423	0	0	1222	205	434
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	9.0		10.0	9.0	7.0	10.0
Minimum Split (s)	35.0		13.0	35.0	22.0	13.0
Total Split (s)	35.0		13.0	48.0	22.0	13.0
Total Split (%)	50.0%		18.6%	68.6%	31.4%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	34.2			47.4	11.6	26.8
Actuated g/C Ratio	0.49			0.68	0.17	0.38
v/c Ratio	0.44			1.08dl	0.63	0.65
Control Delay	14.4			9.6	35.5	22.2
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	14.4			9.6	35.5	22.2
LOS	B			A	D	C
Approach Delay	14.4			9.6	26.5	
Approach LOS	B			A	C	
Queue Length 50th (ft)	111			110	83	149

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	209			186	135	209
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	967			1698	475	670
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	0.44			0.72	0.43	0.65

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2: Broad St & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	423	1222	205	434
v/c Ratio	0.44	1.08dl	0.63	0.65
Control Delay	14.4	9.6	35.5	22.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.4	9.6	35.5	22.2
Queue Length 50th (ft)	111	110	83	149
Queue Length 95th (ft)	209	186	135	209
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	967	1698	475	670
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	0.44	0.72	0.43	0.65

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Existing_PM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.560	12.5	LOS B	4.4	111.2	0.73	0.88	1.14	22.7
6	T1	419	2.0	428	2.0	0.560	12.6	LOS B	4.4	111.2	0.73	0.88	1.14	21.0
16	R2	370	3.0	378	3.0	0.560	10.0	LOS B	4.4	111.2	0.66	0.72	0.84	22.1
Approach		803	2.4	820	2.4	0.560	11.4	LOS B	4.4	111.2	0.70	0.81	1.00	21.5
North: SB - SR 28														
7	L2	507	2.0	517	2.0	0.546	11.0	LOS B	4.3	110.0	0.66	0.76	0.97	20.9
14	R2	573	2.0	585	2.0	0.617	12.8	LOS B	6.1	154.3	0.72	0.88	1.18	17.4
Approach		1080	2.0	1102	2.0	0.617	12.0	LOS B	6.1	154.3	0.69	0.83	1.08	19.3
West: EB - South Ave														
5u	U	2	0.0	2	0.0	1.023	57.6	LOS F	40.2	1018.3	1.00	2.38	4.75	7.3
5	L2	563	1.0	574	1.0	1.023	57.7	LOS F	40.2	1018.3	1.00	2.38	4.75	7.5
2	T1	410	3.0	418	3.0	1.023	46.7	LOS F	40.2	1018.3	0.89	1.97	3.86	11.1
Approach		975	1.8	995	1.8	1.023	53.1	LOS F	40.2	1018.3	0.95	2.21	4.38	8.8
All Vehicles		2858	2.1	2917	2.1	1.023	25.8	LOS D	40.2	1018.3	0.78	1.29	2.18	14.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	637	56	28	627	57	101	23	43	131	21	92
Future Volume (vph)	34	637	56	28	627	57	101	23	43	131	21	92
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		100	0		0	0		70	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.988			0.902			0.878	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1900	2037	0	1995	2037	0	1956	1894	0	1995	1814	0
Flt Permitted	0.204			0.197			0.653			0.712		
Satd. Flow (perm)	408	2037	0	414	2037	0	1344	1894	0	1495	1814	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			7			45			96	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			127			500			138	
Travel Time (s)		13.9			2.9			13.6			3.8	
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 (%)	5%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Adj. Flow (vph)	35	664	58	29	653	59	105	24	45	136	22	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	722	0	29	712	0	105	69	0	136	118	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	2		1	2			4			8	
Permitted Phases	2			2			4			8		
Detector Phase	1	2		1	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	9.5	19.0		9.5	19.0		19.0	19.0		19.0	19.0	
Total Split (s)	10.0	55.0		10.0	55.0		22.0	22.0		22.0	22.0	
Total Split (%)	10.5%	57.9%		10.5%	57.9%		23.2%	23.2%		23.2%	23.2%	
Yellow Time (s)	3.5	3.0		3.5	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0		4.5	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	57.2	51.2		57.2	51.2		15.0	15.0		15.0	15.0	
Actuated g/C Ratio	0.60	0.54		0.60	0.54		0.16	0.16		0.16	0.16	
v/c Ratio	0.11	0.66		0.09	0.65		0.49	0.20		0.58	0.32	
Control Delay	2.1	12.4		6.8	13.3		44.8	17.5		47.2	13.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	2.1	12.4		6.8	13.3		44.8	17.5		47.2	13.1	
LOS	A	B		A	B		D	B		D	B	
Approach Delay		11.9			13.1			34.0			31.4	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	1	68		5	152		59	13		78	12	

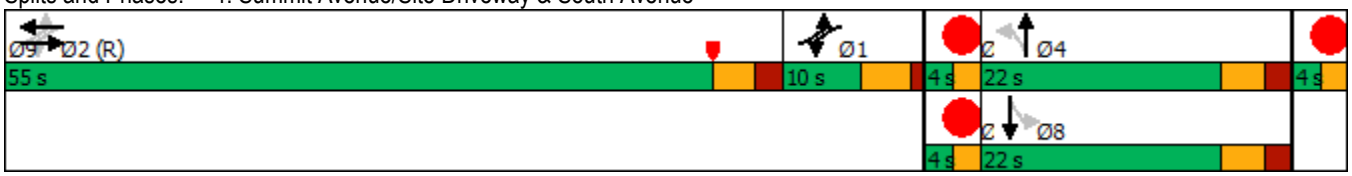
Lane Group	Ø3	Ø7	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	3	7	9
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0
Total Split (%)	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m2	85		m11	170		109	49		135	58	
Internal Link Dist (ft)		431			47			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)	331	1101		340	1101		240	375		267	403	
Starvation Cap Reductn	0	5		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	0.11	0.66		0.09	0.65		0.44	0.18		0.51	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 2 (2%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 55.0%		ICU Level of Service A	
Analysis Period (min) 15			

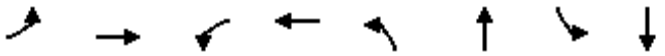
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue



Lane Group	Ø3	Ø7	Ø9
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	35	722	29	712	105	69	136	118
v/c Ratio	0.11	0.66	0.09	0.65	0.49	0.20	0.58	0.32
Control Delay	2.1	12.4	6.8	13.3	44.8	17.5	47.2	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	12.4	6.8	13.3	44.8	17.5	47.2	13.1
Queue Length 50th (ft)	1	68	5	152	59	13	78	12
Queue Length 95th (ft)	m2	85	m11	170	109	49	135	58
Internal Link Dist (ft)		431		47		420		58
Turn Bay Length (ft)								
Base Capacity (vph)	331	1101	340	1101	240	375	267	403
Starvation Cap Reductn	0	5	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	0.11	0.66	0.09	0.65	0.44	0.18	0.51	0.29

Intersection Summary

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

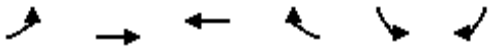
Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	718	47	29	586	35	89
Future Vol, veh/h	718	47	29	586	35	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	0	3	2	0	1
Mvmt Flow	725	47	29	592	35	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	772	0	1399	749
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	-	-	4.13	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	839	-	156	413
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	839	-	148	413
Mov Cap-2 Maneuver	-	-	-	-	148	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	28.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	-	-	839	-
HCM Lane V/C Ratio	0.457	-	-	0.035	-
HCM Control Delay (s)	28.7	-	-	9.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-



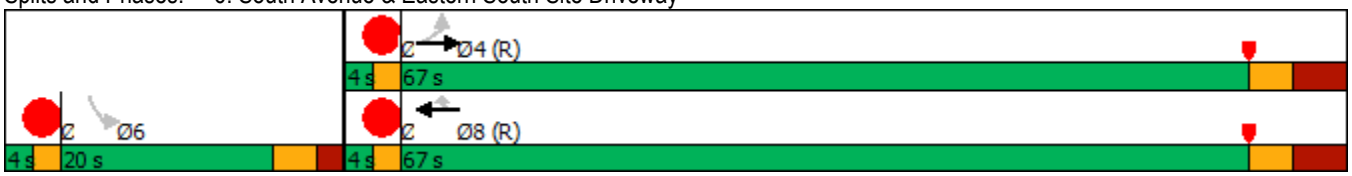
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	17	732	565	40	62	56			
Future Volume (vph)	17	732	565	40	62	56			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			150	0	0			
Storage Lanes	0			1	1	0			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt				0.850	0.936				
Flt Protected		0.999			0.974				
Satd. Flow (prot)	0	2058	2059	1785	1914	0			
Flt Permitted		0.982			0.974				
Satd. Flow (perm)	0	2023	2059	1785	1914	0			
Right Turn on Red				Yes		Yes			
Satd. Flow (RTOR)				41	41				
Link Speed (mph)		30	30		25				
Link Distance (ft)		279	494		163				
Travel Time (s)		6.3	11.2		4.4				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%			
Adj. Flow (vph)	18	755	582	41	64	58			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	773	582	41	122	0			
Turn Type	Perm	NA	NA	Perm	Perm				
Protected Phases		4	8				3	5	7
Permitted Phases	4			8	6				
Detector Phase	4	4	8	8	6				
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0		1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0	23.0	19.0		4.0	4.0	4.0
Total Split (s)	67.0	67.0	67.0	67.0	20.0		4.0	4.0	4.0
Total Split (%)	70.5%	70.5%	70.5%	70.5%	21.1%		4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0	4.0	2.0		0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0				
Total Lost Time (s)		7.0	7.0	7.0	5.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max		None	None	None
Act Effct Green (s)		60.8	60.8	60.8	15.8				
Actuated g/C Ratio		0.64	0.64	0.64	0.17				
v/c Ratio		0.60	0.44	0.04	0.35				
Control Delay		7.8	17.7	7.4	27.0				
Queue Delay		0.1	1.4	0.0	0.0				
Total Delay		7.9	19.1	7.4	27.0				
LOS		A	B	A	C				
Approach Delay		7.9	18.4		27.0				
Approach LOS		A	B		C				
Queue Length 50th (ft)		108	255	3	44				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 95th (ft)		207	m362	m9	96				
Internal Link Dist (ft)		199	414		83				
Turn Bay Length (ft)				150					
Base Capacity (vph)		1294	1317	1157	352				
Starvation Cap Reductn		50	512	0	0				
Spillback Cap Reductn		0	0	0	0				
Storage Cap Reductn		0	0	0	0				
Reduced v/c Ratio		0.62	0.72	0.04	0.35				

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 3 (3%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 6: South Avenue & Eastern South Site Driveway





Lane Group	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	773	582	41	122
v/c Ratio	0.60	0.44	0.04	0.35
Control Delay	7.8	17.7	7.4	27.0
Queue Delay	0.1	1.4	0.0	0.0
Total Delay	7.9	19.1	7.4	27.0
Queue Length 50th (ft)	108	255	3	44
Queue Length 95th (ft)	207	m362	m9	96
Internal Link Dist (ft)	199	414		83
Turn Bay Length (ft)			150	
Base Capacity (vph)	1294	1317	1157	352
Starvation Cap Reductn	50	512	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.72	0.04	0.35

Intersection Summary

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

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Future Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948						0.850			0.992	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1956	3708	0	0	0	1956	2059	1750	0	1956	2042	0
Flt Permitted	0.261					0.231				0.125		
Satd. Flow (perm)	537	3708	0	0	0	476	2059	1750	0	257	2042	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		1									3	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	215	520	268	5	32	54	453	201	5	203	617	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	793	0	0	0	86	453	201	0	208	651	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	10.0	10.0	40.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%	40.0%	10.5%	10.5%	42.1%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None	None	None	None	None	
Act Effct Green (s)	40.6	31.6				40.0	30.0	30.0		44.0	32.0	
Actuated g/C Ratio	0.43	0.33				0.42	0.32	0.32		0.46	0.34	
v/c Ratio	0.71	0.64				0.31	0.70	0.36		0.85	0.94	
Control Delay	25.7	20.4				18.0	35.3	27.5		47.8	55.0	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.3	0.0	
Total Delay	25.7	20.4				18.0	35.3	27.5		48.1	55.0	
LOS	C	C				B	D	C		D	E	
Approach Delay		21.5					31.2				53.3	
Approach LOS		C					C				D	
Queue Length 50th (ft)	61	188				29	238	93		70	376	

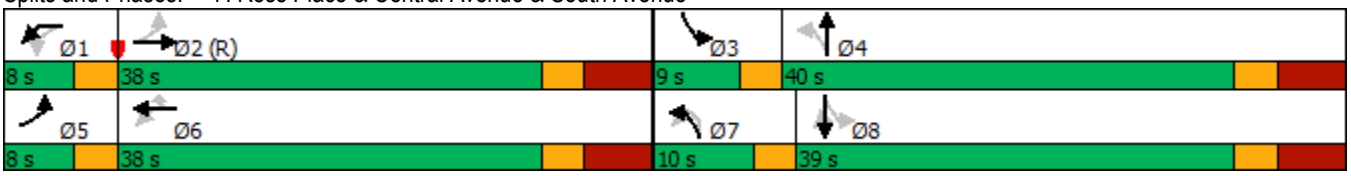


Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	177	638	183	80
Future Volume (vph)	177	638	183	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1956	2059	1750	0
Flt Permitted	0.129			
Satd. Flow (perm)	266	2059	1750	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%
Adj. Flow (vph)	186	672	193	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	186	672	277	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	9.0	39.0	39.0	
Total Split (%)	9.5%	41.1%	41.1%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	42.0	31.0	31.0	
Actuated g/C Ratio	0.44	0.33	0.33	
v/c Ratio	0.83	1.00	0.42	
Control Delay	47.1	68.6	15.5	
Queue Delay	0.0	0.0	0.0	
Total Delay	47.1	68.6	15.5	
LOS	D	E	B	
Approach Delay		52.1		
Approach LOS		D		
Queue Length 50th (ft)	61	~402	67	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	#121	251				56	349	155		#185	#600	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	303	1233				278	650	552		244	689	
Starvation Cap Reductn	0	0				0	0	0		0	0	
Spillback Cap Reductn	0	0				0	0	0		1	0	
Storage Cap Reductn	0	0				0	0	0		0	0	
Reduced v/c Ratio	0.71	0.64				0.31	0.70	0.36		0.86	0.94	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 80 (84%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 40.0		Intersection LOS: D	
Intersection Capacity Utilization 91.0%		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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#163	#640	137	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	224	671	655	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	9	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.83	1.00	0.43	

Intersection Summary

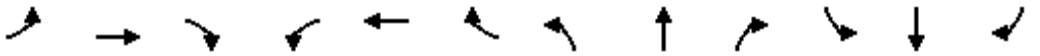


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	793	86	453	201	208	651	186	672	277
v/c Ratio	0.71	0.64	0.31	0.70	0.36	0.85	0.94	0.83	1.00	0.42
Control Delay	25.7	20.4	18.0	35.3	27.5	47.8	55.0	47.1	68.6	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	25.7	20.4	18.0	35.3	27.5	48.1	55.0	47.1	68.6	15.5
Queue Length 50th (ft)	61	188	29	238	93	70	376	61	~402	67
Queue Length 95th (ft)	#121	251	56	349	155	#185	#600	#163	#640	137
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	303	1233	278	650	552	244	689	224	671	655
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	0	0	9
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.64	0.31	0.70	0.36	0.86	0.94	0.83	1.00	0.43

Intersection Summary

~ 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.

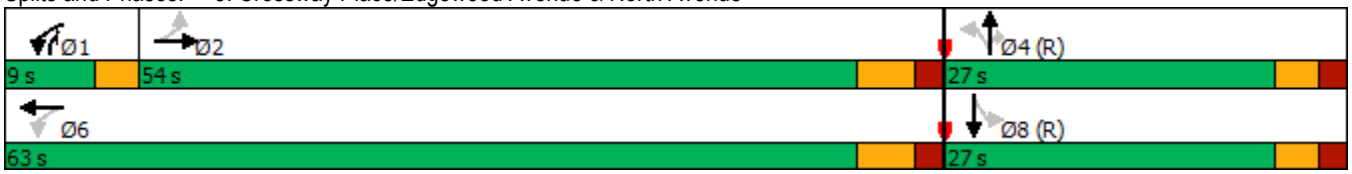


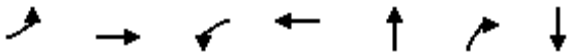
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	594	41	367	684	5	92	60	227	10	35	15
Future Volume (vph)	5	594	41	367	684	5	92	60	227	10	35	15
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999				0.850		0.966	
Flt Protected	0.950			0.950				0.971			0.991	
Satd. Flow (prot)	1956	2038	0	1956	2057	0	0	1999	1750	0	1971	0
Flt Permitted	0.331			0.235				0.792			0.947	
Satd. Flow (perm)	681	2038	0	484	2057	0	0	1631	1750	0	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			1				236		16	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	625	43	386	720	5	97	63	239	11	37	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	668	0	386	725	0	0	160	239	0	64	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		9.0	63.0		27.0	27.0	9.0	27.0	27.0	
Total Split (%)	60.0%	60.0%		10.0%	70.0%		30.0%	30.0%	10.0%	30.0%	30.0%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	48.0	48.0		60.0	57.0			22.0	33.0		22.0	
Actuated g/C Ratio	0.53	0.53		0.67	0.63			0.24	0.37		0.24	
v/c Ratio	0.01	0.61		0.92	0.56			0.40	0.30		0.14	
Control Delay	10.2	17.5		39.3	11.4			32.1	4.0		22.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.2	17.5		39.3	11.4			32.1	4.0		22.1	
LOS	B	B		D	B			C	A		C	
Approach Delay		17.4			21.1			15.3			22.1	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	1	246		80	210			76	1		21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	357		#197	302			135	47		53	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	363	1089		420	1303			398	791		472	
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	0.01	0.61		0.92	0.56			0.40	0.30		0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 54 (60%), Referenced to phase 4:NBTL and 8:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 75.6%		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: 8: Crossway Place/Edgewood Avenue & North Avenue

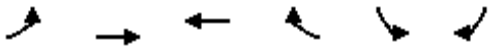




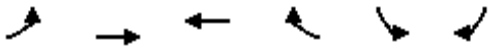
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	668	386	725	160	239	64
v/c Ratio	0.01	0.61	0.92	0.56	0.40	0.30	0.14
Control Delay	10.2	17.5	39.3	11.4	32.1	4.0	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	17.5	39.3	11.4	32.1	4.0	22.1
Queue Length 50th (ft)	1	246	80	210	76	1	21
Queue Length 95th (ft)	7	357	#197	302	135	47	53
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	363	1089	420	1303	398	791	472
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	0.01	0.61	0.92	0.56	0.40	0.30	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	6	670	758	150	232	36			
Future Volume (vph)	6	670	758	150	232	36			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			0	0	50			
Storage Lanes	0			0	1	1			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt			0.978			0.850			
Flt Protected					0.950				
Satd. Flow (prot)	0	2059	2014	0	1956	1750			
Flt Permitted		0.991			0.950				
Satd. Flow (perm)	0	2040	2014	0	1956	1750			
Right Turn on Red				No		Yes			
Satd. Flow (RTOR)						20			
Link Speed (mph)		35	35		25				
Link Distance (ft)		175	117		156				
Travel Time (s)		3.4	2.3		4.3				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	7	728	824	163	252	39			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	735	987	0	252	39			
Turn Type	Perm	NA	NA		Prot	Perm			
Protected Phases		4	8		6		3	5	7
Permitted Phases	4					6			
Detector Phase	4	4	8		6	6			
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0		5.0	5.0	1.0	1.0	1.0
Minimum Split (s)	30.5	30.5	30.5		19.5	19.5	4.0	4.0	4.0
Total Split (s)	69.0	69.0	69.0		23.0	23.0	4.0	4.0	4.0
Total Split (%)	69.0%	69.0%	69.0%		23.0%	23.0%	4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	2.0	2.0	2.0
All-Red Time (s)	2.5	2.5	2.5		2.5	2.5	0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			
Total Lost Time (s)		5.5	5.5		5.5	5.5			
Lead/Lag	Lag	Lag	Lag		Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max		Max	Max	None	None	None
Act Effct Green (s)		65.9	65.9		19.9	19.9			
Actuated g/C Ratio		0.66	0.66		0.20	0.20			
v/c Ratio		0.55	0.74		0.65	0.11			
Control Delay		11.3	12.5		46.4	21.8			
Queue Delay		0.1	3.8		0.0	0.0			
Total Delay		11.4	16.4		46.4	21.8			
LOS		B	B		D	C			
Approach Delay		11.4	16.4		43.1				
Approach LOS		B	B		D				
Queue Length 50th (ft)		212	299		146	10			
Queue Length 95th (ft)		343	361		#263	39			

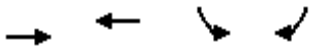


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Internal Link Dist (ft)		95	37		76				
Turn Bay Length (ft)						50			
Base Capacity (vph)		1344	1327		389	363			
Starvation Cap Reductn		0	253		0	0			
Spillback Cap Reductn		53	0		0	0			
Storage Cap Reductn		0	0		0	0			
Reduced v/c Ratio		0.57	0.92		0.65	0.11			

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 8 (8%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 18.4		Intersection LOS: B	
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: 9: North Avenue & Clark Street





Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	735	987	252	39
v/c Ratio	0.55	0.74	0.65	0.11
Control Delay	11.3	12.5	46.4	21.8
Queue Delay	0.1	3.8	0.0	0.0
Total Delay	11.4	16.4	46.4	21.8
Queue Length 50th (ft)	212	299	146	10
Queue Length 95th (ft)	343	361	#263	39
Internal Link Dist (ft)	95	37	76	
Turn Bay Length (ft)				50
Base Capacity (vph)	1344	1327	389	363
Starvation Cap Reductn	0	253	0	0
Spillback Cap Reductn	53	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.92	0.65	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

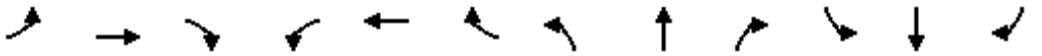
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	193	202	0	52	39
Future Vol, veh/h	0	193	202	0	52	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	230	240	0	62	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	470	240
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	556	804
Stage 1	0	-	-	0	805	-
Stage 2	0	-	-	0	813	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	556	804
Mov Cap-2 Maneuver	-	-	-	-	556	-
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	641
HCM Lane V/C Ratio	-	-	0.169
HCM Control Delay (s)	-	-	11.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6



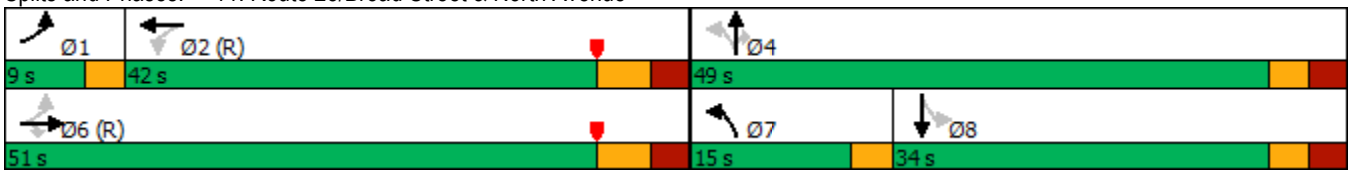
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	395	400	240	530	10	282	505	169	35	439	137
Future Volume (vph)	166	395	400	240	530	10	282	505	169	35	439	137
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		125	0		0	0		0	0		75
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.966	
Flt Protected	0.950				0.985		0.950				0.997	
Satd. Flow (prot)	1956	1538	1750	0	3809	0	1956	2059	1785	0	3721	0
Flt Permitted	0.212				0.716		0.193				0.886	
Satd. Flow (perm)	436	1538	1750	0	2769	0	397	2059	1785	0	3306	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			391		1						37	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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
Heavy Vehicles (%)	2%	4%	2%	3%	3%	0%	2%	2%	0%	0%	3%	5%
Adj. Flow (vph)	173	411	417	250	552	10	294	526	176	36	457	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	411	417	0	812	0	294	526	176	0	636	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	9.0	51.0	51.0	42.0	42.0		15.0	49.0	49.0	34.0	34.0	
Total Split (%)	9.0%	51.0%	51.0%	42.0%	42.0%		15.0%	49.0%	49.0%	34.0%	34.0%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	51.9	47.9	47.9		37.3		42.1	39.1	39.1		24.1	
Actuated g/C Ratio	0.52	0.48	0.48		0.37		0.42	0.39	0.39		0.24	
v/c Ratio	0.51	0.56	0.40		0.79		0.83	0.65	0.25		0.77	
Control Delay	16.1	19.7	3.1		23.2		40.8	28.9	20.9		39.9	
Queue Delay	0.0	0.9	0.4		0.0		3.6	0.0	0.0		0.5	
Total Delay	16.1	20.6	3.4		23.2		44.4	28.9	20.9		40.4	
LOS	B	C	A		C		D	C	C		D	
Approach Delay		12.7			23.2			32.0			40.4	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	47	215	22		274		123	266	73		186	

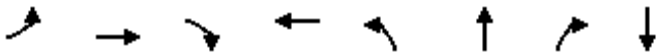
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m76	304	43		#171		#217	358	116		240	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185		125									
Base Capacity (vph)	341	736	1042		1034		354	885	767		952	
Starvation Cap Reductn	0	125	240		0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0		22	0	0		78	
Storage Cap Reductn	0	0	0		0		0	0	0		0	
Reduced v/c Ratio	0.51	0.67	0.52		0.79		0.89	0.59	0.23		0.73	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 25.9 Intersection LOS: C
Intersection Capacity Utilization 106.1% ICU Level of Service G
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: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	173	411	417	812	294	526	176	636
v/c Ratio	0.51	0.56	0.40	0.79	0.83	0.65	0.25	0.77
Control Delay	16.1	19.7	3.1	23.2	40.8	28.9	20.9	39.9
Queue Delay	0.0	0.9	0.4	0.0	3.6	0.0	0.0	0.5
Total Delay	16.1	20.6	3.4	23.2	44.4	28.9	20.9	40.4
Queue Length 50th (ft)	47	215	22	274	123	266	73	186
Queue Length 95th (ft)	m76	304	43	#171	#217	358	116	240
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185		125					
Base Capacity (vph)	341	736	1042	1034	354	885	767	952
Starvation Cap Reductn	0	125	240	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	22	0	0	78
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.67	0.52	0.79	0.89	0.59	0.23	0.73

Intersection Summary

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.

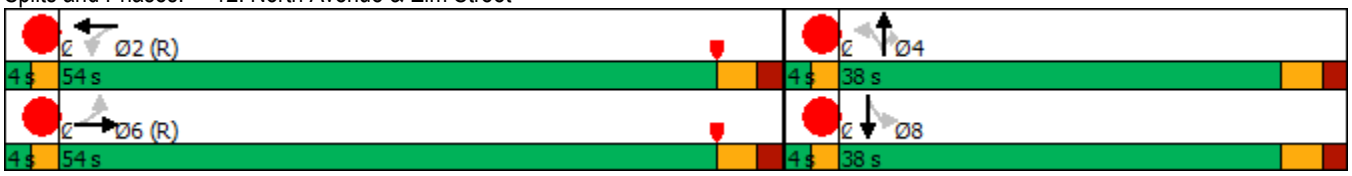
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	499	33	38	730	163	35	28	18	105	26	174
Future Volume (vph)	66	499	33	38	730	163	35	28	18	105	26	174
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.974				0.850		0.923	
Flt Protected		0.994			0.998			0.973			0.983	
Satd. Flow (prot)	0	3838	0	0	3789	0	0	2043	1785	0	1873	0
Flt Permitted		0.730			0.902			0.655			0.860	
Satd. Flow (perm)	0	2819	0	0	3425	0	0	1376	1785	0	1639	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			35				65		72	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
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 (%)	0%	3%	0%	0%	3%	0%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	69	520	34	40	760	170	36	29	19	109	27	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	623	0	0	970	0	0	65	19	0	317	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	54.0	54.0		54.0	54.0		38.0	38.0	38.0	38.0	38.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		38.0%	38.0%	38.0%	38.0%	38.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0			5.0			5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		57.2			57.2			21.3	21.3		21.3	
Actuated g/C Ratio		0.57			0.57			0.21	0.21		0.21	
v/c Ratio		0.39			0.49			0.22	0.04		0.78	
Control Delay		9.9			16.2			32.1	0.2		41.7	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		9.9			16.2			32.1	0.2		41.7	
LOS		A			B			C	A		D	
Approach Delay		9.9			16.2			24.9			41.7	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		72			248			35	0		150	
Queue Length 95th (ft)		140			m286			65	0		225	
Internal Link Dist (ft)		83			399			113			96	
Turn Bay Length (ft)												

Lane Group	Ø1	Ø3	Ø5	Ø7
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Heavy Vehicles (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	3	5	7
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	1.0	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0	4.0
Total Split (%)	4%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1617			1975			454	632		589	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.39			0.49			0.14	0.03		0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 99 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 12: North Avenue & Elm Street



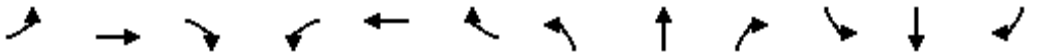
Lane Group	Ø1	Ø3	Ø5	Ø7
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	623	970	65	19	317
v/c Ratio	0.39	0.49	0.22	0.04	0.78
Control Delay	9.9	16.2	32.1	0.2	41.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.9	16.2	32.1	0.2	41.7
Queue Length 50th (ft)	72	248	35	0	150
Queue Length 95th (ft)	140	m286	65	0	225
Internal Link Dist (ft)	83	399	113		96
Turn Bay Length (ft)					
Base Capacity (vph)	1617	1975	454	632	589
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.39	0.49	0.14	0.03	0.54

Intersection Summary

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

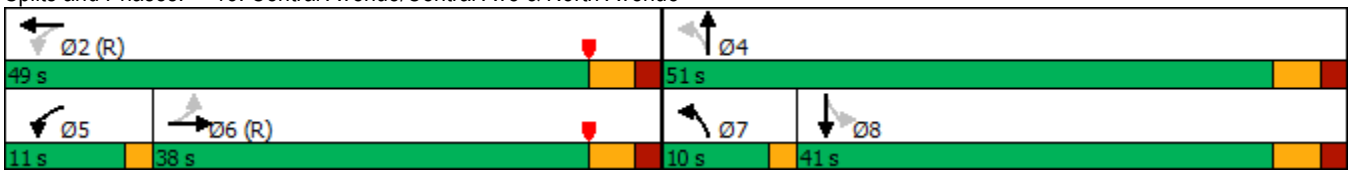


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Future Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. 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
Frt		0.962			0.990			0.966			0.996	
Flt Protected		0.997			0.989			0.989			0.996	
Satd. Flow (prot)	0	3752	0	0	3830	0	0	3737	0	0	3881	0
Flt Permitted		0.825			0.544			0.550			0.736	
Satd. Flow (perm)	0	3105	0	0	2107	0	0	2078	0	0	2868	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					9			50				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	41	521	193	233	713	65	223	571	235	60	703	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	755	0	0	1011	0	0	1029	0	0	785	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		2.6	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	38.0	38.0		11.0	49.0		10.0	51.0		41.0	41.0	
Total Split (%)	38.0%	38.0%		11.0%	49.0%		10.0%	51.0%		41.0%	41.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)		32.4			43.4			45.4			35.4	
Actuated g/C Ratio		0.32			0.43			0.45			0.35	
v/c Ratio		0.75			1.00			0.99			0.77	
Control Delay		36.9			55.5			50.3			35.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		36.9			55.5			50.3			35.0	
LOS		D			E			D			C	
Approach Delay		36.9			55.5			50.3			35.0	
Approach LOS		D			E			D			C	
Queue Length 50th (ft)		236			251			238			231	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		311			#413			#394			306	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)												
Base Capacity (vph)		1006			1012			1043			1015	
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		0.75			1.00			0.99			0.77	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 42 (42%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 45.6		Intersection LOS: D	
Intersection Capacity Utilization 106.3%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

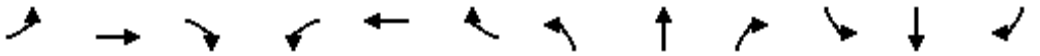
Splits and Phases: 13: Central Avenue/Central Ave & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	755	1011	1029	785
v/c Ratio	0.75	1.00	0.99	0.77
Control Delay	36.9	55.5	50.3	35.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	36.9	55.5	50.3	35.0
Queue Length 50th (ft)	236	251	238	231
Queue Length 95th (ft)	311	#413	#394	306
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	1006	1012	1043	1015
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	0.75	1.00	0.99	0.77

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

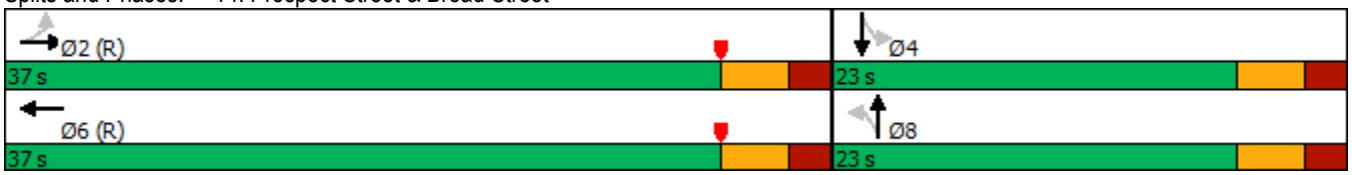


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	662	0	0	520	55	26	42	15	36	0	114
Future Volume (vph)	127	662	0	0	520	55	26	42	15	36	0	114
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	128		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.987			0.975			0.897	
Flt Protected	0.950							0.985			0.988	
Satd. Flow (prot)	1956	2059	0	0	2032	0	0	1977	0	0	1825	0
Flt Permitted	0.400							0.818			0.921	
Satd. Flow (perm)	824	2059	0	0	2032	0	0	1642	0	0	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					14			16			120	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		430			482			224			309	
Travel Time (s)		11.7			13.1			6.1			7.0	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	134	697	0	0	547	58	27	44	16	38	0	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	697	0	0	605	0	0	87	0	0	158	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		
Detector Phase	2	2			6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0			23.0		23.0	23.0		23.0	23.0	
Total Split (s)	37.0	37.0			37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%			61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max			C-Max		None	None		None	None	
Act Effct Green (s)	45.1	45.1			45.1			8.0			8.0	
Actuated g/C Ratio	0.75	0.75			0.75			0.13			0.13	
v/c Ratio	0.22	0.45			0.40			0.37			0.48	
Control Delay	4.8	5.4			3.3			24.0			13.1	
Queue Delay	0.0	0.3			0.0			0.0			0.0	
Total Delay	4.8	5.7			3.3			24.0			13.1	
LOS	A	A			A			C			B	
Approach Delay		5.6			3.3			24.0			13.1	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	13	87			37			24			13	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	39	182			81			56			54	
Internal Link Dist (ft)		350			402			144			229	
Turn Bay Length (ft)	128											
Base Capacity (vph)	619	1546			1529			503			594	
Starvation Cap Reductn	0	354			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.22	0.58			0.40			0.17			0.27	

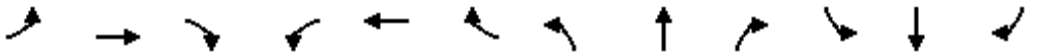
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 59.5 (99%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 56.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: Prospect Street & Broad Street



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	134	697	605	87	158
v/c Ratio	0.22	0.45	0.40	0.37	0.48
Control Delay	4.8	5.4	3.3	24.0	13.1
Queue Delay	0.0	0.3	0.0	0.0	0.0
Total Delay	4.8	5.7	3.3	24.0	13.1
Queue Length 50th (ft)	13	87	37	24	13
Queue Length 95th (ft)	39	182	81	56	54
Internal Link Dist (ft)		350	402	144	229
Turn Bay Length (ft)	128				
Base Capacity (vph)	619	1546	1529	503	594
Starvation Cap Reductn	0	354	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.58	0.40	0.17	0.27

Intersection Summary



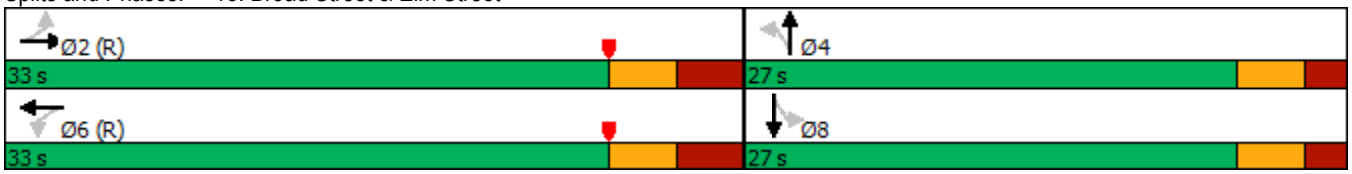
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	592	65	66	459	76	28	72	56	128	92	89
Future Volume (vph)	62	592	65	66	459	76	28	72	56	128	92	89
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.979			0.934			0.926	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1956	2028	0	1956	2016	0	1956	1923	0	1956	1906	0
Flt Permitted	0.402			0.316			0.595			0.671		
Satd. Flow (perm)	828	2028	0	651	2016	0	1225	1923	0	1381	1906	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			18			59			92	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	65	623	68	69	483	80	29	76	59	135	97	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	691	0	69	563	0	29	135	0	135	191	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	37.5	37.5		37.5	37.5		11.5	11.5		11.5	11.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.19	0.19		0.19	0.19	
v/c Ratio	0.13	0.54		0.17	0.44		0.12	0.33		0.51	0.44	
Control Delay	4.8	5.9		7.2	8.3		19.2	13.8		27.7	13.9	
Queue Delay	0.0	0.0		0.0	0.5		0.0	0.0		0.0	0.0	
Total Delay	4.8	6.0		7.2	8.7		19.2	13.8		27.7	13.9	
LOS	A	A		A	A		B	B		C	B	
Approach Delay		5.9			8.6			14.7			19.6	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	6	67		10	118		9	24		45	31	

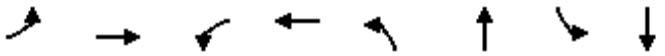
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m15	96		37	207		24	56		81	70	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	517	1272		407	1267		449	742		506	757	
Starvation Cap Reductn	0	21		0	306		0	0		0	0	
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	0.13	0.55		0.17	0.59		0.06	0.18		0.27	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 73.6%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	691	69	563	29	135	135	191
v/c Ratio	0.13	0.54	0.17	0.44	0.12	0.33	0.51	0.44
Control Delay	4.8	5.9	7.2	8.3	19.2	13.8	27.7	13.9
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	4.8	6.0	7.2	8.7	19.2	13.8	27.7	13.9
Queue Length 50th (ft)	6	67	10	118	9	24	45	31
Queue Length 95th (ft)	m15	96	37	207	24	56	81	70
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	517	1272	407	1267	449	742	506	757
Starvation Cap Reductn	0	21	0	306	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	0.13	0.55	0.17	0.59	0.06	0.18	0.27	0.25

Intersection Summary

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



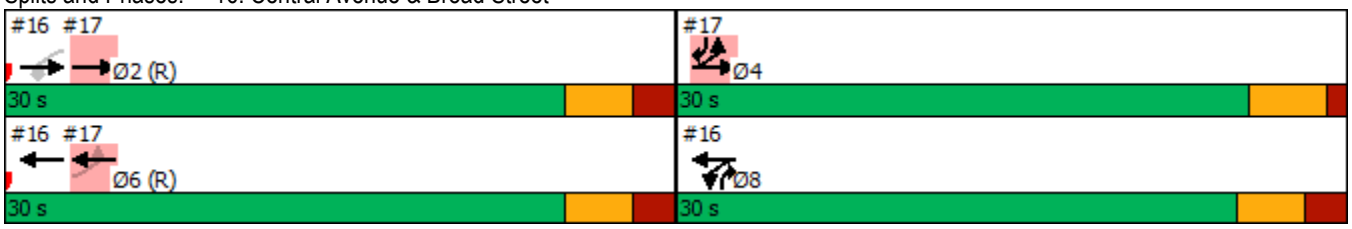
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	689	87	567	551	0	426		
Future Volume (vph)	689	87	567	551	0	426		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950					
Satd. Flow (prot)	3912	1750	1956	2059	0	1781		
Flt Permitted			0.324					
Satd. Flow (perm)	3912	1750	667	2059	0	1781		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		92				109		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	725	92	597	580	0	448		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	725	92	597	580	0	448		
Turn Type	NA	Perm	D.P+P	NA		Over		
Protected Phases	2		8	6 8		8	4	6
Permitted Phases		2	2					
Detector Phase	2	2	8	6 8		8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0			7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0			30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0			30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0			3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0			2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None			None	None	C-Max
Act Effct Green (s)	27.4	27.4	50.0	60.0		22.6		
Actuated g/C Ratio	0.46	0.46	0.83	1.00		0.38		
v/c Ratio	0.41	0.11	0.57	0.28		0.61		
Control Delay	13.7	5.3	7.6	0.3		14.5		
Queue Delay	0.2	0.0	0.8	0.0		0.0		
Total Delay	13.9	5.3	8.4	0.3		14.5		
LOS	B	A	A	A		B		
Approach Delay	12.9			4.4	14.5			
Approach LOS	B			A	B			
Queue Length 50th (ft)	110	3	23	0		85		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	158	m27	109	0		163		
Internal Link Dist (ft)	238			23	636			
Turn Bay Length (ft)			130					
Base Capacity (vph)	1786	848	1107	2035		805		
Starvation Cap Reductn	344	0	239	0		0		
Spillback Cap Reductn	41	0	0	37		11		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	0.50	0.11	0.69	0.29		0.56		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 9.1		Intersection LOS: A	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 16: Central Avenue & Broad Street

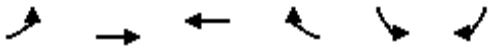




Lane Group	EBT	EBR	WBL	WBT	NBR
Lane Group Flow (vph)	725	92	597	580	448
v/c Ratio	0.41	0.11	0.57	0.28	0.61
Control Delay	13.7	5.3	7.6	0.3	14.5
Queue Delay	0.2	0.0	0.8	0.0	0.0
Total Delay	13.9	5.3	8.4	0.3	14.5
Queue Length 50th (ft)	110	3	23	0	85
Queue Length 95th (ft)	158	m27	109	0	163
Internal Link Dist (ft)	238			23	
Turn Bay Length (ft)			130		
Base Capacity (vph)	1786	848	1107	2035	805
Starvation Cap Reductn	344	0	239	0	0
Spillback Cap Reductn	41	0	0	37	11
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.11	0.69	0.29	0.56

Intersection Summary

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

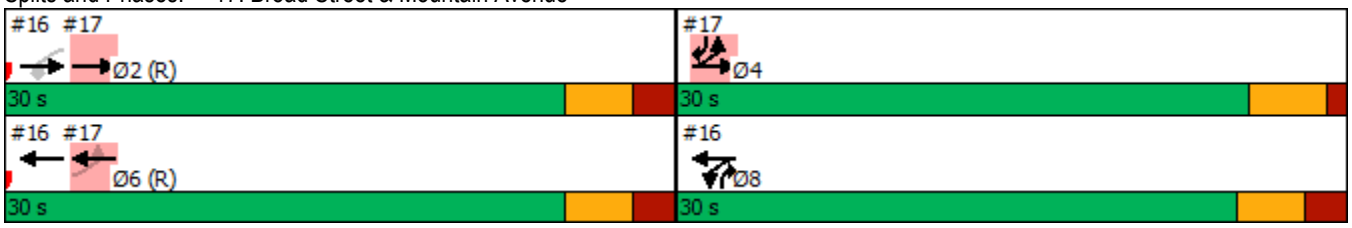


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	523	585	593	26	0	524		
Future Volume (vph)	523	585	593	26	0	524		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.994			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1956	2059	3888	0	0	3080		
Flt Permitted	0.365							
Satd. Flow (perm)	751	2059	3888	0	0	3080		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			9			268		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%		
Adj. Flow (vph)	551	616	624	27	0	552		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	551	616	651	0	0	552		
Turn Type	D.P+P	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases	6							
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	51.0	60.0	27.4			23.1		
Actuated g/C Ratio	0.85	1.00	0.46			0.38		
v/c Ratio	0.50	0.30	0.37			0.41		
Control Delay	6.0	0.3	12.0			7.0		
Queue Delay	0.9	0.0	0.0			0.0		
Total Delay	7.0	0.3	12.0			7.0		
LOS	A	A	B			A		
Approach Delay		3.5	12.0		7.0			
Approach LOS		A	B		A			
Queue Length 50th (ft)	40	0	81			35		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	93	0	118			67		
Internal Link Dist (ft)		13	318		952			
Turn Bay Length (ft)						150		
Base Capacity (vph)	1165	2035	1780			1463		
Starvation Cap Reductn	346	0	0			0		
Spillback Cap Reductn	0	0	142			51		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.67	0.30	0.40			0.39		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 6.6		Intersection LOS: A	
Intersection Capacity Utilization 49.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	551	616	651	552
v/c Ratio	0.50	0.30	0.37	0.41
Control Delay	6.0	0.3	12.0	7.0
Queue Delay	0.9	0.0	0.0	0.0
Total Delay	7.0	0.3	12.0	7.0
Queue Length 50th (ft)	40	0	81	35
Queue Length 95th (ft)	93	0	118	67
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	1165	2035	1780	1463
Starvation Cap Reductn	346	0	0	0
Spillback Cap Reductn	0	0	142	51
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.30	0.40	0.39

Intersection Summary

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↗
Traffic Vol, veh/h	0	760	673	0	0	59
Future Vol, veh/h	0	760	673	0	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	800	708	0	0	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	708
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	0	0	435
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	435
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	435
HCM Lane V/C Ratio	-	-	0.143
HCM Control Delay (s)	-	-	14.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.5

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	572	10	36	837	16	55
Future Vol, veh/h	572	10	36	837	16	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	602	11	38	881	17	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	613	0	1565	608
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	957	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	966	-	123	496
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	373	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	966	-	114	496
Mov Cap-2 Maneuver	-	-	-	-	114	-
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	344	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	283	-	-	966	-
HCM Lane V/C Ratio	0.264	-	-	0.039	-
HCM Control Delay (s)	22.2	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	18	43	846	25	65
Future Vol, veh/h	610	18	43	846	25	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	642	19	45	891	26	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	661	0	1633	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	981	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	927	-	111	468
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	363	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	927	-	100	468
Mov Cap-2 Maneuver	-	-	-	-	100	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	328	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	31
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	231	-	-	927	-
HCM Lane V/C Ratio	0.41	-	-	0.049	-
HCM Control Delay (s)	31	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	901	890	3	2	1
Future Vol, veh/h	1	901	890	3	2	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	948	937	3	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	940	0	-	0	1889	939
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	950	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	729	-	-	-	77	320
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	376	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	729	-	-	-	77	320
Mov Cap-2 Maneuver	-	-	-	-	77	-
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	41.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	729	-	-	-	103
HCM Lane V/C Ratio	0.001	-	-	-	0.031
HCM Control Delay (s)	9.9	0	-	-	41.1
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	0	2	153	0	2
Future Vol, veh/h	260	0	2	153	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	0	2	166	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	283	0	453	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	170	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1279	-	565	756
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	860	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1279	-	564	756
Mov Cap-2 Maneuver	-	-	-	-	564	-
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	858	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	756	-	-	1279	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9.8	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	581	0	2	832	0	18
Future Vol, veh/h	581	0	2	832	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	632	0	2	904	0	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	632	0	-	316
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	947	-	0	680
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	947	-	-	680
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	680	-	-	947	-
HCM Lane V/C Ratio	0.029	-	-	0.002	-
HCM Control Delay (s)	10.5	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Kimley»Horn

DRAFT

2027 Build Conditions + Mitigation Saturday Midday Peak

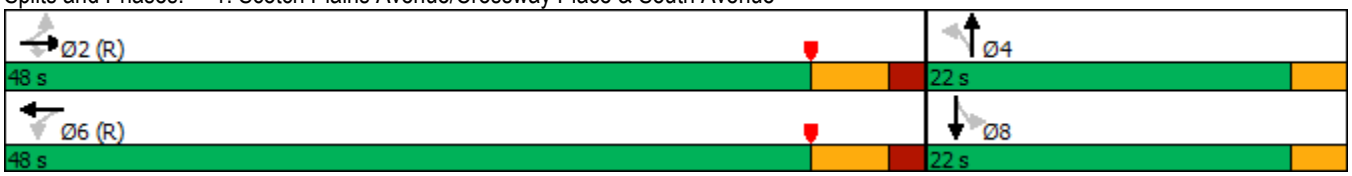
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	374	45	30	355	74	43	184	21	62	157	121
Future Volume (vph)	152	374	45	30	355	74	43	184	21	62	157	121
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	0		0	70		0	0		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.985			0.935	
Flt Protected		0.986			0.997		0.950			0.950		
Satd. Flow (prot)	0	2065	1785	0	2039	0	1995	2040	0	1975	1964	0
Flt Permitted		0.748			0.950		0.288			0.419		
Satd. Flow (perm)	0	1566	1785	0	1943	0	605	2040	0	871	1964	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47		25			8			54	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		137			639			608			265	
Travel Time (s)		2.7			12.4			16.6			7.2	
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 (%)	1%	0%	0%	4%	0%	1%	0%	1%	5%	1%	0%	0%
Adj. Flow (vph)	158	390	47	31	370	77	45	192	22	65	164	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	548	47	0	478	0	45	214	0	65	290	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0		13.0	13.0		13.0	13.0	
Total Split (s)	48.0	48.0	48.0	48.0	48.0		22.0	22.0		22.0	22.0	
Total Split (%)	68.6%	68.6%	68.6%	68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		3.0	3.0		3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		47.1	47.1		47.1		13.9	13.9		13.9	13.9	
Actuated g/C Ratio		0.67	0.67		0.67		0.20	0.20		0.20	0.20	
v/c Ratio		0.52	0.04		0.36		0.38	0.52		0.38	0.67	
Control Delay		13.1	4.7		6.3		31.9	27.8		29.2	28.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		13.1	4.7		6.3		31.9	27.8		29.2	28.2	
LOS		B	A		A		C	C		C	C	
Approach Delay		12.5			6.3			28.5			28.4	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		155	1		69		17	80		25	94	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		279	m22		146		43	128		54	154	
Internal Link Dist (ft)		57			559			528			185	
Turn Bay Length (ft)							70					
Base Capacity (vph)		1053	1216		1315		164	559		236	572	
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		0.52	0.04		0.36		0.27	0.38		0.28	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 84.5%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 1: Scotch Plains Avenue/Crossway Place & South Avenue





Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	548	47	478	45	214	65	290
v/c Ratio	0.52	0.04	0.36	0.38	0.52	0.38	0.67
Control Delay	13.1	4.7	6.3	31.9	27.8	29.2	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	4.7	6.3	31.9	27.8	29.2	28.2
Queue Length 50th (ft)	155	1	69	17	80	25	94
Queue Length 95th (ft)	279	m22	146	43	128	54	154
Internal Link Dist (ft)	57		559		528		185
Turn Bay Length (ft)				70			
Base Capacity (vph)	1053	1216	1315	164	559	236	572
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	0.52	0.04	0.36	0.27	0.38	0.28	0.51

Intersection Summary

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



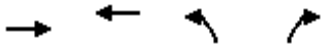
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	405	73	406	420	108	305
Future Volume (vph)	405	73	406	420	108	305
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Storage Length (ft)		0	0		0	75
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.979					0.850
Flt Protected				0.976	0.950	
Satd. Flow (prot)	2019	0	0	3875	1995	1785
Flt Permitted				0.586	0.950	
Satd. Flow (perm)	2019	0	0	2327	1995	1785
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	35	
Link Distance (ft)	403			289	427	
Travel Time (s)	11.0			7.9	8.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	12%	1%	0%	0%	0%
Adj. Flow (vph)	413	74	414	429	110	311
Shared Lane Traffic (%)						
Lane Group Flow (vph)	487	0	0	843	110	311
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases			2			4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	7.0		10.0	9.0	7.0	10.0
Minimum Split (s)	33.0		13.0	35.0	22.0	13.0
Total Split (s)	33.0		13.0	46.0	24.0	13.0
Total Split (%)	47.1%		18.6%	65.7%	34.3%	18.6%
Yellow Time (s)	4.0		3.0	4.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	5.0	3.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	C-Max		None	C-Max	None	None
Act Effct Green (s)	39.5			52.7	8.7	21.5
Actuated g/C Ratio	0.56			0.75	0.12	0.31
v/c Ratio	0.43			0.44	0.45	0.57
Control Delay	11.5			4.2	33.8	23.7
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.5			4.2	33.8	23.7
LOS	B			A	C	C
Approach Delay	11.5			4.2	26.3	
Approach LOS	B			A	C	
Queue Length 50th (ft)	117			52	45	107

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	207			89	86	164
Internal Link Dist (ft)	323			209	347	
Turn Bay Length (ft)						75
Base Capacity (vph)	1139			1912	541	548
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	0.43			0.44	0.20	0.57

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 34 (49%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Broad St & South Avenue





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	487	843	110	311
v/c Ratio	0.43	0.44	0.45	0.57
Control Delay	11.5	4.2	33.8	23.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.5	4.2	33.8	23.7
Queue Length 50th (ft)	117	52	45	107
Queue Length 95th (ft)	207	89	86	164
Internal Link Dist (ft)	323	209	347	
Turn Bay Length (ft)				75
Base Capacity (vph)	1139	1912	541	548
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	0.43	0.44	0.20	0.57

Intersection Summary

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Existing_SAT (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.646	14.4	LOS B	6.5	166.1	0.77	0.99	1.35	21.5
6	T1	348	0.0	378	0.0	0.646	14.4	LOS B	6.5	166.1	0.77	0.99	1.35	19.7
16	R2	358	7.0	389	7.0	0.646	10.5	LOS B	6.5	166.1	0.64	0.73	0.91	22.1
Approach		720	3.5	782	3.5	0.646	12.4	LOS B	6.5	166.1	0.71	0.86	1.13	20.8
North: SB - SR 28														
7	L2	368	0.0	400	0.0	0.445	8.6	LOS A	2.5	63.0	0.58	0.54	0.63	22.6
14	R2	356	0.0	387	0.0	0.445	7.2	LOS A	2.5	63.0	0.53	0.47	0.53	21.0
Approach		724	0.0	787	0.0	0.445	7.9	LOS A	2.5	63.0	0.55	0.51	0.58	21.9
West: EB - South Ave														
5	L2	482	0.0	524	0.0	0.758	17.6	LOS C	12.6	315.3	0.85	1.17	1.72	13.7
2	T1	390	1.0	424	1.0	0.758	12.3	LOS B	12.6	315.3	0.68	0.83	1.16	21.7
Approach		872	0.4	948	0.4	0.758	15.2	LOS C	12.6	315.3	0.77	1.02	1.47	16.8
All Vehicles		2316	1.3	2517	1.3	0.758	12.1	LOS B	12.6	315.3	0.68	0.81	1.09	19.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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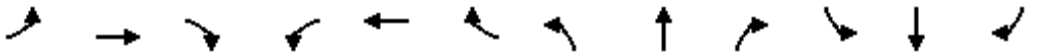


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	618	43	28	561	15	98	14	41	34	3	38
Future Volume (vph)	17	618	43	28	561	15	98	14	41	34	3	38
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		100	0		0	0		70	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.996			0.889			0.860	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	2079	0	1995	2092	0	1995	1867	0	1995	1806	0
Flt Permitted	0.309			0.243			0.729			0.719		
Satd. Flow (perm)	649	2079	0	510	2092	0	1531	1867	0	1510	1806	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			43			40	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			126			500			138	
Travel Time (s)		13.9			2.9			13.6			3.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	18	644	45	29	584	16	102	15	43	35	3	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	689	0	29	600	0	102	58	0	35	43	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	2		1	2			4			8	
Permitted Phases	2			2			4			8		
Detector Phase	1	2		1	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	8.0	21.0		8.0	21.0		19.0	19.0		19.0	19.0	
Total Split (s)	8.0	58.0		8.0	58.0		21.0	21.0		21.0	21.0	
Total Split (%)	8.4%	61.1%		8.4%	61.1%		22.1%	22.1%		22.1%	22.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	4.0		0.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.0		3.0	7.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	61.2	52.2		61.2	52.2		14.4	14.4		14.4	14.4	
Actuated g/C Ratio	0.64	0.55		0.64	0.55		0.15	0.15		0.15	0.15	
v/c Ratio	0.04	0.60		0.07	0.52		0.44	0.18		0.15	0.14	
Control Delay	0.9	9.9		5.0	21.4		43.1	16.7		36.6	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	0.9	9.9		5.0	21.4		43.1	16.7		36.6	13.5	
LOS	A	A		A	C		D	B		D	B	
Approach Delay		9.7			20.6			33.5			23.9	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)	0	56		3	209		57	8		19	2	

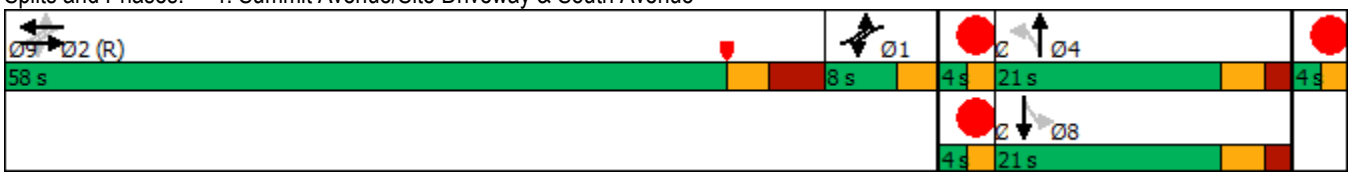
Lane Group	Ø3	Ø7	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	3	7	9
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0
Total Split (%)	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m1	81		m8	245		106	42		46	30	
Internal Link Dist (ft)		431			46			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)	488	1144		406	1150		257	350		254	337	
Starvation Cap Reductn	0	17		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	0.61		0.07	0.52		0.40	0.17		0.14	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

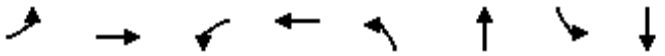
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue



Lane Group	Ø3	Ø7	Ø9
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	689	29	600	102	58	35	43
v/c Ratio	0.04	0.60	0.07	0.52	0.44	0.18	0.15	0.14
Control Delay	0.9	9.9	5.0	21.4	43.1	16.7	36.6	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.9	9.9	5.0	21.4	43.1	16.7	36.6	13.5
Queue Length 50th (ft)	0	56	3	209	57	8	19	2
Queue Length 95th (ft)	m1	81	m8	245	106	42	46	30
Internal Link Dist (ft)		431		46		420		58
Turn Bay Length (ft)								
Base Capacity (vph)	488	1144	406	1150	257	350	254	337
Starvation Cap Reductn	0	17	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	0.61	0.07	0.52	0.40	0.17	0.14	0.13

Intersection Summary

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

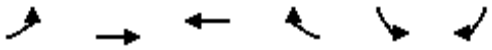
Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	651	43	32	554	43	105
Future Vol, veh/h	651	43	32	554	43	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	664	44	33	565	44	107

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	708	0	1317	686
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	900	-	175	451
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	534	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	900	-	166	451
Mov Cap-2 Maneuver	-	-	-	-	166	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	506	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	28.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	301	-	-	900	-
HCM Lane V/C Ratio	0.502	-	-	0.036	-
HCM Control Delay (s)	28.4	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.6	-	-	0.1	-



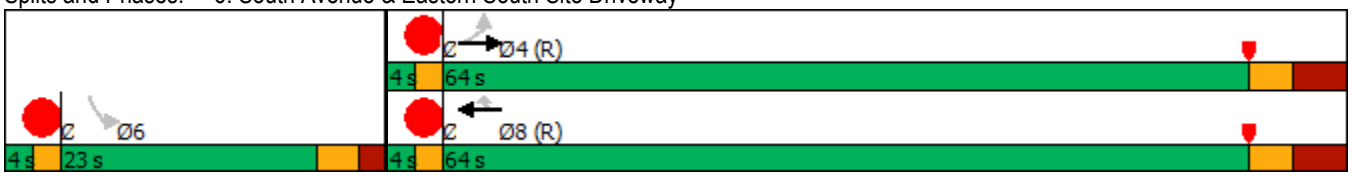
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	28	694	586	29	33	60			
Future Volume (vph)	28	694	586	29	33	60			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			150	0	0			
Storage Lanes	0			1	1	0			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt				0.850	0.912				
Flt Protected		0.998			0.983				
Satd. Flow (prot)	0	2096	2100	1785	1883	0			
Flt Permitted		0.962			0.983				
Satd. Flow (perm)	0	2020	2100	1785	1883	0			
Right Turn on Red				Yes		Yes			
Satd. Flow (RTOR)				31	65				
Link Speed (mph)		30	30		25				
Link Distance (ft)		279	494		163				
Travel Time (s)		6.3	11.2		4.4				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%			
Adj. Flow (vph)	30	746	630	31	35	65			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	776	630	31	100	0			
Turn Type	Perm	NA	NA	Perm	Perm				
Protected Phases		4	8				3	5	7
Permitted Phases	4			8	6				
Detector Phase	4	4	8	8	6				
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0		1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0	23.0	19.0		4.0	4.0	4.0
Total Split (s)	64.0	64.0	64.0	64.0	23.0		4.0	4.0	4.0
Total Split (%)	67.4%	67.4%	67.4%	67.4%	24.2%		4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0	4.0	2.0		0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0				
Total Lost Time (s)		7.0	7.0	7.0	5.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max		None	None	None
Act Effct Green (s)		57.8	57.8	57.8	18.8				
Actuated g/C Ratio		0.61	0.61	0.61	0.20				
v/c Ratio		0.63	0.49	0.03	0.24				
Control Delay		9.3	9.8	3.1	15.6				
Queue Delay		0.0	0.4	0.0	0.0				
Total Delay		9.3	10.2	3.1	15.6				
LOS		A	B	A	B				
Approach Delay		9.3	9.9		15.6				
Approach LOS		A	A		B				
Queue Length 50th (ft)		144	142	0	18				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 95th (ft)		185	238	m7	61				
Internal Link Dist (ft)		199	414		83				
Turn Bay Length (ft)				150					
Base Capacity (vph)		1229	1278	1098	424				
Starvation Cap Reductn		13	248	0	0				
Spillback Cap Reductn		0	0	0	0				
Storage Cap Reductn		0	0	0	0				
Reduced v/c Ratio		0.64	0.61	0.03	0.24				

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 6: South Avenue & Eastern South Site Driveway





Lane Group	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	776	630	31	100
v/c Ratio	0.63	0.49	0.03	0.24
Control Delay	9.3	9.8	3.1	15.6
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	9.3	10.2	3.1	15.6
Queue Length 50th (ft)	144	142	0	18
Queue Length 95th (ft)	185	238	m7	61
Internal Link Dist (ft)	199	414		83
Turn Bay Length (ft)			150	
Base Capacity (vph)	1229	1278	1098	424
Starvation Cap Reductn	13	248	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.61	0.03	0.24

Intersection Summary

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

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Future Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949						0.850			0.982	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1995	3737	0	0	0	1995	2100	1767	0	1976	2017	0
Flt Permitted	0.366					0.312				0.336		
Satd. Flow (perm)	769	3737	0	0	0	655	2100	1767	0	699	2017	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		2									8	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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%	0%	0%	0%	1%	0%	1%	2%	4%
Adj. Flow (vph)	140	415	204	11	61	63	394	264	4	159	485	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	630	0	0	0	124	394	264	0	163	553	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	37.0			9.0	9.0	38.0	38.0	10.0	10.0	37.0	
Total Split (%)	8.4%	38.9%			9.5%	9.5%	40.0%	40.0%	10.5%	10.5%	38.9%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None	None	None	None	None	
Act Effct Green (s)	40.2	29.9				41.7	30.7	30.7		40.0	28.0	
Actuated g/C Ratio	0.42	0.31				0.44	0.32	0.32		0.42	0.29	
v/c Ratio	0.36	0.53				0.33	0.58	0.46		0.42	0.92	
Control Delay	8.0	17.1				17.7	31.3	29.2		17.8	54.6	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	8.0	17.1				17.7	31.3	29.2		17.8	54.6	
LOS	A	B				B	C	C		B	D	
Approach Delay		15.4					28.4				46.2	
Approach LOS		B					C				D	
Queue Length 50th (ft)	15	100				42	199	127		53	312	



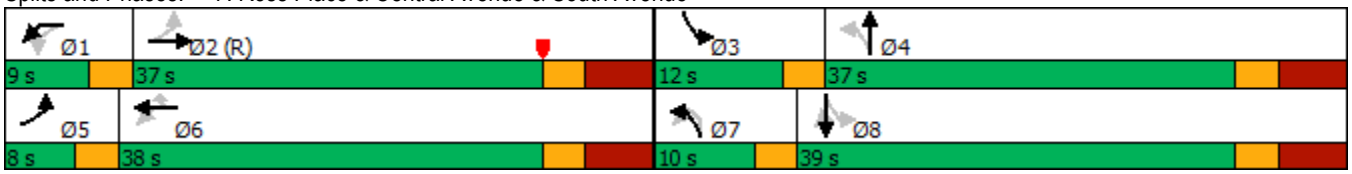
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	235	403	117	75
Future Volume (vph)	235	403	117	75
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1995	2059	1774	0
Flt Permitted	0.133			
Satd. Flow (perm)	279	2059	1774	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	1%	0%
Adj. Flow (vph)	245	420	122	78
Shared Lane Traffic (%)				
Lane Group Flow (vph)	245	420	200	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	12.0	39.0	39.0	
Total Split (%)	12.6%	41.1%	41.1%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	44.0	30.0	30.0	
Actuated g/C Ratio	0.46	0.32	0.32	
v/c Ratio	0.84	0.65	0.31	
Control Delay	43.2	33.1	10.8	
Queue Delay	0.0	0.0	0.0	
Total Delay	43.2	33.1	10.8	
LOS	D	C	B	
Approach Delay		30.8		
Approach LOS		C		
Queue Length 50th (ft)	83	213	31	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	m36	156				76	295	202		91	#506	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	394	1178				373	678	570		388	621	
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	0.36	0.53				0.33	0.58	0.46		0.42	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 29.9		Intersection LOS: C	
Intersection Capacity Utilization 82.3%		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: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#206	314	83	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	291	671	663	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.84	0.63	0.30	

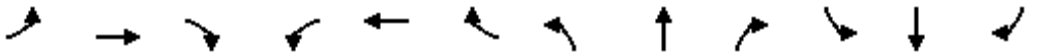
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	140	630	124	394	264	163	553	245	420	200
v/c Ratio	0.36	0.53	0.33	0.58	0.46	0.42	0.92	0.84	0.65	0.31
Control Delay	8.0	17.1	17.7	31.3	29.2	17.8	54.6	43.2	33.1	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	17.1	17.7	31.3	29.2	17.8	54.6	43.2	33.1	10.8
Queue Length 50th (ft)	15	100	42	199	127	53	312	83	213	31
Queue Length 95th (ft)	m36	156	76	295	202	91	#506	#206	314	83
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	394	1178	373	678	570	388	621	291	671	663
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	0.36	0.53	0.33	0.58	0.46	0.42	0.89	0.84	0.63	0.30

Intersection Summary

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.

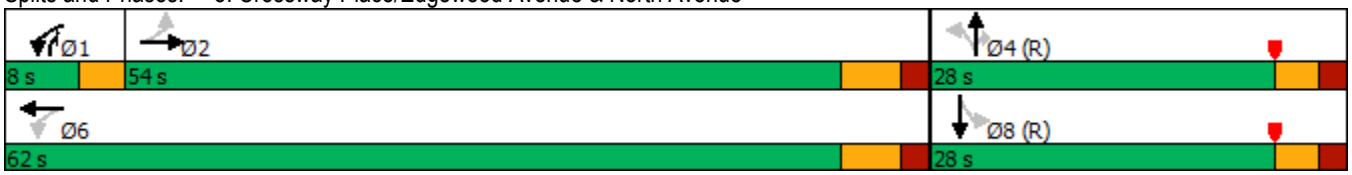


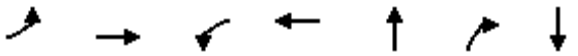
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	482	50	255	532	17	67	58	306	5	58	13
Future Volume (vph)	6	482	50	255	532	17	67	58	306	5	58	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	135		0	118		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.995				0.850		0.977	
Flt Protected	0.950			0.950				0.974			0.997	
Satd. Flow (prot)	1995	2052	0	1995	2050	0	0	2045	1750	0	2046	0
Flt Permitted	0.418			0.303				0.803			0.985	
Satd. Flow (perm)	878	2052	0	636	2050	0	0	1686	1750	0	2021	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			3				309		11	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		750			630			296			544	
Travel Time (s)		14.6			12.3			8.1			14.8	
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%	2%	0%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	6	518	54	274	572	18	72	62	329	5	62	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	572	0	274	590	0	0	134	329	0	81	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	7.0	5.0	7.0	7.0	
Minimum Split (s)	54.0	54.0		14.0	54.0		28.0	28.0	14.0	28.0	28.0	
Total Split (s)	54.0	54.0		8.0	62.0		28.0	28.0	8.0	28.0	28.0	
Total Split (%)	60.0%	60.0%		8.9%	68.9%		31.1%	31.1%	8.9%	31.1%	31.1%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0			5.0	3.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Recall Mode	Max	Max		None	Max		C-Max	C-Max	None	C-Max	C-Max	
Act Effct Green (s)	48.0	48.0		59.0	56.0			23.0	33.0		23.0	
Actuated g/C Ratio	0.53	0.53		0.66	0.62			0.26	0.37		0.26	
v/c Ratio	0.01	0.52		0.56	0.46			0.31	0.39		0.15	
Control Delay	10.0	15.5		11.2	10.4			29.5	4.6		23.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.0	15.5		11.2	10.4			29.5	4.6		23.6	
LOS	A	B		B	B			C	A		C	
Approach Delay		15.4			10.7			11.8			23.6	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	2	195		55	160			62	7		31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	7	285		87	234			112	61		67	
Internal Link Dist (ft)		670			550			216			464	
Turn Bay Length (ft)	135			118								
Base Capacity (vph)	468	1098		492	1276			430	837		524	
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	0.01	0.52		0.56	0.46			0.31	0.39		0.15	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 77 (86%), Referenced to phase 4:NBTL and 8:SBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

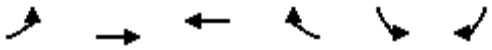
Splits and Phases: 8: Crossway Place/Edgewood Avenue & North Avenue



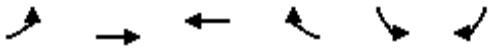


Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	6	572	274	590	134	329	81
v/c Ratio	0.01	0.52	0.56	0.46	0.31	0.39	0.15
Control Delay	10.0	15.5	11.2	10.4	29.5	4.6	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	15.5	11.2	10.4	29.5	4.6	23.6
Queue Length 50th (ft)	2	195	55	160	62	7	31
Queue Length 95th (ft)	7	285	87	234	112	61	67
Internal Link Dist (ft)		670		550	216		464
Turn Bay Length (ft)	135		118				
Base Capacity (vph)	468	1098	492	1276	430	837	524
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	0.01	0.52	0.56	0.46	0.31	0.39	0.15

Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	14	632	602	149	161	35			
Future Volume (vph)	14	632	602	149	161	35			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			0	0	50			
Storage Lanes	0			0	1	1			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt			0.973			0.850			
Flt Protected		0.999			0.950				
Satd. Flow (prot)	0	2098	2039	0	1995	1785			
Flt Permitted		0.981			0.950				
Satd. Flow (perm)	0	2060	2039	0	1995	1785			
Right Turn on Red				No		Yes			
Satd. Flow (RTOR)						29			
Link Speed (mph)		35	35		25				
Link Distance (ft)		175	117		156				
Travel Time (s)		3.4	2.3		4.3				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%			
Adj. Flow (vph)	14	652	621	154	166	36			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	666	775	0	166	36			
Turn Type	Perm	NA	NA		Prot	Perm			
Protected Phases		4	8		6		3	5	7
Permitted Phases	4					6			
Detector Phase	4	4	8		6	6			
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0		5.0	5.0	1.0	1.0	1.0
Minimum Split (s)	19.5	19.5	19.5		19.5	19.5	4.0	4.0	4.0
Total Split (s)	67.0	67.0	67.0		25.0	25.0	4.0	4.0	4.0
Total Split (%)	67.0%	67.0%	67.0%		25.0%	25.0%	4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	2.0	2.0	2.0
All-Red Time (s)	2.5	2.5	2.5		2.5	2.5	0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			
Total Lost Time (s)		5.5	5.5		5.5	5.5			
Lead/Lag	Lag	Lag	Lag		Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max		Max	Max	None	None	None
Act Effct Green (s)		63.9	63.9		21.9	21.9			
Actuated g/C Ratio		0.64	0.64		0.22	0.22			
v/c Ratio		0.51	0.60		0.38	0.09			
Control Delay		11.6	13.4		37.0	15.3			
Queue Delay		0.0	1.1		0.0	0.0			
Total Delay		11.6	14.5		37.0	15.3			
LOS		B	B		D	B			
Approach Delay		11.6	14.5		33.1				
Approach LOS		B	B		C				
Queue Length 50th (ft)		195	289		89	4			

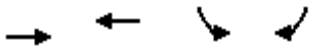


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 95th (ft)		314	337		157	31			
Internal Link Dist (ft)		95	37		76				
Turn Bay Length (ft)						50			
Base Capacity (vph)		1316	1302		436	413			
Starvation Cap Reductn		0	294		0	0			
Spillback Cap Reductn		0	0		0	0			
Storage Cap Reductn		0	0		0	0			
Reduced v/c Ratio		0.51	0.77		0.38	0.09			

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 57.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: North Avenue & Clark Street





Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	666	775	166	36
v/c Ratio	0.51	0.60	0.38	0.09
Control Delay	11.6	13.4	37.0	15.3
Queue Delay	0.0	1.1	0.0	0.0
Total Delay	11.6	14.5	37.0	15.3
Queue Length 50th (ft)	195	289	89	4
Queue Length 95th (ft)	314	337	157	31
Internal Link Dist (ft)	95	37	76	
Turn Bay Length (ft)				50
Base Capacity (vph)	1316	1302	436	413
Starvation Cap Reductn	0	294	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.77	0.38	0.09

Intersection Summary

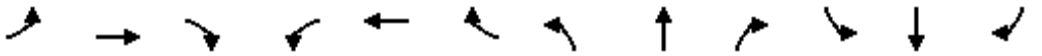
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	169	164	0	49	17
Future Vol, veh/h	0	169	164	0	49	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	0	0
Mvmt Flow	0	188	182	0	54	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	370	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	634	866
Stage 1	0	-	-	0	854	-
Stage 2	0	-	-	0	849	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	634	866
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	849	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	681
HCM Lane V/C Ratio	-	-	0.108
HCM Control Delay (s)	-	-	10.9
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

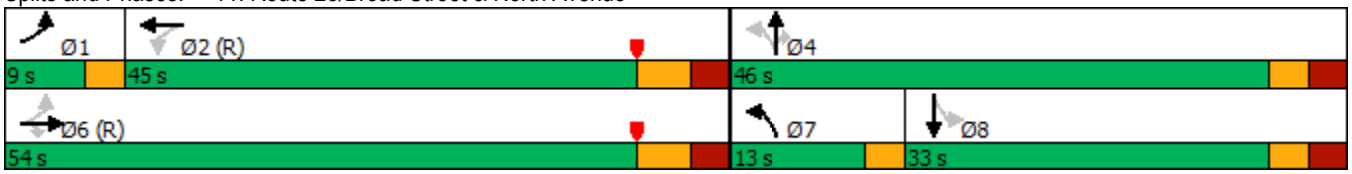


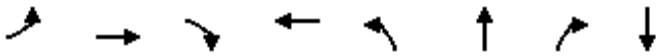
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	338	340	189	449	12	246	417	160	47	378	109
Future Volume (vph)	126	338	340	189	449	12	246	417	160	47	378	109
Ideal Flow (vphpl)	2100	1600	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		125	0		0	0		0	0		75
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.997				0.850		0.969	
Flt Protected	0.950				0.986		0.950				0.996	
Satd. Flow (prot)	1975	1600	1767	0	3795	0	1995	2100	1785	0	3816	0
Flt Permitted	0.308				0.740		0.229				0.860	
Satd. Flow (perm)	640	1600	1767	0	2848	0	481	2100	1785	0	3295	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			351		2						31	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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%	0%	1%	2%	4%	0%	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	130	348	351	195	463	12	254	430	165	48	390	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	348	351	0	670	0	254	430	165	0	550	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	9.0	54.0	54.0	45.0	45.0		13.0	46.0	46.0	33.0	33.0	
Total Split (%)	9.0%	54.0%	54.0%	45.0%	45.0%		13.0%	46.0%	46.0%	33.0%	33.0%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	56.3	52.3	52.3		41.9		37.7	34.7	34.7		21.7	
Actuated g/C Ratio	0.56	0.52	0.52		0.42		0.38	0.35	0.35		0.22	
v/c Ratio	0.28	0.42	0.32		0.56		0.76	0.59	0.27		0.74	
Control Delay	9.5	13.9	2.1		20.4		38.0	29.9	23.7		40.5	
Queue Delay	0.0	0.4	0.3		0.0		2.0	0.0	0.0		0.2	
Total Delay	9.5	14.3	2.4		20.4		40.0	29.9	23.7		40.8	
LOS	A	B	A		C		D	C	C		D	
Approach Delay		8.5			20.4			31.7			40.8	
Approach LOS		A			C			C			D	
Queue Length 50th (ft)	25	133	5		163		114	222	75		163	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	49	217	21		125		#170	295	116		208	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185		125									
Base Capacity (vph)	457	836	1091		1195		333	840	714		912	
Starvation Cap Reductn	0	176	282		0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0		21	0	0		55	
Storage Cap Reductn	0	0	0		0		0	0	0		0	
Reduced v/c Ratio	0.28	0.53	0.43		0.56		0.81	0.51	0.23		0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 93.0%		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: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	130	348	351	670	254	430	165	550
v/c Ratio	0.28	0.42	0.32	0.56	0.76	0.59	0.27	0.74
Control Delay	9.5	13.9	2.1	20.4	38.0	29.9	23.7	40.5
Queue Delay	0.0	0.4	0.3	0.0	2.0	0.0	0.0	0.2
Total Delay	9.5	14.3	2.4	20.4	40.0	29.9	23.7	40.8
Queue Length 50th (ft)	25	133	5	163	114	222	75	163
Queue Length 95th (ft)	49	217	21	125	#170	295	116	208
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185		125					
Base Capacity (vph)	457	836	1091	1195	333	840	714	912
Starvation Cap Reductn	0	176	282	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	21	0	0	55
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.53	0.43	0.56	0.81	0.51	0.23	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

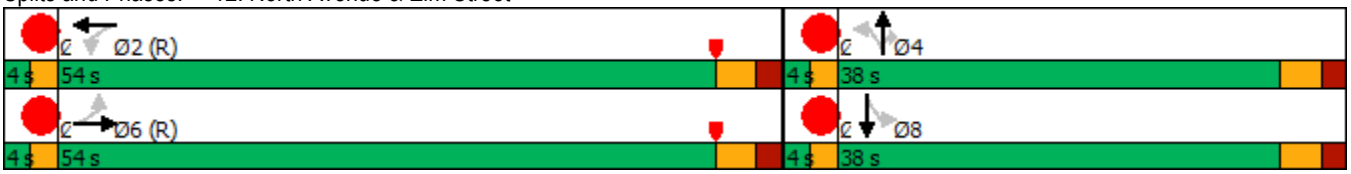
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	486	49	43	632	132	1	1	68	128	27	92
Future Volume (vph)	24	486	49	43	632	132	1	1	68	128	27	92
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.975				0.850		0.950	
Flt Protected		0.998			0.997			0.976			0.975	
Satd. Flow (prot)	0	3930	0	0	3879	0	0	2050	1785	0	1945	0
Flt Permitted		0.901			0.894			0.902			0.836	
Satd. Flow (perm)	0	3548	0	0	3478	0	0	1894	1785	0	1668	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			32				69		32	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		163			479			193			176	
Travel Time (s)		4.4			13.1			4.4			4.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	491	49	43	638	133	1	1	69	129	27	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	564	0	0	814	0	0	2	69	0	249	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		19.0	19.0	19.0	19.0	19.0	
Total Split (s)	54.0	54.0		54.0	54.0		38.0	38.0	38.0	38.0	38.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		38.0%	38.0%	38.0%	38.0%	38.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0			5.0			5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		59.3			59.3			19.2	19.2		19.2	
Actuated g/C Ratio		0.59			0.59			0.19	0.19		0.19	
v/c Ratio		0.27			0.39			0.01	0.17		0.72	
Control Delay		7.8			8.6			29.0	8.6		44.5	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		7.8			8.6			29.0	8.6		44.5	
LOS		A			A			C	A		D	
Approach Delay		7.8			8.6			9.1			44.5	
Approach LOS		A			A			A			D	
Queue Length 50th (ft)		69			85			1	0		132	
Queue Length 95th (ft)		100			156			7	33		200	
Internal Link Dist (ft)		83			399			113			96	
Turn Bay Length (ft)												

Lane Group	Ø1	Ø3	Ø5	Ø7
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Heavy Vehicles (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	3	5	7
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	1.0	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0	4.0
Total Split (%)	4%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		2110			2076			625	635		571	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.27			0.39			0.00	0.11		0.44	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 3 (3%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	Ø1	Ø3	Ø5	Ø7
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	564	814	2	69	249
v/c Ratio	0.27	0.39	0.01	0.17	0.72
Control Delay	7.8	8.6	29.0	8.6	44.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	8.6	29.0	8.6	44.5
Queue Length 50th (ft)	69	85	1	0	132
Queue Length 95th (ft)	100	156	7	33	200
Internal Link Dist (ft)	83	399	113		96
Turn Bay Length (ft)					
Base Capacity (vph)	2110	2076	625	635	571
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.39	0.00	0.11	0.44

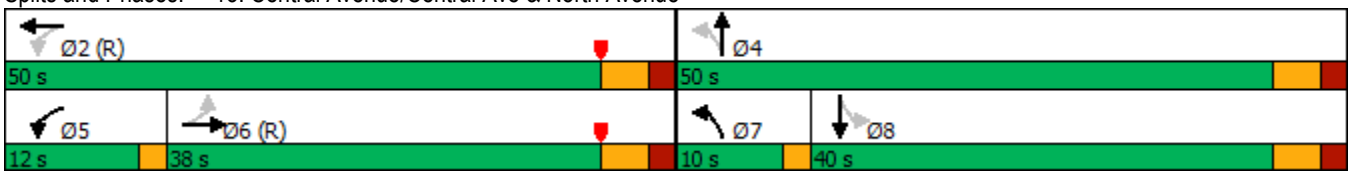
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Future Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. 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
Frt		0.954			0.989			0.971			0.991	
Flt Protected		0.994			0.987			0.988			0.996	
Satd. Flow (prot)	0	3784	0	0	3895	0	0	3828	0	0	3938	0
Flt Permitted		0.737			0.554			0.616			0.800	
Satd. Flow (perm)	0	2805	0	0	2186	0	0	2387	0	0	3163	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					10			38				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	79	403	215	222	548	60	223	504	174	45	466	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	0	830	0	0	901	0	0	542	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	38.0	38.0		12.0	50.0		10.0	50.0		40.0	40.0	
Total Split (%)	38.0%	38.0%		12.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)		32.4			47.5			41.3			31.3	
Actuated g/C Ratio		0.32			0.48			0.41			0.31	
v/c Ratio		0.77			0.69			0.84			0.55	
Control Delay		29.9			23.1			32.0			30.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		29.9			23.1			32.0			30.3	
LOS		C			C			C			C	
Approach Delay		29.9			23.1			32.0			30.3	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		170			185			207			144	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		261			242			261			194	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)												
Base Capacity (vph)		908			1206			1144			1088	
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			0.69			0.79			0.50	

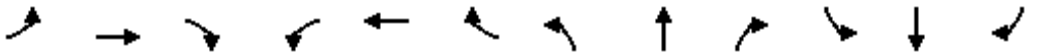
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 94.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 13: Central Avenue/Central Ave & North Avenue



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	697	830	901	542
v/c Ratio	0.77	0.69	0.84	0.55
Control Delay	29.9	23.1	32.0	30.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.9	23.1	32.0	30.3
Queue Length 50th (ft)	170	185	207	144
Queue Length 95th (ft)	261	242	261	194
Internal Link Dist (ft)	123	626	729	143
Turn Bay Length (ft)				
Base Capacity (vph)	908	1206	1144	1088
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	0.69	0.79	0.50

Intersection Summary

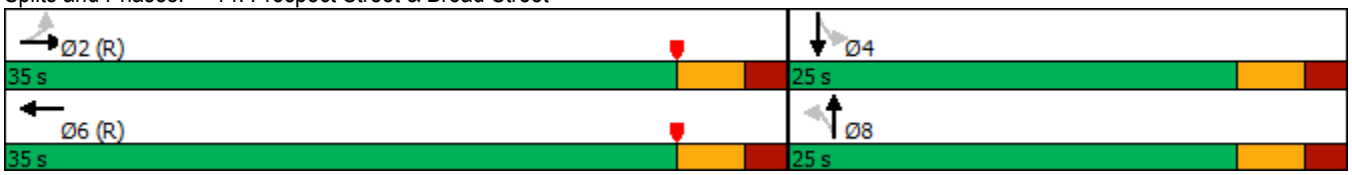


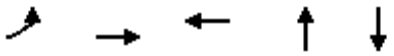
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	453	1	0	371	72	17	47	76	6	0	166
Future Volume (vph)	142	453	1	0	371	72	17	47	76	6	0	166
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	128		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.978			0.927			0.869	
Flt Protected	0.950							0.994			0.998	
Satd. Flow (prot)	1995	2079	0	0	2044	0	0	1935	0	0	1804	0
Flt Permitted	0.473							0.900			0.989	
Satd. Flow (perm)	993	2079	0	0	2044	0	0	1752	0	0	1788	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					23			82			178	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		430			482			224			309	
Travel Time (s)		11.7			13.1			6.1			7.0	
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
Heavy Vehicles (%)	0%	1%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	153	487	1	0	399	77	18	51	82	6	0	178
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	488	0	0	476	0	0	151	0	0	184	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		
Detector Phase	2	2			6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0			23.0		23.0	23.0		23.0	23.0	
Total Split (s)	35.0	35.0			35.0		25.0	25.0		25.0	25.0	
Total Split (%)	58.3%	58.3%			58.3%		41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max			C-Max		None	None		None	None	
Act Effct Green (s)	41.9	41.9			41.9			8.1			8.1	
Actuated g/C Ratio	0.70	0.70			0.70			0.14			0.14	
v/c Ratio	0.22	0.34			0.33			0.49			0.47	
Control Delay	4.7	4.7			2.4			17.6			8.8	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	4.7	4.7			2.4			17.6			8.8	
LOS	A	A			A			B			A	
Approach Delay		4.7			2.4			17.6			8.8	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	15	52			19			23			2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	43	113			33			64			46	
Internal Link Dist (ft)		350			402			144			229	
Turn Bay Length (ft)	128											
Base Capacity (vph)	694	1453			1435			638			714	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.22	0.34			0.33			0.24			0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 59.5 (99%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 5.8		Intersection LOS: A	
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			

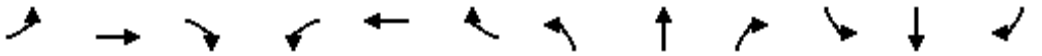
Splits and Phases: 14: Prospect Street & Broad Street





Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	153	488	476	151	184
v/c Ratio	0.22	0.34	0.33	0.49	0.47
Control Delay	4.7	4.7	2.4	17.6	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	4.7	2.4	17.6	8.8
Queue Length 50th (ft)	15	52	19	23	2
Queue Length 95th (ft)	43	113	33	64	46
Internal Link Dist (ft)		350	402	144	229
Turn Bay Length (ft)	128				
Base Capacity (vph)	694	1453	1435	638	714
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.34	0.33	0.24	0.26

Intersection Summary

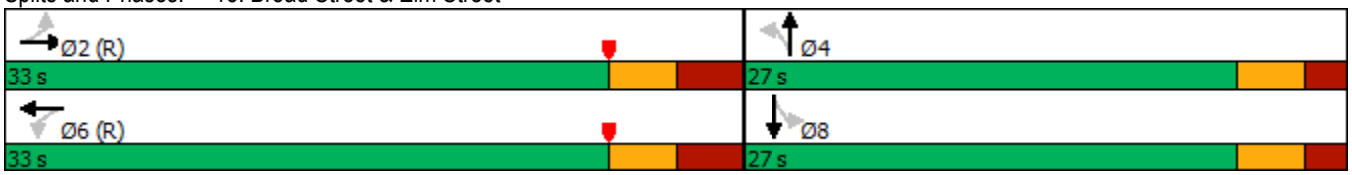


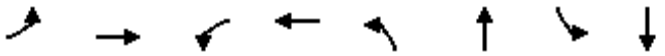
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	369	73	33	304	79	51	149	86	118	115	81
Future Volume (vph)	75	369	73	33	304	79	51	149	86	118	115	81
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	105		0	60		0	0		80	0		115
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.969			0.945			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	2048	0	1995	2035	0	1995	1985	0	1995	1970	0
Flt Permitted	0.520			0.474			0.567			0.471		
Satd. Flow (perm)	1092	2048	0	995	2035	0	1191	1985	0	989	1970	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			28			55			66	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		482			318			290			825	
Travel Time (s)		13.1			8.7			6.6			18.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	78	384	76	34	317	82	53	155	90	123	120	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	460	0	34	399	0	53	245	0	123	204	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		5.0	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)	37.3	37.3		37.3	37.3		11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.20	0.20		0.20	0.20	
v/c Ratio	0.11	0.36		0.05	0.31		0.23	0.57		0.64	0.47	
Control Delay	4.8	4.9		6.6	7.7		21.0	21.3		36.7	16.9	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	4.8	4.9		6.6	8.0		21.0	21.3		36.7	16.9	
LOS	A	A		A	A		C	C		D	B	
Approach Delay		4.9			7.9			21.3			24.4	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	7	47		5	81		16	62		42	44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	21	79		22	152		37	107		80	83	
Internal Link Dist (ft)		402			238			210			745	
Turn Bay Length (ft)	105			60								
Base Capacity (vph)	679	1282		619	1276		436	762		362	764	
Starvation Cap Reductn	0	0		0	406		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	0.11	0.36		0.05	0.46		0.12	0.32		0.34	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Broad Street & Elm Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	460	34	399	53	245	123	204
v/c Ratio	0.11	0.36	0.05	0.31	0.23	0.57	0.64	0.47
Control Delay	4.8	4.9	6.6	7.7	21.0	21.3	36.7	16.9
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	4.8	4.9	6.6	8.0	21.0	21.3	36.7	16.9
Queue Length 50th (ft)	7	47	5	81	16	62	42	44
Queue Length 95th (ft)	21	79	22	152	37	107	80	83
Internal Link Dist (ft)		402		238		210		745
Turn Bay Length (ft)	105		60					
Base Capacity (vph)	679	1282	619	1276	436	762	362	764
Starvation Cap Reductn	0	0	0	406	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	0.11	0.36	0.05	0.46	0.12	0.32	0.34	0.27

Intersection Summary



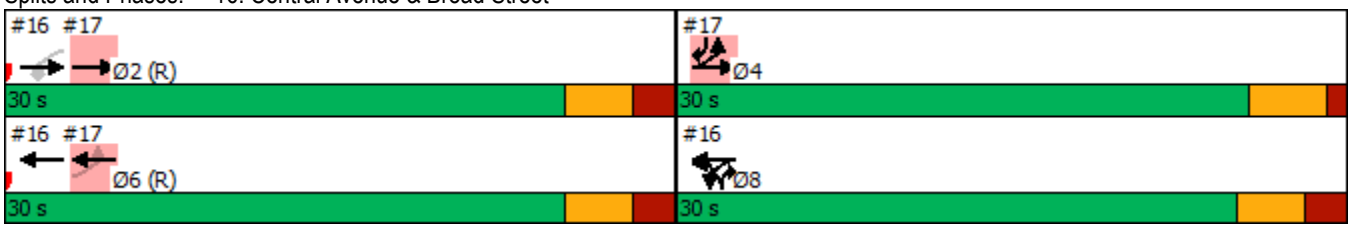
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Lane Configurations								
Traffic Volume (vph)	429	159	480	422	1	383		
Future Volume (vph)	429	159	480	422	1	383		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)		0	130		0	0		
Storage Lanes		1	1		0	1		
Taper Length (ft)			25		25			
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00		
Frt		0.850				0.865		
Flt Protected			0.950		0.950			
Satd. Flow (prot)	3990	1785	1995	2100	0	1817		
Flt Permitted			0.493		0.950			
Satd. Flow (perm)	3990	1785	1035	2100	0	1817		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		166				270		
Link Speed (mph)	25			25	25			
Link Distance (ft)	318			103	716			
Travel Time (s)	8.7			2.8	19.5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	447	166	500	440	1	399		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	447	166	500	440	1	399		
Turn Type	NA	Perm	D.P+P	NA	Prot	Over		
Protected Phases	2		8!	6 8!	8!	8	4	6
Permitted Phases		2	2					
Detector Phase	2	2	8	6 8	8	8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	7.0		7.0	7.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0		30.0	30.0	23.5	30.0
Total Split (s)	30.0	30.0	30.0		30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%	50%	50%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.5	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0		
Total Lost Time (s)	5.0	5.0	5.0			5.0		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	None		None	None	None	C-Max
Act Effct Green (s)	30.5	30.5	50.0	60.0	0.0	19.5		
Actuated g/C Ratio	0.51	0.51	0.83	1.00	0.00	0.32		
v/c Ratio	0.22	0.17	0.43	0.21	no cap	0.52		
Control Delay	10.2	4.3	2.9	0.2		7.0		
Queue Delay	0.0	0.0	0.3	0.0		0.0		
Total Delay	10.2	4.3	3.2	0.2	Error	7.0		
LOS	B	A	A	A	F	A		
Approach Delay	8.6			1.8	Err			
Approach LOS	A			A	F			
Queue Length 50th (ft)	53	0	0	0	0	28		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø4	Ø6
Queue Length 95th (ft)	90	42	22	0	0	79		
Internal Link Dist (ft)	238			23	636			
Turn Bay Length (ft)			130					
Base Capacity (vph)	2031	990	1296	2100	1	914		
Starvation Cap Reductn	0	0	319	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	0.22	0.17	0.51	0.21	1.00	0.44		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: Err			
Intersection Signal Delay: Err		Intersection LOS: F	
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

! Phase conflict between lane groups.

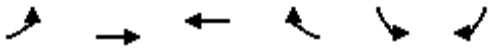
Splits and Phases: 16: Central Avenue & Broad Street



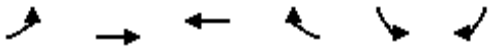


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	447	166	500	440	1	399
v/c Ratio	0.22	0.17	0.43	0.21	no cap	0.52
Control Delay	10.2	4.3	2.9	0.2		7.0
Queue Delay	0.0	0.0	0.3	0.0		0.0
Total Delay	10.2	4.3	3.2	0.2	Error	7.0
Queue Length 50th (ft)	53	0	0	0	0	28
Queue Length 95th (ft)	90	42	22	0	0	79
Internal Link Dist (ft)	238			23	636	
Turn Bay Length (ft)			130			
Base Capacity (vph)	2031	990	1296	2100	1	914
Starvation Cap Reductn	0	0	319	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	0.22	0.17	0.51	0.21	1.00	0.44

Intersection Summary



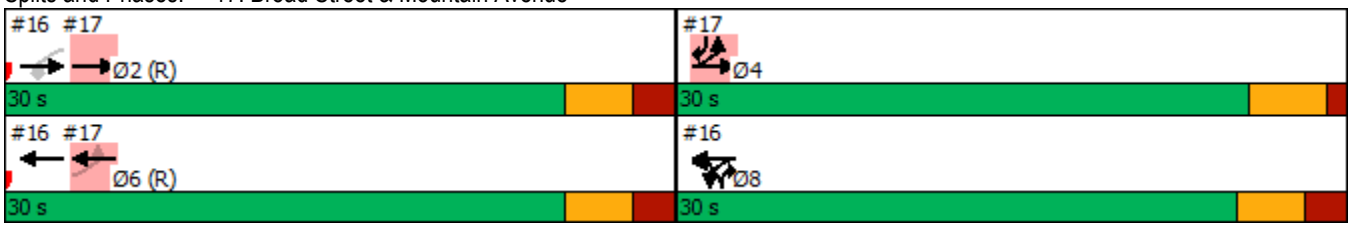
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Lane Configurations								
Traffic Volume (vph)	424	387	459	40	0	446		
Future Volume (vph)	424	387	459	40	0	446		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100		
Storage Length (ft)	0			0	0	150		
Storage Lanes	1			0	0	1		
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88		
Frt			0.988			0.850		
Flt Protected	0.950							
Satd. Flow (prot)	1995	2100	3942	0	0	3142		
Flt Permitted	0.459							
Satd. Flow (perm)	964	2100	3942	0	0	3142		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)			18			437		
Link Speed (mph)		25	25		25			
Link Distance (ft)		93	398		1032			
Travel Time (s)		2.5	10.9		28.1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%		
Adj. Flow (vph)	437	399	473	41	0	460		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	437	399	514	0	0	460		
Turn Type	D.P+P	NA	NA			Over		
Protected Phases	4	2 4	6			4	2	8
Permitted Phases	6							
Detector Phase	4	2 4	6			4		
Switch Phase								
Minimum Initial (s)	5.0		10.0			5.0	10.0	7.0
Minimum Split (s)	23.5		30.0			23.5	30.0	30.0
Total Split (s)	30.0		30.0			30.0	30.0	30.0
Total Split (%)	50.0%		50.0%			50.0%	50%	50%
Yellow Time (s)	3.5		3.0			3.5	3.0	3.0
All-Red Time (s)	1.0		2.0			1.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0			0.0		
Total Lost Time (s)	4.5		5.0			4.5		
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None		C-Max			None	C-Max	None
Act Effct Green (s)	51.0	60.0	30.5			20.0		
Actuated g/C Ratio	0.85	1.00	0.51			0.33		
v/c Ratio	0.38	0.19	0.26			0.34		
Control Delay	2.1	0.2	10.0			2.4		
Queue Delay	0.3	0.0	0.0			0.0		
Total Delay	2.4	0.2	10.0			2.4		
LOS	A	A	A			A		
Approach Delay		1.4	10.0		2.4			
Approach LOS		A	A		A			
Queue Length 50th (ft)	0	0	60			2		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø8
Queue Length 95th (ft)	11	0	91			27		
Internal Link Dist (ft)		13	318		952			
Turn Bay Length (ft)						150		
Base Capacity (vph)	1286	2100	2015			1586		
Starvation Cap Reductn	378	0	0			0		
Spillback Cap Reductn	0	0	0			0		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.48	0.19	0.26			0.29		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: Err			
Intersection Signal Delay: 4.1		Intersection LOS: A	
Intersection Capacity Utilization 41.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 17: Broad Street & Mountain Avenue





Lane Group	EBL	EBT	WBT	SBR
Lane Group Flow (vph)	437	399	514	460
v/c Ratio	0.38	0.19	0.26	0.34
Control Delay	2.1	0.2	10.0	2.4
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	2.4	0.2	10.0	2.4
Queue Length 50th (ft)	0	0	60	2
Queue Length 95th (ft)	11	0	91	27
Internal Link Dist (ft)		13	318	
Turn Bay Length (ft)				150
Base Capacity (vph)	1286	2100	2015	1586
Starvation Cap Reductn	378	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.19	0.26	0.29

Intersection Summary

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↱
Traffic Vol, veh/h	0	671	606	0	0	12
Future Vol, veh/h	0	671	606	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	685	618	0	0	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	618
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	0	0	493
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	493
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	493
HCM Lane V/C Ratio	-	-	0.025
HCM Control Delay (s)	-	-	12.5
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	559	10	36	606	8	28
Future Vol, veh/h	559	10	36	606	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	576	10	37	625	8	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	586	0	1280	581
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	699	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	999	-	185	517
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	999	-	174	517
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	469	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	360	-	-	999	-
HCM Lane V/C Ratio	0.103	-	-	0.037	-
HCM Control Delay (s)	16.1	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	568	18	44	625	13	33
Future Vol, veh/h	568	18	44	625	13	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	580	18	45	638	13	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	598	0	1317	589
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	728	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	989	-	175	512
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	989	-	163	512
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	448	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	989	-
HCM Lane V/C Ratio	0.147	-	-	0.045	-
HCM Control Delay (s)	18.2	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	800	804	3	2	1
Future Vol, veh/h	1	800	804	3	2	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	851	855	3	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	858	0	-	0	1710	857
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	853	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	791	-	-	-	101	360
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	421	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	791	-	-	-	101	360
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	32.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	791	-	-	-	133
HCM Lane V/C Ratio	0.001	-	-	-	0.024
HCM Control Delay (s)	9.6	0	-	-	32.7
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	0	2	168	0	2
Future Vol, veh/h	167	0	2	168	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	186	0	2	187	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	186	0	377	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	191	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1401	-	629	861
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1401	-	628	861
Mov Cap-2 Maneuver	-	-	-	-	628	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	844	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	861	-	-	1401	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9.2	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	614	0	2	800	0	4
Future Vol, veh/h	614	0	2	800	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	640	0	2	833	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	640	0	-	320
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	954	-	0	682
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	954	-	-	682
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	682	-	-	954	-
HCM Lane V/C Ratio	0.006	-	-	0.002	-
HCM Control Delay (s)	10.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Kimley»Horn

DRAFT

APPENDIX G

Intersection Capacity Analysis Alternative Worksheets

Kimley»Horn

DRAFT

Intersection ID #3. Route 28 & South Avenue – Alternative 2

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Proposed_02_AM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	18	0.0	19	0.0	0.490	12.2	LOS B	2.8	72.9	0.69	0.80	1.04	22.5
6	T1	308	5.0	324	5.0	0.490	12.5	LOS B	2.8	72.9	0.69	0.80	1.04	20.9
16	R2	350	5.0	368	5.0	0.479	11.3	LOS B	2.7	70.0	0.66	0.77	0.98	21.1
Approach		676	4.9	712	4.9	0.490	11.9	LOS B	2.8	72.9	0.67	0.79	1.01	21.1
North: SB - SR 28														
7	L2	542	5.0	571	5.0	0.645	13.2	LOS B	7.2	188.2	0.69	0.82	1.14	20.1
14	R2	524	5.0	552	5.0	0.645	9.8	LOS A	7.2	188.2	0.58	0.57	0.71	19.0
Approach		1066	5.0	1122	5.0	0.645	11.5	LOS B	7.2	188.2	0.63	0.70	0.93	19.6
West: EB - South Ave														
5u	U	2	5.0	2	5.0	0.577	13.3	LOS B	4.3	112.5	0.71	0.88	1.19	15.8
5	L2	637	5.0	671	5.0	0.834	17.5	LOS C	13.1	339.5	0.78	1.05	1.56	13.8
2	T1	440	5.0	463	5.0	0.834	26.7	LOS D	13.1	339.5	0.91	1.43	2.39	15.9
Approach		1079	5.0	1136	5.0	0.834	21.2	LOS C	13.1	339.5	0.83	1.21	1.90	14.7
All Vehicles		2821	5.0	2970	5.0	0.834	15.3	LOS C	13.1	339.5	0.72	0.91	1.32	17.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Proposed_02_PM (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.532	11.5	LOS B	3.7	93.3	0.68	0.81	1.05	23.1
6	T1	419	2.0	441	2.0	0.532	11.6	LOS B	3.7	93.3	0.68	0.81	1.05	21.5
16	R2	370	2.0	389	2.0	0.498	11.6	LOS B	3.1	79.9	0.68	0.79	0.99	21.0
Approach		803	2.0	845	2.0	0.532	11.6	LOS B	3.7	93.3	0.68	0.80	1.02	21.3
North: SB - SR 28														
7	L2	507	2.0	534	2.0	0.685	15.1	LOS C	8.2	207.7	0.77	1.03	1.43	19.3
14	R2	573	2.0	603	2.0	0.685	11.4	LOS B	8.2	207.7	0.67	0.79	1.01	18.0
Approach		1080	2.0	1137	2.0	0.685	13.2	LOS B	8.2	207.7	0.72	0.90	1.21	18.8
West: EB - South Ave														
5u	U	2	2.0	2	2.0	0.672	15.6	LOS C	7.0	178.5	0.79	1.03	1.46	15.0
5	L2	563	2.0	593	2.0	0.672	15.5	LOS C	7.0	178.5	0.79	1.03	1.45	14.2
2	T1	410	2.0	432	2.0	0.517	11.2	LOS B	3.6	91.7	0.68	0.80	1.00	24.4
Approach		975	2.0	1026	2.0	0.672	13.7	LOS B	7.0	178.5	0.74	0.93	1.26	17.5
All Vehicles		2858	2.0	3008	2.0	0.685	12.9	LOS B	8.2	207.7	0.72	0.88	1.18	18.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Westfield RAB_Proposed_02_SAT (Site Folder: Build Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: WB - South Ave														
1u	U	14	0.0	15	0.0	0.406	8.4	LOS A	2.0	50.2	0.57	0.59	0.65	24.9
6	T1	348	2.0	366	2.0	0.406	8.5	LOS A	2.0	50.2	0.57	0.59	0.65	23.5
16	R2	358	2.0	377	2.0	0.437	9.6	LOS A	2.4	60.7	0.60	0.66	0.76	22.3
Approach		720	2.0	758	2.0	0.437	9.0	LOS A	2.4	60.7	0.58	0.62	0.71	23.0
North: SB - SR 28														
7	L2	368	2.0	387	2.0	0.426	8.3	LOS A	2.1	52.9	0.55	0.49	0.55	22.9
14	R2	356	2.0	375	2.0	0.426	7.1	LOS A	2.1	52.9	0.50	0.44	0.50	21.1
Approach		724	2.0	762	2.0	0.426	7.7	LOS A	2.1	52.9	0.52	0.46	0.53	22.2
West: EB - South Ave														
5u	U	1	2.0	1	2.0	0.509	9.8	LOS A	3.5	90.1	0.60	0.64	0.80	17.3
5	L2	482	2.0	507	2.0	0.509	9.8	LOS A	3.5	90.1	0.60	0.64	0.80	17.6
2	T1	390	2.0	411	2.0	0.411	8.2	LOS A	1.9	49.0	0.55	0.49	0.55	27.1
Approach		873	2.0	919	2.0	0.509	9.1	LOS A	3.5	90.1	0.58	0.57	0.69	21.1
All Vehicles		2317	2.0	2439	2.0	0.509	8.6	LOS A	3.5	90.1	0.56	0.56	0.64	22.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Kimley»Horn

DRAFT

Intersection ID #7. Ross Place & Central Avenue & South Avenue – Cycle Length

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Future Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.954						0.850			0.997	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1900	3625	0	0	0	1900	2000	1700	0	1900	1994	0
Flt Permitted	0.397					0.376				0.520		
Satd. Flow (perm)	794	3625	0	0	0	752	2000	1700	0	1040	1994	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		1									1	
Link Speed (mph)		30					35				25	
Link Distance (ft)		446					926				398	
Travel Time (s)		10.1					18.0				10.9	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	218	420	180	5	16	22	331	120	11	224	665	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	605	0	0	0	38	331	120	0	235	677	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	11.0	11.0	46.0	
Total Split (%)	8.0%	38.0%			8.0%	8.0%	38.0%	38.0%	11.0%	11.0%	46.0%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None	None	None	None	None	
Act Effct Green (s)	44.0	36.0				42.3	32.2	32.2		48.2	36.8	
Actuated g/C Ratio	0.44	0.36				0.42	0.32	0.32		0.48	0.37	
v/c Ratio	0.53	0.46				0.10	0.51	0.22		0.41	0.92	
Control Delay	25.0	27.7				17.3	31.9	27.3		17.1	49.9	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	25.0	27.7				17.3	31.9	27.3		17.1	49.9	
LOS	C	C				B	C	C		B	D	
Approach Delay		27.0					29.7				41.4	
Approach LOS		C					C				D	
Queue Length 50th (ft)	87	169				14	176	57		80	398	



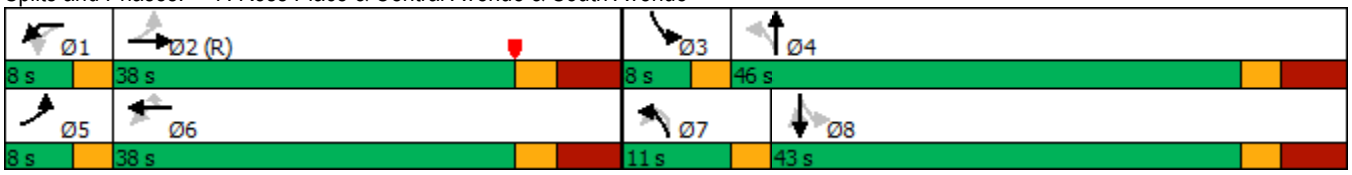
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	92	227	161	80
Future Volume (vph)	92	227	161	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1900	2000	1700	0
Flt Permitted	0.122			
Satd. Flow (perm)	244	2000	1700	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			120	
Link Speed (mph)		25		
Link Distance (ft)		792		
Travel Time (s)		21.6		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%
Adj. Flow (vph)	97	239	169	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	97	239	253	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	8.0	43.0	43.0	
Total Split (%)	8.0%	43.0%	43.0%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	42.2	32.2	32.2	
Actuated g/C Ratio	0.42	0.32	0.32	
v/c Ratio	0.52	0.37	0.40	
Control Delay	26.1	20.7	8.9	
Queue Delay	0.0	0.0	0.0	
Total Delay	26.1	20.7	8.9	
LOS	C	C	A	
Approach Delay		16.5		
Approach LOS		B		
Queue Length 50th (ft)	27	84	31	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	140	225				33	266	104		127	#618	
Internal Link Dist (ft)		366					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	411	1306				377	644	547		570	758	
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	0.53	0.46				0.10	0.51	0.22		0.41	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 80.6%		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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	m63	m126	m76	
Internal Link Dist (ft)		712		
Turn Bay Length (ft)	105			
Base Capacity (vph)	185	700	673	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.52	0.34	0.38	

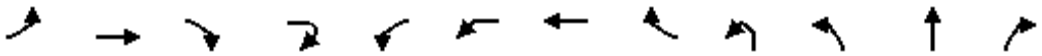
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	218	605	38	331	120	235	677	97	239	253
v/c Ratio	0.53	0.46	0.10	0.51	0.22	0.41	0.92	0.52	0.37	0.40
Control Delay	25.0	27.7	17.3	31.9	27.3	17.1	49.9	26.1	20.7	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	27.7	17.3	31.9	27.3	17.1	49.9	26.1	20.7	8.9
Queue Length 50th (ft)	87	169	14	176	57	80	398	27	84	31
Queue Length 95th (ft)	140	225	33	266	104	127	#618	m63	m126	m76
Internal Link Dist (ft)		366		846			318		712	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	411	1306	377	644	547	570	758	185	700	673
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	0.53	0.46	0.10	0.51	0.22	0.41	0.89	0.52	0.34	0.38

Intersection Summary

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.



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Future Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948						0.850			0.992	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1956	3708	0	0	0	1956	2059	1750	0	1956	2042	0
Flt Permitted	0.231					0.219				0.116		
Satd. Flow (perm)	476	3708	0	0	0	451	2059	1750	0	239	2042	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		1									3	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	215	520	268	5	32	54	453	201	5	203	617	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	793	0	0	0	86	453	201	0	208	651	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0	38.0	11.0	11.0	43.0	
Total Split (%)	8.0%	38.0%			8.0%	8.0%	38.0%	38.0%	11.0%	11.0%	43.0%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None	None	None	None	None	
Act Effct Green (s)	41.0	32.0				40.2	30.0	30.0		47.6	34.6	
Actuated g/C Ratio	0.41	0.32				0.40	0.30	0.30		0.48	0.35	
v/c Ratio	0.78	0.67				0.33	0.73	0.38		0.83	0.92	
Control Delay	43.0	33.3				20.7	39.7	30.3		44.9	51.4	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	43.0	33.3				20.7	39.7	30.3		44.9	51.4	
LOS	D	C				C	D	C		D	D	
Approach Delay		35.4					34.9				49.9	
Approach LOS		D					C				D	
Queue Length 50th (ft)	86	235				32	258	101		70	390	



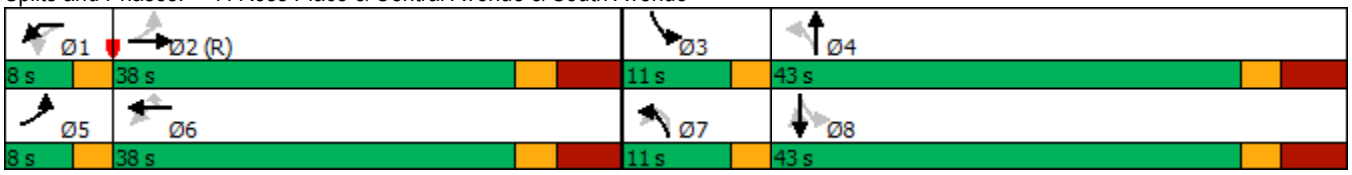
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	177	638	183	80
Future Volume (vph)	177	638	183	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1956	2059	1750	0
Flt Permitted	0.116			
Satd. Flow (perm)	239	2059	1750	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			120	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%
Adj. Flow (vph)	186	672	193	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	186	672	277	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	11.0	43.0	43.0	
Total Split (%)	11.0%	43.0%	43.0%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	47.6	34.6	34.6	
Actuated g/C Ratio	0.48	0.35	0.35	
v/c Ratio	0.74	0.95	0.41	
Control Delay	37.7	59.9	26.1	
Queue Delay	0.0	0.0	0.0	
Total Delay	37.7	59.9	26.1	
LOS	D	E	C	
Approach Delay		48.0		
Approach LOS		D		
Queue Length 50th (ft)	83	421	103	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	#182	304				62	374	165		#187	#608	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	275	1189				259	617	525		251	716	
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	0.78	0.67				0.33	0.73	0.38		0.83	0.91	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 42.5		Intersection LOS: D	
Intersection Capacity Utilization 91.0%		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: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	m108	m#573	m147	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	251	720	690	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.74	0.93	0.40	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	793	86	453	201	208	651	186	672	277
v/c Ratio	0.78	0.67	0.33	0.73	0.38	0.83	0.92	0.74	0.95	0.41
Control Delay	43.0	33.3	20.7	39.7	30.3	44.9	51.4	37.7	59.9	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	33.3	20.7	39.7	30.3	44.9	51.4	37.7	59.9	26.1
Queue Length 50th (ft)	86	235	32	258	101	70	390	83	421	103
Queue Length 95th (ft)	#182	304	62	374	165	#187	#608	m108	m#573	m147
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	275	1189	259	617	525	251	716	251	720	690
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	0.78	0.67	0.33	0.73	0.38	0.83	0.91	0.74	0.93	0.40

Intersection Summary

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.

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Future Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		1		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949						0.850			0.982	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1995	3737	0	0	0	1995	2100	1767	0	1976	2017	0
Flt Permitted	0.348					0.301				0.364		
Satd. Flow (perm)	731	3737	0	0	0	632	2100	1767	0	757	2017	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		2									7	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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%	0%	0%	0%	1%	0%	1%	2%	4%
Adj. Flow (vph)	140	415	204	11	61	63	394	264	4	159	485	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	630	0	0	0	124	394	264	0	163	553	0
Turn Type	pm+pt	NA			custom	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6		6	7	4		
Detector Phase	5	2			1	1	6	6	7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0	10.0	5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0	38.0	8.0	8.0	15.0	
Total Split (s)	8.0	37.0			9.0	9.0	38.0	38.0	11.0	11.0	39.0	
Total Split (%)	8.0%	37.0%			9.0%	9.0%	38.0%	38.0%	11.0%	11.0%	39.0%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0	5.0	0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0	8.0		3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None	None	None	None	None	
Act Effct Green (s)	41.1	30.6				42.6	31.3	31.3		42.6	29.7	
Actuated g/C Ratio	0.41	0.31				0.43	0.31	0.31		0.43	0.30	
v/c Ratio	0.38	0.55				0.35	0.60	0.48		0.39	0.91	
Control Delay	21.0	31.6				20.1	34.2	31.8		16.8	54.8	
Queue Delay	0.0	0.0				0.0	0.0	0.0		0.0	0.0	
Total Delay	21.0	31.6				20.1	34.2	31.8		16.8	54.8	
LOS	C	C				C	C	C		B	D	
Approach Delay		29.7					31.1				46.1	
Approach LOS		C					C				D	
Queue Length 50th (ft)	53	179				47	216	138		53	329	



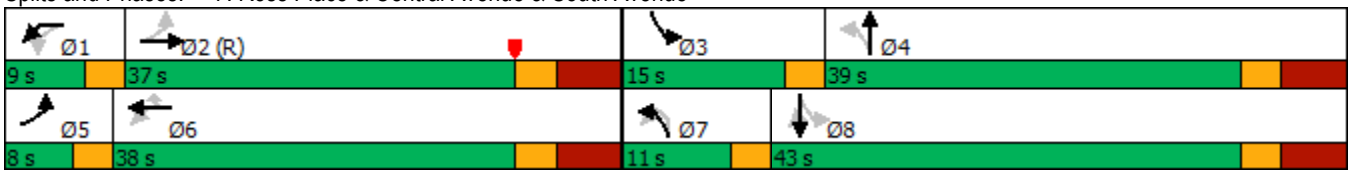
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	235	403	117	75
Future Volume (vph)	235	403	117	75
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1995	2059	1774	0
Flt Permitted	0.122			
Satd. Flow (perm)	256	2059	1774	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			120	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	1%	0%
Adj. Flow (vph)	245	420	122	78
Shared Lane Traffic (%)				
Lane Group Flow (vph)	245	420	200	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	15.0	43.0	43.0	
Total Split (%)	15.0%	43.0%	43.0%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	49.0	33.3	33.3	
Actuated g/C Ratio	0.49	0.33	0.33	
v/c Ratio	0.76	0.61	0.30	
Control Delay	40.9	24.0	7.2	
Queue Delay	0.0	0.0	0.0	
Total Delay	40.9	24.0	7.2	
LOS	D	C	A	
Approach Delay		24.9		
Approach LOS		C		
Queue Length 50th (ft)	119	167	29	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	93	237				84	316	217		89	#522	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90							115		100		
Base Capacity (vph)	370	1143				354	657	553		421	630	
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	0.38	0.55				0.35	0.60	0.48		0.39	0.88	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 32.5		Intersection LOS: C	
Intersection Capacity Utilization 82.3%		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: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	m#196	m244	m66	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	334	720	698	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.73	0.58	0.29	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	140	630	124	394	264	163	553	245	420	200
v/c Ratio	0.38	0.55	0.35	0.60	0.48	0.39	0.91	0.76	0.61	0.30
Control Delay	21.0	31.6	20.1	34.2	31.8	16.8	54.8	40.9	24.0	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	31.6	20.1	34.2	31.8	16.8	54.8	40.9	24.0	7.2
Queue Length 50th (ft)	53	179	47	216	138	53	329	119	167	29
Queue Length 95th (ft)	93	237	84	316	217	89	#522	m#196	m244	m66
Internal Link Dist (ft)		414		846			318		729	
Turn Bay Length (ft)	90				115	100		105		
Base Capacity (vph)	370	1143	354	657	553	421	630	334	720	698
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	0.38	0.55	0.35	0.60	0.48	0.39	0.88	0.73	0.58	0.29

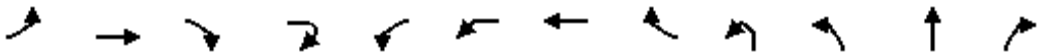
Intersection Summary

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.

Kimley»Horn

DRAFT

Intersection ID #7. Ross Place & Central Avenue & South Avenue – Remove westbound right-turn lane



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Future Volume (vph)	207	399	171	5	15	21	314	114	10	213	632	11
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		0		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.954					0.960				0.997	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1900	3625	0	0	0	1900	1920	0	0	1900	1994	0
Flt Permitted	0.250					0.385				0.562		
Satd. Flow (perm)	500	3625	0	0	0	770	1920	0	0	1124	1994	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		1									1	
Link Speed (mph)		30					35				25	
Link Distance (ft)		446					926				398	
Travel Time (s)		10.1					18.0				10.9	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	218	420	180	5	16	22	331	120	11	224	665	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	605	0	0	0	38	451	0	0	235	677	0
Turn Type	pm+pt	NA			custom	pm+pt	NA		custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6			7	4		
Detector Phase	5	2			1	1	6		7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0		5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0		8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0		8.0	8.0	41.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%		8.4%	8.4%	43.2%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0		0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0			0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0			3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag		Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes		Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None		None	None	None	
Act Effct Green (s)	42.5	34.5				40.7	30.6			42.3	33.3	
Actuated g/C Ratio	0.45	0.36				0.43	0.32			0.45	0.35	
v/c Ratio	0.71	0.46				0.10	0.73			0.43	0.97	
Control Delay	18.0	16.1				15.2	37.0			18.8	59.0	
Queue Delay	0.0	0.0				0.0	0.0			0.0	0.0	
Total Delay	18.0	16.1				15.2	37.0			18.8	59.0	
LOS	B	B				B	D			B	E	
Approach Delay		16.6					35.3				48.6	
Approach LOS		B					D				D	
Queue Length 50th (ft)	36	123				12	242			80	398	



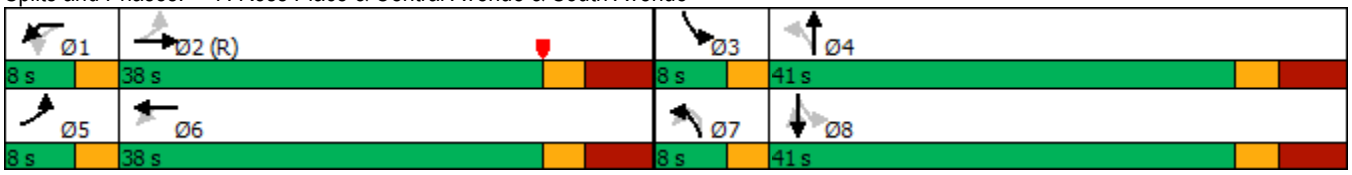
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	92	227	161	80
Future Volume (vph)	92	227	161	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1900	2000	1700	0
Flt Permitted	0.124			
Satd. Flow (perm)	248	2000	1700	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		792		
Travel Time (s)		21.6		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%
Adj. Flow (vph)	97	239	169	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	97	239	253	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	8.0	41.0	41.0	
Total Split (%)	8.4%	43.2%	43.2%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	41.7	31.7	31.7	
Actuated g/C Ratio	0.44	0.33	0.33	
v/c Ratio	0.49	0.36	0.39	
Control Delay	22.5	25.4	13.3	
Queue Delay	0.0	0.0	0.0	
Total Delay	22.5	25.4	13.3	
LOS	C	C	B	
Approach Delay		19.7		
Approach LOS		B		
Queue Length 50th (ft)	31	106	53	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	m#51	161				30	357			129	#635	
Internal Link Dist (ft)		366					846				318	
Turn Bay Length (ft)	90									100		
Base Capacity (vph)	307	1317				390	618			541	699	
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	0.46				0.10	0.73			0.43	0.97	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 30.9		Intersection LOS: C	
Intersection Capacity Utilization 86.9%		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: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	58	168	116	
Internal Link Dist (ft)		712		
Turn Bay Length (ft)	105			
Base Capacity (vph)	196	694	672	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.49	0.34	0.38	

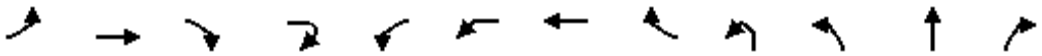
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	218	605	38	451	235	677	97	239	253
v/c Ratio	0.71	0.46	0.10	0.73	0.43	0.97	0.49	0.36	0.39
Control Delay	18.0	16.1	15.2	37.0	18.8	59.0	22.5	25.4	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	16.1	15.2	37.0	18.8	59.0	22.5	25.4	13.3
Queue Length 50th (ft)	36	123	12	242	80	398	31	106	53
Queue Length 95th (ft)	m#51	161	30	357	129	#635	58	168	116
Internal Link Dist (ft)		366		846		318		712	
Turn Bay Length (ft)	90				100		105		
Base Capacity (vph)	307	1317	390	618	541	699	196	694	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.46	0.10	0.73	0.43	0.97	0.49	0.34	0.38

Intersection Summary

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.



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Future Volume (vph)	204	494	255	5	30	51	430	191	5	193	586	32
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		0		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948					0.954				0.992	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1956	3708	0	0	0	1956	1964	0	0	1956	2042	0
Flt Permitted	0.129					0.231				0.125		
Satd. Flow (perm)	266	3708	0	0	0	476	1964	0	0	257	2042	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		1									3	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	215	520	268	5	32	54	453	201	5	203	617	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	793	0	0	0	86	654	0	0	208	651	0
Turn Type	pm+pt	NA			custom	pm+pt	NA		custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6			7	4		
Detector Phase	5	2			1	1	6		7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0		5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0		8.0	8.0	15.0	
Total Split (s)	8.0	38.0			8.0	8.0	38.0		10.0	10.0	40.0	
Total Split (%)	8.4%	40.0%			8.4%	8.4%	40.0%		10.5%	10.5%	42.1%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0		0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0			0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0			3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag		Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes		Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None		None	None	None	
Act Effct Green (s)	40.6	31.6				40.0	30.0			44.0	32.0	
Actuated g/C Ratio	0.43	0.33				0.42	0.32			0.46	0.34	
v/c Ratio	1.06	0.64				0.31	1.05			0.85	0.94	
Control Delay	99.9	20.4				18.0	84.7			47.8	55.0	
Queue Delay	0.0	0.0				0.0	0.0			0.6	0.0	
Total Delay	99.9	20.4				18.0	84.7			48.4	55.0	
LOS	F	C				B	F			D	E	
Approach Delay		37.3					76.9				53.4	
Approach LOS		D					E				D	
Queue Length 50th (ft)	~82	188				29	~435			70	376	



Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	177	638	183	80
Future Volume (vph)	177	638	183	80
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1956	2059	1750	0
Flt Permitted	0.129			
Satd. Flow (perm)	266	2059	1750	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%
Adj. Flow (vph)	186	672	193	84
Shared Lane Traffic (%)				
Lane Group Flow (vph)	186	672	277	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	9.0	39.0	39.0	
Total Split (%)	9.5%	41.1%	41.1%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	42.0	31.0	31.0	
Actuated g/C Ratio	0.44	0.33	0.33	
v/c Ratio	0.83	1.00	0.42	
Control Delay	47.1	68.6	15.5	
Queue Delay	0.0	0.0	0.0	
Total Delay	47.1	68.6	15.5	
LOS	D	E	B	
Approach Delay		52.1		
Approach LOS		D		
Queue Length 50th (ft)	61	~402	67	

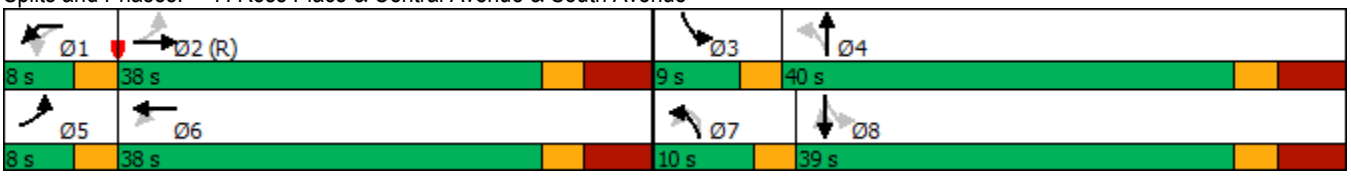
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	#228	251				56	#647			#185	#600	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90									100		
Base Capacity (vph)	202	1233				278	620			244	689	
Starvation Cap Reductn	0	0				0	0			0	0	
Spillback Cap Reductn	0	0				0	0			2	0	
Storage Cap Reductn	0	0				0	0			0	0	
Reduced v/c Ratio	1.06	0.64				0.31	1.05			0.86	0.94	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 80 (84%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 53.3		Intersection LOS: D	
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.

Splits and Phases: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#163	#640	137	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	224	671	655	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	19	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.83	1.00	0.44	

Intersection Summary

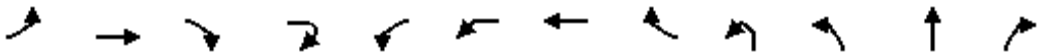


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	793	86	654	208	651	186	672	277
v/c Ratio	1.06	0.64	0.31	1.05	0.85	0.94	0.83	1.00	0.42
Control Delay	99.9	20.4	18.0	84.7	47.8	55.0	47.1	68.6	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0
Total Delay	99.9	20.4	18.0	84.7	48.4	55.0	47.1	68.6	15.5
Queue Length 50th (ft)	~82	188	29	~435	70	376	61	~402	67
Queue Length 95th (ft)	#228	251	56	#647	#185	#600	#163	#640	137
Internal Link Dist (ft)		414		846		318		729	
Turn Bay Length (ft)	90				100		105		
Base Capacity (vph)	202	1233	278	620	244	689	224	671	655
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	2	0	0	0	19
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.64	0.31	1.05	0.86	0.94	0.83	1.00	0.44

Intersection Summary

~ 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.



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Future Volume (vph)	134	398	196	11	59	60	378	253	4	153	466	65
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	90		0			0		115		100		0
Storage Lanes	1		0			1		0		1		0
Taper Length (ft)	25					25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949					0.940				0.982	
Flt Protected	0.950					0.950				0.950		
Satd. Flow (prot)	1995	3737	0	0	0	1995	1966	0	0	1976	2017	0
Flt Permitted	0.134					0.313				0.336		
Satd. Flow (perm)	281	3737	0	0	0	657	1966	0	0	699	2017	0
Right Turn on Red				Yes				No				Yes
Satd. Flow (RTOR)		2									8	
Link Speed (mph)		30					30				25	
Link Distance (ft)		494					926				398	
Travel Time (s)		11.2					21.0				10.9	
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%	0%	0%	0%	1%	0%	1%	2%	4%
Adj. Flow (vph)	140	415	204	11	61	63	394	264	4	159	485	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	630	0	0	0	124	658	0	0	163	553	0
Turn Type	pm+pt	NA			custom	pm+pt	NA		custom	pm+pt	NA	
Protected Phases	5	2				1	6			7	4	
Permitted Phases	2				1	6			7	4		
Detector Phase	5	2			1	1	6		7	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0			5.0	5.0	10.0		5.0	5.0	7.0	
Minimum Split (s)	8.0	18.0			8.0	8.0	38.0		8.0	8.0	15.0	
Total Split (s)	8.0	37.0			9.0	9.0	38.0		10.0	10.0	37.0	
Total Split (%)	8.4%	38.9%			9.5%	9.5%	40.0%		10.5%	10.5%	38.9%	
Yellow Time (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0			0.0	0.0	5.0		0.0	0.0	5.0	
Lost Time Adjust (s)	0.0	0.0				0.0	0.0			0.0	0.0	
Total Lost Time (s)	3.0	8.0				3.0	8.0			3.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lead	Lag		Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes		Yes	Yes	Yes	
Recall Mode	None	C-Max			None	None	None		None	None	None	
Act Effct Green (s)	40.3	29.9				41.7	30.6			40.0	28.0	
Actuated g/C Ratio	0.42	0.31				0.44	0.32			0.42	0.29	
v/c Ratio	0.65	0.53				0.33	1.04			0.42	0.92	
Control Delay	25.1	17.1				17.7	80.2			17.8	54.6	
Queue Delay	0.0	0.0				0.0	0.0			0.0	0.0	
Total Delay	25.1	17.1				17.7	80.2			17.8	54.6	
LOS	C	B				B	F			B	D	
Approach Delay		18.5					70.2				46.2	
Approach LOS		B					E				D	
Queue Length 50th (ft)	17	100				42	~440			53	312	



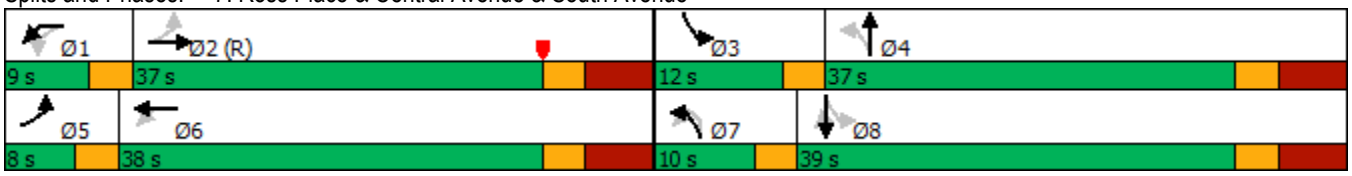
Lane Group	SBL	SBT	SBR	SBR2
Lane Configurations				
Traffic Volume (vph)	235	403	117	75
Future Volume (vph)	235	403	117	75
Ideal Flow (vphpl)	2100	2100	2100	2100
Storage Length (ft)	105		0	
Storage Lanes	1		1	
Taper Length (ft)	25			
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.850	
Flt Protected	0.950			
Satd. Flow (prot)	1995	2059	1774	0
Flt Permitted	0.133			
Satd. Flow (perm)	279	2059	1774	0
Right Turn on Red				Yes
Satd. Flow (RTOR)			126	
Link Speed (mph)		25		
Link Distance (ft)		809		
Travel Time (s)		22.1		
Peak Hour Factor	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	1%	0%
Adj. Flow (vph)	245	420	122	78
Shared Lane Traffic (%)				
Lane Group Flow (vph)	245	420	200	0
Turn Type	pm+pt	NA	Perm	
Protected Phases	3	8		
Permitted Phases	8		8	
Detector Phase	3	8	8	
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	
Minimum Split (s)	8.0	38.0	38.0	
Total Split (s)	12.0	39.0	39.0	
Total Split (%)	12.6%	41.1%	41.1%	
Yellow Time (s)	3.0	3.0	3.0	
All-Red Time (s)	0.0	5.0	5.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	3.0	8.0	8.0	
Lead/Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	
Recall Mode	None	None	None	
Act Effct Green (s)	44.0	30.0	30.0	
Actuated g/C Ratio	0.46	0.32	0.32	
v/c Ratio	0.84	0.65	0.31	
Control Delay	43.2	33.1	10.8	
Queue Delay	0.0	0.0	0.0	
Total Delay	43.2	33.1	10.8	
LOS	D	C	B	
Approach Delay		30.8		
Approach LOS		C		
Queue Length 50th (ft)	83	213	31	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Queue Length 95th (ft)	m#79	156				76	#652			91	#506	
Internal Link Dist (ft)		414					846				318	
Turn Bay Length (ft)	90									100		
Base Capacity (vph)	216	1178				373	632			388	621	
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	0.65	0.53				0.33	1.04			0.42	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 41.2		Intersection LOS: D	
Intersection Capacity Utilization 96.2%		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: 7: Ross Place & Central Avenue & South Avenue





Lane Group	SBL	SBT	SBR	SBR2
Queue Length 95th (ft)	#206	314	83	
Internal Link Dist (ft)		729		
Turn Bay Length (ft)	105			
Base Capacity (vph)	291	671	663	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.84	0.63	0.30	

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	140	630	124	658	163	553	245	420	200
v/c Ratio	0.65	0.53	0.33	1.04	0.42	0.92	0.84	0.65	0.31
Control Delay	25.1	17.1	17.7	80.2	17.8	54.6	43.2	33.1	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	17.1	17.7	80.2	17.8	54.6	43.2	33.1	10.8
Queue Length 50th (ft)	17	100	42	~440	53	312	83	213	31
Queue Length 95th (ft)	m#79	156	76	#652	91	#506	#206	314	83
Internal Link Dist (ft)		414		846		318		729	
Turn Bay Length (ft)	90				100		105		
Base Capacity (vph)	216	1178	373	632	388	621	291	671	663
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.53	0.33	1.04	0.42	0.89	0.84	0.63	0.30

Intersection Summary

~ 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.

Kimley»Horn

DRAFT

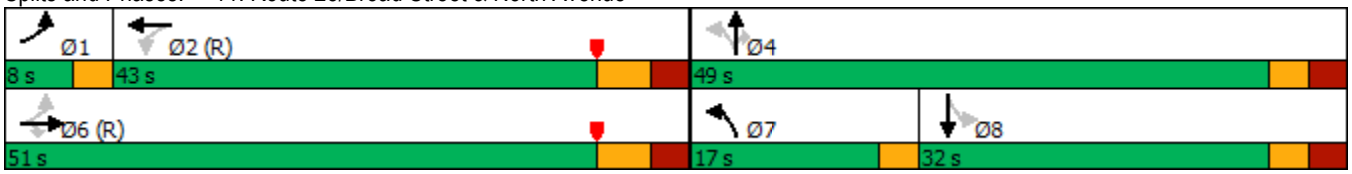
Intersection ID #11. Route 28/Broad Street & North Avenue – Remove eastbound right-turn slip lane

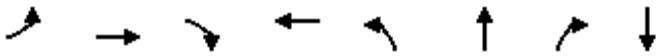
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	413	366	223	475	7	248	573	167	13	475	103
Future Volume (vph)	195	413	366	223	475	7	248	573	167	13	475	103
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		125	0		0	0		0	0		75
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.974	
Flt Protected	0.950				0.984		0.950				0.999	
Satd. Flow (prot)	1847	1981	1700	0	3758	0	1956	2039	1684	0	3714	0
Flt Permitted	0.236				0.696		0.180				0.917	
Satd. Flow (perm)	459	1981	1700	0	2658	0	371	2039	1684	0	3409	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			342		1						24	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		267			555			498			430	
Travel Time (s)		5.2			15.1			13.6			11.7	
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 (%)	8%	6%	5%	5%	4%	0%	2%	3%	6%	0%	5%	3%
Adj. Flow (vph)	212	449	398	242	516	8	270	623	182	14	516	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	212	449	398	0	766	0	270	623	182	0	642	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	8.0	51.0	51.0	43.0	43.0		17.0	49.0	49.0	32.0	32.0	
Total Split (%)	8.0%	51.0%	51.0%	43.0%	43.0%		17.0%	49.0%	49.0%	32.0%	32.0%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	51.4	47.4	47.4		37.4		42.6	39.6	39.6		23.3	
Actuated g/C Ratio	0.51	0.47	0.47		0.37		0.43	0.40	0.40		0.23	
v/c Ratio	0.64	0.48	0.40		0.77		0.73	0.77	0.27		0.79	
Control Delay	23.4	18.0	3.8		32.6		31.2	33.2	20.8		42.2	
Queue Delay	0.0	1.0	0.4		0.0		1.1	0.0	0.0		1.1	
Total Delay	23.4	18.9	4.2		32.6		32.3	33.2	20.8		43.3	
LOS	C	B	A		C		C	C	C		D	
Approach Delay		14.3			32.6			30.9			43.3	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	78	223	33		235		108	327	74		192	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#133	286	47		305		167	449	121		252	
Internal Link Dist (ft)		187			475			418			350	
Turn Bay Length (ft)	185		125									
Base Capacity (vph)	332	938	985		995		379	876	724		904	
Starvation Cap Reductn	0	254	219		0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0		22	0	0		97	
Storage Cap Reductn	0	0	0		0		0	0	0		0	
Reduced v/c Ratio	0.64	0.66	0.52		0.77		0.76	0.71	0.25		0.80	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 101.8%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 11: Route 28/Broad Street & North Avenue

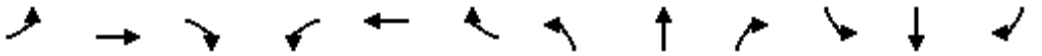




Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	212	449	398	766	270	623	182	642
v/c Ratio	0.64	0.48	0.40	0.77	0.73	0.77	0.27	0.79
Control Delay	23.4	18.0	3.8	32.6	31.2	33.2	20.8	42.2
Queue Delay	0.0	1.0	0.4	0.0	1.1	0.0	0.0	1.1
Total Delay	23.4	18.9	4.2	32.6	32.3	33.2	20.8	43.3
Queue Length 50th (ft)	78	223	33	235	108	327	74	192
Queue Length 95th (ft)	#133	286	47	305	167	449	121	252
Internal Link Dist (ft)		187		475		418		350
Turn Bay Length (ft)	185		125					
Base Capacity (vph)	332	938	985	995	379	876	724	904
Starvation Cap Reductn	0	254	219	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	22	0	0	97
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.66	0.52	0.77	0.76	0.71	0.25	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



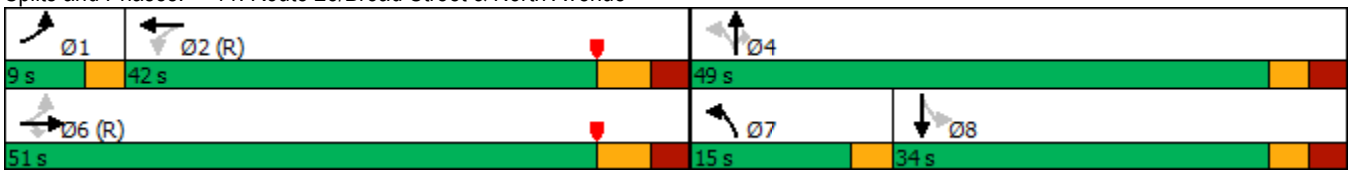
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	395	400	240	530	10	282	505	169	35	439	137
Future Volume (vph)	166	395	400	240	530	10	282	505	169	35	439	137
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		125	0		0	0		0	0		75
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.966	
Flt Protected	0.950				0.985		0.950				0.997	
Satd. Flow (prot)	1956	2019	1750	0	3809	0	1956	2059	1785	0	3721	0
Flt Permitted	0.212				0.716		0.193				0.886	
Satd. Flow (perm)	436	2019	1750	0	2769	0	397	2059	1785	0	3306	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			391		1						37	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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
Heavy Vehicles (%)	2%	4%	2%	3%	3%	0%	2%	2%	0%	0%	3%	5%
Adj. Flow (vph)	173	411	417	250	552	10	294	526	176	36	457	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	411	417	0	812	0	294	526	176	0	636	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	9.0	51.0	51.0	42.0	42.0		15.0	49.0	49.0	34.0	34.0	
Total Split (%)	9.0%	51.0%	51.0%	42.0%	42.0%		15.0%	49.0%	49.0%	34.0%	34.0%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	51.9	47.9	47.9		37.3		42.1	39.1	39.1		24.1	
Actuated g/C Ratio	0.52	0.48	0.48		0.37		0.42	0.39	0.39		0.24	
v/c Ratio	0.51	0.43	0.40		0.79		0.83	0.65	0.25		0.77	
Control Delay	16.1	16.1	3.1		23.2		40.8	28.9	20.9		39.9	
Queue Delay	0.0	0.8	0.4		0.0		3.6	0.0	0.0		0.5	
Total Delay	16.1	16.9	3.4		23.2		44.4	28.9	20.9		40.4	
LOS	B	B	A		C		D	C	C		D	
Approach Delay		11.1			23.2			32.0			40.4	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	47	172	22		274		123	266	73		186	

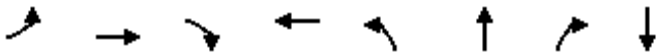
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m76	233	43		#171		#217	358	116		240	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185		125									
Base Capacity (vph)	341	967	1042		1034		354	885	767		952	
Starvation Cap Reductn	0	289	240		0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0		22	0	0		78	
Storage Cap Reductn	0	0	0		0		0	0	0		0	
Reduced v/c Ratio	0.51	0.61	0.52		0.79		0.89	0.59	0.23		0.73	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 25.4 Intersection LOS: C
Intersection Capacity Utilization 100.2% ICU Level of Service G
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: Route 28/Broad Street & North Avenue

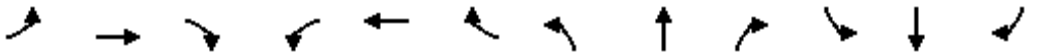




Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	173	411	417	812	294	526	176	636
v/c Ratio	0.51	0.43	0.40	0.79	0.83	0.65	0.25	0.77
Control Delay	16.1	16.1	3.1	23.2	40.8	28.9	20.9	39.9
Queue Delay	0.0	0.8	0.4	0.0	3.6	0.0	0.0	0.5
Total Delay	16.1	16.9	3.4	23.2	44.4	28.9	20.9	40.4
Queue Length 50th (ft)	47	172	22	274	123	266	73	186
Queue Length 95th (ft)	m76	233	43	#171	#217	358	116	240
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185		125					
Base Capacity (vph)	341	967	1042	1034	354	885	767	952
Starvation Cap Reductn	0	289	240	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	22	0	0	78
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.61	0.52	0.79	0.89	0.59	0.23	0.73

Intersection Summary

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.

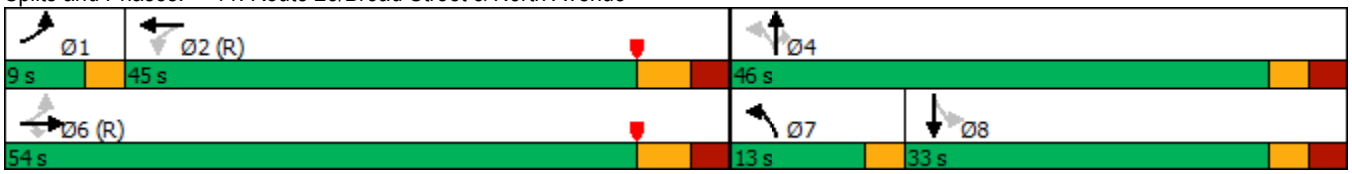


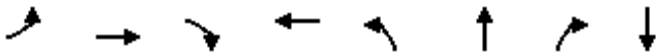
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	338	340	189	449	12	246	417	160	47	378	109
Future Volume (vph)	126	338	340	189	449	12	246	417	160	47	378	109
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	185		125	0		0	0		0	0		75
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.997				0.850		0.969	
Flt Protected	0.950				0.986		0.950				0.996	
Satd. Flow (prot)	1975	2100	1767	0	3795	0	1995	2100	1785	0	3816	0
Flt Permitted	0.308				0.740		0.229				0.860	
Satd. Flow (perm)	640	2100	1767	0	2848	0	481	2100	1785	0	3295	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			351		2						31	
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		278			555			498			430	
Travel Time (s)		5.4			15.1			13.6			11.7	
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%	0%	1%	2%	4%	0%	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	130	348	351	195	463	12	254	430	165	48	390	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	348	351	0	670	0	254	430	165	0	550	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6		6	2			4		4	8		
Detector Phase	1	6	6	2	2		7	4	4	8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	30.0	30.0	30.0	30.0		8.0	24.0	24.0	24.0	24.0	
Total Split (s)	9.0	54.0	54.0	45.0	45.0		13.0	46.0	46.0	33.0	33.0	
Total Split (%)	9.0%	54.0%	54.0%	45.0%	45.0%		13.0%	46.0%	46.0%	33.0%	33.0%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0		0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	7.0	7.0		7.0		3.0	6.0	6.0		6.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	56.3	52.3	52.3		41.9		37.7	34.7	34.7		21.7	
Actuated g/C Ratio	0.56	0.52	0.52		0.42		0.38	0.35	0.35		0.22	
v/c Ratio	0.28	0.32	0.32		0.56		0.76	0.59	0.27		0.74	
Control Delay	9.5	11.8	2.1		20.4		38.0	29.9	23.7		40.5	
Queue Delay	0.0	0.5	0.3		0.0		2.0	0.0	0.0		0.2	
Total Delay	9.5	12.2	2.4		20.4		40.0	29.9	23.7		40.8	
LOS	A	B	A		C		D	C	C		D	
Approach Delay		7.6			20.4			31.7			40.8	
Approach LOS		A			C			C			D	
Queue Length 50th (ft)	25	106	5		163		114	222	75		163	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	49	167	21		125		#170	295	116		208	
Internal Link Dist (ft)		198			475			418			350	
Turn Bay Length (ft)	185		125									
Base Capacity (vph)	457	1097	1091		1195		333	840	714		912	
Starvation Cap Reductn	0	372	282		0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0		21	0	0		55	
Storage Cap Reductn	0	0	0		0		0	0	0		0	
Reduced v/c Ratio	0.28	0.48	0.43		0.56		0.81	0.51	0.23		0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 88.0%		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.			

Splits and Phases: 11: Route 28/Broad Street & North Avenue





Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	130	348	351	670	254	430	165	550
v/c Ratio	0.28	0.32	0.32	0.56	0.76	0.59	0.27	0.74
Control Delay	9.5	11.8	2.1	20.4	38.0	29.9	23.7	40.5
Queue Delay	0.0	0.5	0.3	0.0	2.0	0.0	0.0	0.2
Total Delay	9.5	12.2	2.4	20.4	40.0	29.9	23.7	40.8
Queue Length 50th (ft)	25	106	5	163	114	222	75	163
Queue Length 95th (ft)	49	167	21	125	#170	295	116	208
Internal Link Dist (ft)		198		475		418		350
Turn Bay Length (ft)	185		125					
Base Capacity (vph)	457	1097	1091	1195	333	840	714	912
Starvation Cap Reductn	0	372	282	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	21	0	0	55
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.48	0.43	0.56	0.81	0.51	0.23	0.64

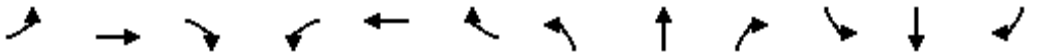
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Kimley»Horn

DRAFT

Intersection ID #13. Central Avenue & North Avenue – Construct a westbound left-turn lane

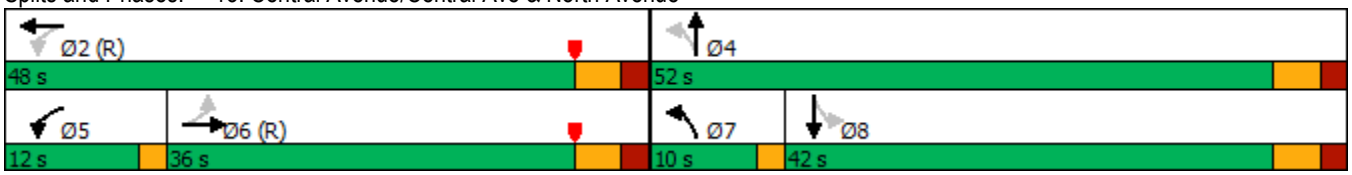


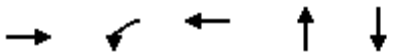
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Future Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.969			0.993			0.980			0.996	
Flt Protected		0.998		0.950				0.988			0.998	
Satd. Flow (prot)	0	3675	0	1900	3773	0	0	3679	0	0	3777	0
Flt Permitted		0.921		0.268				0.647			0.904	
Satd. Flow (perm)	0	3391	0	536	3773	0	0	2409	0	0	3421	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					6			23				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		221			706			792			210	
Travel Time (s)		6.0			13.8			21.6			5.7	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	20	469	125	185	566	28	253	616	135	16	462	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	614	0	185	594	0	0	1004	0	0	492	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	36.0	36.0		12.0	48.0		10.0	52.0		42.0	42.0	
Total Split (%)	36.0%	36.0%		12.0%	48.0%		10.0%	52.0%		42.0%	42.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.6		2.1	5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)		30.4		47.6	44.1			44.7			34.7	
Actuated g/C Ratio		0.30		0.48	0.44			0.45			0.35	
v/c Ratio		0.60		0.45	0.36			0.88			0.41	
Control Delay		30.3		19.6	19.5			33.4			25.8	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		30.3		19.6	19.5			33.4			25.8	
LOS		C		B	B			C			C	
Approach Delay		30.3			19.5			33.4			25.8	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)		174		69	131			234			121	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		244		113	175			297			165	
Internal Link Dist (ft)		141			626			712			130	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1030		412	1665			1185			1245	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.60		0.45	0.36			0.85			0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 84.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 13: Central Avenue/Central Ave & North Avenue





Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	614	185	594	1004	492
v/c Ratio	0.60	0.45	0.36	0.88	0.41
Control Delay	30.3	19.6	19.5	33.4	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	19.6	19.5	33.4	25.8
Queue Length 50th (ft)	174	69	131	234	121
Queue Length 95th (ft)	244	113	175	297	165
Internal Link Dist (ft)	141		626	712	130
Turn Bay Length (ft)		100			
Base Capacity (vph)	1030	412	1665	1185	1245
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.45	0.36	0.85	0.40

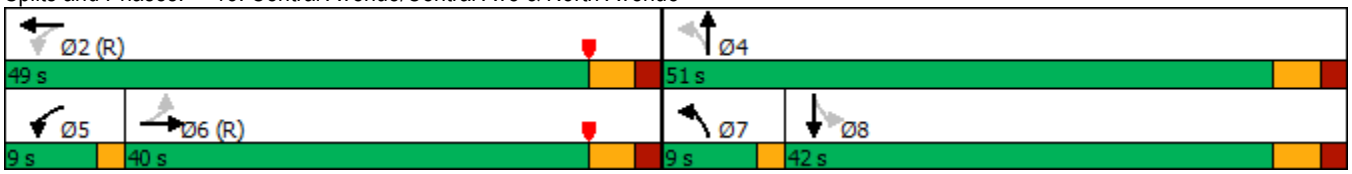
Intersection Summary

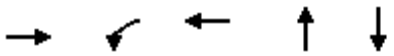
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Future Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.962			0.987			0.966			0.996	
Flt Protected		0.997		0.950				0.989			0.996	
Satd. Flow (prot)	0	3752	0	1956	3861	0	0	3737	0	0	3881	0
Flt Permitted		0.862		0.214				0.554			0.731	
Satd. Flow (perm)	0	3244	0	441	3861	0	0	2093	0	0	2848	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					12			50				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	41	521	193	233	713	65	223	571	235	60	703	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	755	0	233	778	0	0	1029	0	0	785	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		2.6	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	40.0	40.0		9.0	49.0		9.0	51.0		42.0	42.0	
Total Split (%)	40.0%	40.0%		9.0%	49.0%		9.0%	51.0%		42.0%	42.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.6		2.1	5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)		34.4		46.9	43.4			45.4			36.4	
Actuated g/C Ratio		0.34		0.47	0.43			0.45			0.36	
v/c Ratio		0.68		0.75	0.46			1.00			0.76	
Control Delay		32.8		33.9	20.8			53.0			33.6	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		32.8		33.9	20.8			53.0			33.6	
LOS		C		C	C			D			C	
Approach Delay		32.8			23.8			53.0			33.6	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)		234		87	177			238			228	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		302		#164	228			#400			303	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1115		311	1682			1033			1036	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.68		0.75	0.46			1.00			0.76	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 42 (42%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 36.3		Intersection LOS: D	
Intersection Capacity Utilization 100.5%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 13: Central Avenue/Central Ave & North Avenue





Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	755	233	778	1029	785
v/c Ratio	0.68	0.75	0.46	1.00	0.76
Control Delay	32.8	33.9	20.8	53.0	33.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	33.9	20.8	53.0	33.6
Queue Length 50th (ft)	234	87	177	238	228
Queue Length 95th (ft)	302	#164	228	#400	303
Internal Link Dist (ft)	123		626	729	143
Turn Bay Length (ft)		100			
Base Capacity (vph)	1115	311	1682	1033	1036
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.75	0.46	1.00	0.76

Intersection Summary

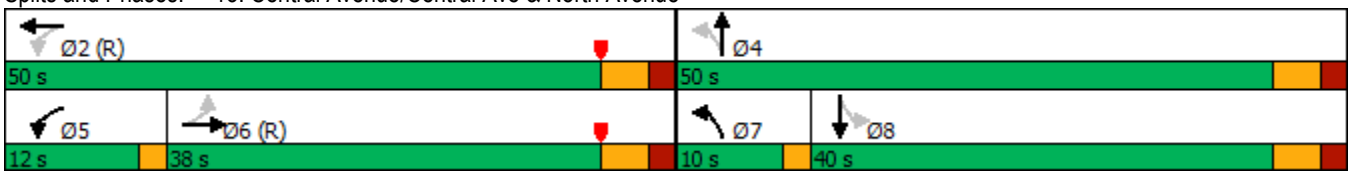
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Future Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.954			0.985			0.971			0.991	
Flt Protected		0.994		0.950				0.988			0.996	
Satd. Flow (prot)	0	3784	0	1995	3930	0	0	3828	0	0	3938	0
Flt Permitted		0.788		0.232				0.616			0.800	
Satd. Flow (perm)	0	2999	0	487	3930	0	0	2387	0	0	3163	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					15			38				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	79	403	215	222	548	60	223	504	174	45	466	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	222	608	0	0	901	0	0	542	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	38.0	38.0		12.0	50.0		10.0	50.0		40.0	40.0	
Total Split (%)	38.0%	38.0%		12.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.6		2.1	5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)		32.4		51.0	47.5			41.3			31.3	
Actuated g/C Ratio		0.32		0.51	0.48			0.41			0.31	
v/c Ratio		0.72		0.50	0.32			0.84			0.55	
Control Delay		27.7		18.6	17.1			32.0			30.3	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		27.7		18.6	17.1			32.0			30.3	
LOS		C		B	B			C			C	
Approach Delay		27.7			17.5			32.0			30.3	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)		168		79	124			207			144	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		261		128	168			261			194	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)				100								
Base Capacity (vph)		971		444	1875			1144			1088	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.72		0.50	0.32			0.79			0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 26.6		Intersection LOS: C	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 13: Central Avenue/Central Ave & North Avenue



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	697	222	608	901	542
v/c Ratio	0.72	0.50	0.32	0.84	0.55
Control Delay	27.7	18.6	17.1	32.0	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	18.6	17.1	32.0	30.3
Queue Length 50th (ft)	168	79	124	207	144
Queue Length 95th (ft)	261	128	168	261	194
Internal Link Dist (ft)	123		626	729	143
Turn Bay Length (ft)		100			
Base Capacity (vph)	971	444	1875	1144	1088
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.50	0.32	0.79	0.50

Intersection Summary

Kimley»Horn

DRAFT

Road Diet

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	658	47	11	509	74	185	45	39	66	5	23
Future Volume (vph)	56	658	47	11	509	74	185	45	39	66	5	23
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		100	0		0	60		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.981			0.930			0.876	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	1945	0	1995	1974	0	1956	1953	0	1995	1840	0
Flt Permitted	0.263			0.165			0.738			0.700		
Satd. Flow (perm)	552	1945	0	346	1974	0	1519	1953	0	1470	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			11			41			24	
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		511			153			500			138	
Travel Time (s)		13.9			3.5			13.6			3.1	
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%	7%	5%	0%	5%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	58	685	49	11	530	77	193	47	41	69	5	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	734	0	11	607	0	193	88	0	69	29	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	2		1	2			4			8	
Permitted Phases	2			2			4			8		
Detector Phase	1	2		1	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	9.5	19.0		9.5	19.0		19.0	19.0		19.0	19.0	
Total Split (s)	10.0	52.0		10.0	52.0		24.0	24.0		24.0	24.0	
Total Split (%)	10.5%	54.7%		10.5%	54.7%		25.3%	25.3%		25.3%	25.3%	
Yellow Time (s)	3.5	3.0		3.5	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0		4.5	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	54.8	48.8		54.8	48.8		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.58	0.51		0.58	0.51		0.18	0.18		0.18	0.18	
v/c Ratio	0.14	0.73		0.04	0.60		0.72	0.23		0.27	0.08	
Control Delay	3.3	16.8		6.7	22.5		52.7	20.7		35.9	15.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	3.3	16.8		6.7	22.5		52.7	20.7		35.9	15.1	
LOS	A	B		A	C		D	C		D	B	
Approach Delay		15.8			22.2			42.7			29.7	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)	2	83		1	184		110	24		36	3	

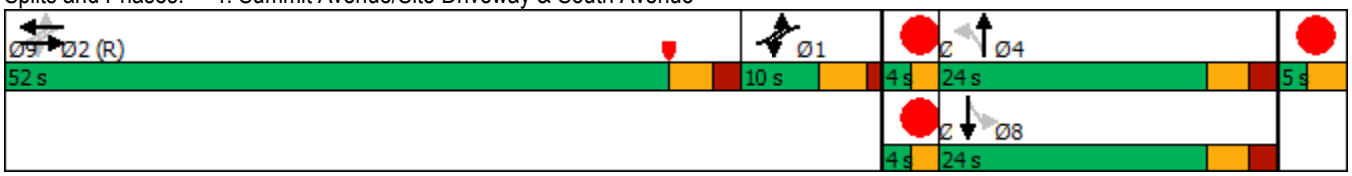
Lane Group	Ø3	Ø7	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	3	7	9
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	5.0
Total Split (s)	4.0	4.0	5.0
Total Split (%)	4%	4%	5%
Yellow Time (s)	2.0	2.0	3.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	5	493		m4	456		182	64		74	26	
Internal Link Dist (ft)		431			73			420			58	
Turn Bay Length (ft)							60					
Base Capacity (vph)	401	1001		295	1019		303	423		294	387	
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	0.14	0.73		0.04	0.60		0.64	0.21		0.23	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

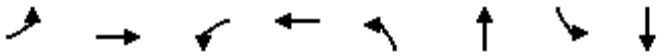
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue



Lane Group	Ø3	Ø7	Ø9
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	58	734	11	607	193	88	69	29
v/c Ratio	0.14	0.73	0.04	0.60	0.72	0.23	0.27	0.08
Control Delay	3.3	16.8	6.7	22.5	52.7	20.7	35.9	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	16.8	6.7	22.5	52.7	20.7	35.9	15.1
Queue Length 50th (ft)	2	83	1	184	110	24	36	3
Queue Length 95th (ft)	5	493	m4	456	182	64	74	26
Internal Link Dist (ft)		431		73		420		58
Turn Bay Length (ft)					60			
Base Capacity (vph)	401	1001	295	1019	303	423	294	387
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	0.14	0.73	0.04	0.60	0.64	0.21	0.23	0.07

Intersection Summary

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

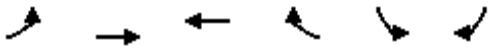
Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	658	53	19	477	48	154
Future Vol, veh/h	658	53	19	477	48	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	7	8	0	5	4	0
Mvmt Flow	700	56	20	507	51	164

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	756	0	1275	728
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	864	-	182	427
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	864	-	176	427
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	558	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	36.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	864	-
HCM Lane V/C Ratio	0.674	-	-	0.023	-
HCM Control Delay (s)	36.7	-	-	9.3	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	4.6	-	-	0.1	-

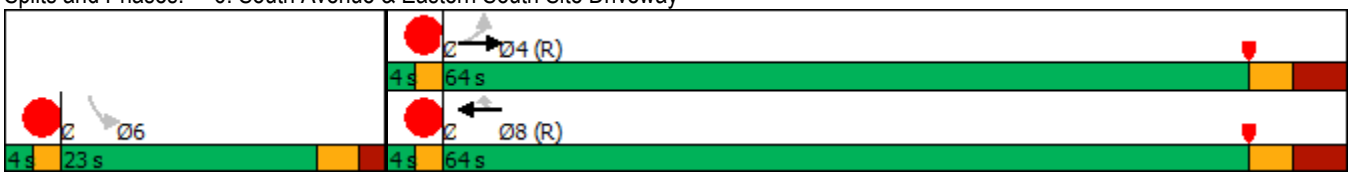


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	46	759	493	91	19	25			
Future Volume (vph)	46	759	493	91	19	25			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			150	0	0			
Storage Lanes	0			1	1	0			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt				0.850	0.922				
Flt Protected		0.997			0.979				
Satd. Flow (prot)	0	1999	2000	1785	1843	0			
Flt Permitted		0.945			0.979				
Satd. Flow (perm)	0	1895	2000	1785	1843	0			
Right Turn on Red				Yes		Yes			
Satd. Flow (RTOR)				97	27				
Link Speed (mph)		30	30		25				
Link Distance (ft)		320	446		143				
Travel Time (s)		7.3	10.1		3.9				
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94			
Heavy Vehicles (%)	0%	5%	5%	0%	0%	5%			
Bus Blockages (#/hr)	5	0	0	0	0	0			
Adj. Flow (vph)	49	807	524	97	20	27			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	856	524	97	47	0			
Turn Type	Perm	NA	NA	Perm	Perm				
Protected Phases		4	8				3	5	7
Permitted Phases	4			8	6				
Detector Phase	4	4	8	8	6				
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0		1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0	23.0	19.0		4.0	4.0	4.0
Total Split (s)	64.0	64.0	64.0	64.0	23.0		4.0	4.0	4.0
Total Split (%)	67.4%	67.4%	67.4%	67.4%	24.2%		4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0	4.0	2.0		0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0				
Total Lost Time (s)		7.0	7.0	7.0	5.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max		None	None	None
Act Effct Green (s)		57.8	57.8	57.8	18.8				
Actuated g/C Ratio		0.61	0.61	0.61	0.20				
v/c Ratio		0.74	0.43	0.09	0.12				
Control Delay		13.9	9.2	2.1	18.7				
Queue Delay		0.0	0.5	0.0	0.0				
Total Delay		13.9	9.7	2.1	18.7				
LOS		B	A	A	B				
Approach Delay		13.9	8.5		18.7				
Approach LOS		B	A		B				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 50th (ft)		186	141	0	10				
Queue Length 95th (ft)		336	198	14	40				
Internal Link Dist (ft)		240	366		63				
Turn Bay Length (ft)				150					
Base Capacity (vph)		1153	1217	1123	386				
Starvation Cap Reductn		2	317	0	0				
Spillback Cap Reductn		0	0	0	0				
Storage Cap Reductn		0	0	0	0				
Reduced v/c Ratio		0.74	0.58	0.09	0.12				

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

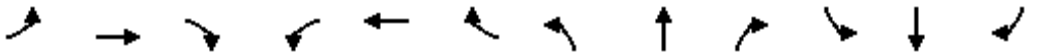
Splits and Phases: 6: South Avenue & Eastern South Site Driveway





Lane Group	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	856	524	97	47
v/c Ratio	0.74	0.43	0.09	0.12
Control Delay	13.9	9.2	2.1	18.7
Queue Delay	0.0	0.5	0.0	0.0
Total Delay	13.9	9.7	2.1	18.7
Queue Length 50th (ft)	186	141	0	10
Queue Length 95th (ft)	336	198	14	40
Internal Link Dist (ft)	240	366		63
Turn Bay Length (ft)			150	
Base Capacity (vph)	1153	1217	1123	386
Starvation Cap Reductn	2	317	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.58	0.09	0.12

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	551	33	18	659	150	9	14	3	83	20	56
Future Volume (vph)	69	551	33	18	659	150	9	14	3	83	20	56
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	75		0	75		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.972				0.850		0.952	
Flt Protected	0.950			0.950				0.981			0.975	
Satd. Flow (prot)	1995	1952	0	1995	1958	0	0	2060	1785	0	1919	0
Flt Permitted	0.159			0.310				0.893			0.822	
Satd. Flow (perm)	334	1952	0	651	1958	0	0	1875	1785	0	1618	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			16				65		30	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		460			460			167			176	
Travel Time (s)		12.5			12.5			3.8			4.0	
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%	7%	0%	0%	5%	1%	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	77	612	37	20	732	167	10	16	3	92	22	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	649	0	20	899	0	0	26	3	0	176	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		19.0	19.0	19.0	19.0	19.0	
Total Split (s)	53.0	53.0		53.0	53.0		39.0	39.0	39.0	39.0	39.0	
Total Split (%)	53.0%	53.0%		53.0%	53.0%		39.0%	39.0%	39.0%	39.0%	39.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	62.5	62.5		62.5	62.5			16.0	16.0		16.0	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.16	0.16		0.16	
v/c Ratio	0.37	0.53		0.05	0.73			0.09	0.01		0.62	
Control Delay	15.3	11.2		8.8	13.5			35.0	0.0		41.8	
Queue Delay	0.0	0.0		0.0	0.1			0.0	0.0		0.0	
Total Delay	15.3	11.2		8.8	13.6			35.0	0.0		41.8	
LOS	B	B		A	B			C	A		D	
Approach Delay		11.6			13.5			31.4			41.8	
Approach LOS		B			B			C			D	
Queue Length 50th (ft)	17	144		3	206			15	0		89	

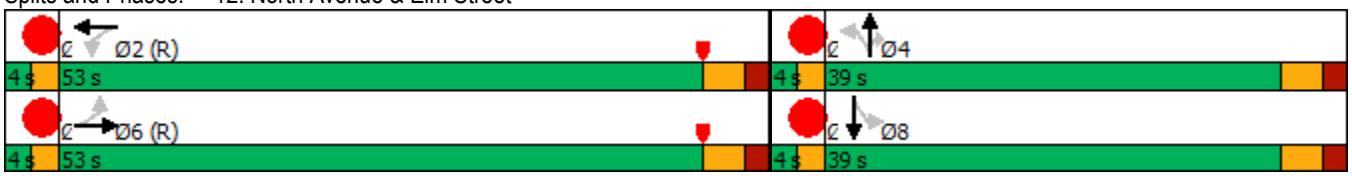
Lane Group	Ø1	Ø3	Ø5	Ø7
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Heavy Vehicles (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	3	5	7
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	1.0	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0	4.0
Total Split (%)	4%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m48	297		m8	m430			36	0		149	
Internal Link Dist (ft)		380			380			87			96	
Turn Bay Length (ft)	75			75								
Base Capacity (vph)	208	1220		406	1228			637	649		569	
Starvation Cap Reductn	0	0		0	15			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	0.37	0.53		0.05	0.74			0.04	0.00		0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

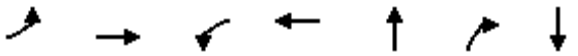
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	Ø1	Ø3	Ø5	Ø7
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	77	649	20	899	26	3	176
v/c Ratio	0.37	0.53	0.05	0.73	0.09	0.01	0.62
Control Delay	15.3	11.2	8.8	13.5	35.0	0.0	41.8
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	15.3	11.2	8.8	13.6	35.0	0.0	41.8
Queue Length 50th (ft)	17	144	3	206	15	0	89
Queue Length 95th (ft)	m48	297	m8	m430	36	0	149
Internal Link Dist (ft)		380		380	87		96
Turn Bay Length (ft)	75		75				
Base Capacity (vph)	208	1220	406	1228	637	649	569
Starvation Cap Reductn	0	0	0	15	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	0.37	0.53	0.05	0.74	0.04	0.00	0.31

Intersection Summary

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

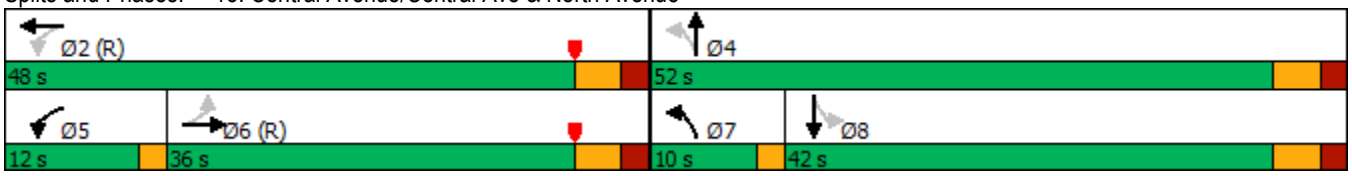
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Future Volume (vph)	19	446	119	176	538	27	240	585	128	15	439	13
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	60		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.968			0.993			0.980			0.996	
Flt Protected	0.950			0.950				0.988			0.998	
Satd. Flow (prot)	1900	1936	0	1900	1986	0	0	3679	0	0	3777	0
Flt Permitted	0.321			0.123				0.647			0.904	
Satd. Flow (perm)	642	1936	0	246	1986	0	0	2409	0	0	3421	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					3			23				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		221			706			792			210	
Travel Time (s)		6.0			13.8			21.6			5.7	
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
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	20	469	125	185	566	28	253	616	135	16	462	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	594	0	185	594	0	0	1004	0	0	492	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	36.0	36.0		12.0	48.0		10.0	52.0		42.0	42.0	
Total Split (%)	36.0%	36.0%		12.0%	48.0%		10.0%	52.0%		42.0%	42.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		2.1	5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)	30.4	30.4		47.6	44.1			44.7			34.7	
Actuated g/C Ratio	0.30	0.30		0.48	0.44			0.45			0.35	
v/c Ratio	0.10	1.01		0.60	0.68			0.88			0.41	
Control Delay	26.2	71.0		26.0	27.5			33.4			25.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	26.2	71.0		26.0	27.6			33.4			25.8	
LOS	C	E		C	C			C			C	
Approach Delay		69.5			27.2			33.4			25.8	
Approach LOS		E			C			C			C	
Queue Length 50th (ft)	10	~349		69	302			234			121	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m15	#606		#137	432			297			165	
Internal Link Dist (ft)		141			626			712			130	
Turn Bay Length (ft)	60			100								
Base Capacity (vph)	195	588		308	876			1185			1245	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	3			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.10	1.01		0.60	0.68			0.85			0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 38.1		Intersection LOS: D	
Intersection Capacity Utilization 90.5%		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: 13: Central Avenue/Central Ave & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	20	594	185	594	1004	492
v/c Ratio	0.10	1.01	0.60	0.68	0.88	0.41
Control Delay	26.2	71.0	26.0	27.5	33.4	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	71.0	26.0	27.6	33.4	25.8
Queue Length 50th (ft)	10	~349	69	302	234	121
Queue Length 95th (ft)	m15	#606	#137	432	297	165
Internal Link Dist (ft)		141		626	712	130
Turn Bay Length (ft)	60		100			
Base Capacity (vph)	195	588	308	876	1185	1245
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	1.01	0.60	0.68	0.85	0.40

Intersection Summary

~ 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.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↱
Traffic Vol, veh/h	0	708	540	0	0	18
Future Vol, veh/h	0	708	540	0	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	745	568	0	0	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	568
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.345
Pot Cap-1 Maneuver	0	-	-	0	0	517
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	517
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	517
HCM Lane V/C Ratio	-	-	0.037
HCM Control Delay (s)	-	-	12.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	585	0	1	725	0	7
Future Vol, veh/h	585	0	1	725	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	636	0	1	788	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	636	0	-	636
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	-	3.318
Pot Cap-1 Maneuver	-	-	947	-	0	478
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	947	-	-	478
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	478	-	-	947	-
HCM Lane V/C Ratio	0.016	-	-	0.001	-
HCM Control Delay (s)	12.7	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	637	56	28	627	57	101	23	43	131	21	92
Future Volume (vph)	34	637	56	28	627	57	101	23	43	131	21	92
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		100	0		0	0		70	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.988			0.902			0.878	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1900	2037	0	1995	2037	0	1956	1894	0	1995	1814	0
Flt Permitted	0.204			0.197			0.653			0.712		
Satd. Flow (perm)	408	2037	0	414	2037	0	1344	1894	0	1495	1814	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			7			45			96	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			127			500			138	
Travel Time (s)		13.9			2.9			13.6			3.8	
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 (%)	5%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Adj. Flow (vph)	35	664	58	29	653	59	105	24	45	136	22	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	722	0	29	712	0	105	69	0	136	118	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	2		1	2			4			8	
Permitted Phases	2			2			4			8		
Detector Phase	1	2		1	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	9.5	19.0		9.5	19.0		19.0	19.0		19.0	19.0	
Total Split (s)	10.0	55.0		10.0	55.0		22.0	22.0		22.0	22.0	
Total Split (%)	10.5%	57.9%		10.5%	57.9%		23.2%	23.2%		23.2%	23.2%	
Yellow Time (s)	3.5	3.0		3.5	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.0		4.5	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	57.2	51.2		57.2	51.2		15.0	15.0		15.0	15.0	
Actuated g/C Ratio	0.60	0.54		0.60	0.54		0.16	0.16		0.16	0.16	
v/c Ratio	0.11	0.66		0.09	0.65		0.49	0.20		0.58	0.32	
Control Delay	2.1	12.4		6.8	13.3		44.8	17.5		47.2	13.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	2.1	12.4		6.8	13.3		44.8	17.5		47.2	13.1	
LOS	A	B		A	B		D	B		D	B	
Approach Delay		11.9			13.1			34.0			31.4	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	1	68		5	152		59	13		78	12	

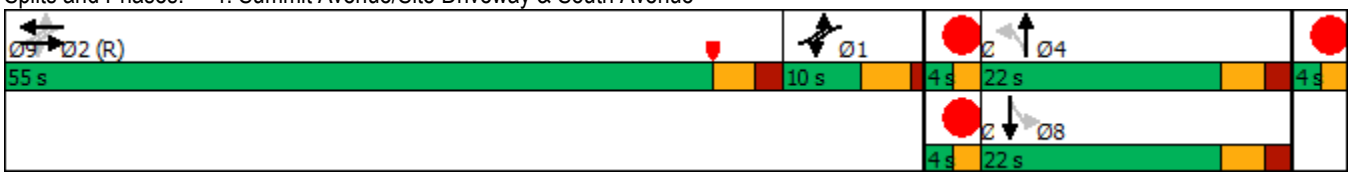
Lane Group	Ø3	Ø7	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	3	7	9
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0
Total Split (%)	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m2	85		m11	170		109	49		135	58	
Internal Link Dist (ft)		431			47			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)	331	1101		340	1101		240	375		267	403	
Starvation Cap Reductn	0	5		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	0.11	0.66		0.09	0.65		0.44	0.18		0.51	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 2 (2%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 55.0%		ICU Level of Service A	
Analysis Period (min) 15			

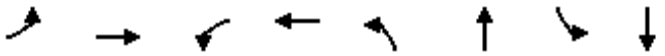
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue



Lane Group	Ø3	Ø7	Ø9
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	35	722	29	712	105	69	136	118
v/c Ratio	0.11	0.66	0.09	0.65	0.49	0.20	0.58	0.32
Control Delay	2.1	12.4	6.8	13.3	44.8	17.5	47.2	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	12.4	6.8	13.3	44.8	17.5	47.2	13.1
Queue Length 50th (ft)	1	68	5	152	59	13	78	12
Queue Length 95th (ft)	m2	85	m11	170	109	49	135	58
Internal Link Dist (ft)		431		47		420		58
Turn Bay Length (ft)								
Base Capacity (vph)	331	1101	340	1101	240	375	267	403
Starvation Cap Reductn	0	5	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	0.11	0.66	0.09	0.65	0.44	0.18	0.51	0.29

Intersection Summary

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

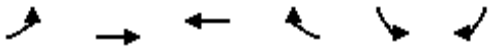
Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	718	47	29	586	35	89
Future Vol, veh/h	718	47	29	586	35	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	0	3	2	0	1
Mvmt Flow	725	47	29	592	35	90

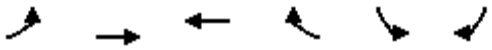
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	772	0	1399	749
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	-	-	4.13	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	839	-	156	413
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	839	-	148	413
Mov Cap-2 Maneuver	-	-	-	-	148	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	28.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	-	-	839	-
HCM Lane V/C Ratio	0.457	-	-	0.035	-
HCM Control Delay (s)	28.7	-	-	9.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	17	732	565	40	62	56			
Future Volume (vph)	17	732	565	40	62	56			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			150	0	0			
Storage Lanes	0			1	1	0			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt				0.850	0.936				
Flt Protected		0.999			0.974				
Satd. Flow (prot)	0	2058	2059	1785	1914	0			
Flt Permitted		0.982			0.974				
Satd. Flow (perm)	0	2023	2059	1785	1914	0			
Right Turn on Red				Yes		Yes			
Satd. Flow (RTOR)				41	41				
Link Speed (mph)		30	30		25				
Link Distance (ft)		279	494		163				
Travel Time (s)		6.3	11.2		4.4				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%			
Adj. Flow (vph)	18	755	582	41	64	58			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	773	582	41	122	0			
Turn Type	Perm	NA	NA	Perm	Perm				
Protected Phases		4	8				3	5	7
Permitted Phases	4			8	6				
Detector Phase	4	4	8	8	6				
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0		1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0	23.0	19.0		4.0	4.0	4.0
Total Split (s)	67.0	67.0	67.0	67.0	20.0		4.0	4.0	4.0
Total Split (%)	70.5%	70.5%	70.5%	70.5%	21.1%		4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0	4.0	2.0		0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0				
Total Lost Time (s)		7.0	7.0	7.0	5.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max		None	None	None
Act Effct Green (s)		60.8	60.8	60.8	15.8				
Actuated g/C Ratio		0.64	0.64	0.64	0.17				
v/c Ratio		0.60	0.44	0.04	0.35				
Control Delay		7.8	17.7	7.4	27.0				
Queue Delay		0.1	1.4	0.0	0.0				
Total Delay		7.9	19.1	7.4	27.0				
LOS		A	B	A	C				
Approach Delay		7.9	18.4		27.0				
Approach LOS		A	B		C				
Queue Length 50th (ft)		108	255	3	44				

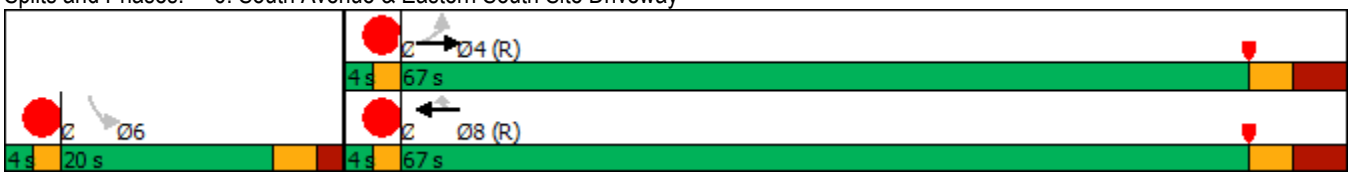


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 95th (ft)		207	m362	m9	96				
Internal Link Dist (ft)		199	414		83				
Turn Bay Length (ft)				150					
Base Capacity (vph)		1294	1317	1157	352				
Starvation Cap Reductn		50	512	0	0				
Spillback Cap Reductn		0	0	0	0				
Storage Cap Reductn		0	0	0	0				
Reduced v/c Ratio		0.62	0.72	0.04	0.35				

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 3 (3%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 6: South Avenue & Eastern South Site Driveway

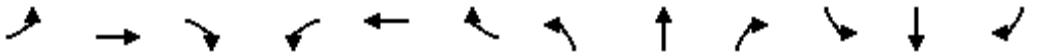




Lane Group	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	773	582	41	122
v/c Ratio	0.60	0.44	0.04	0.35
Control Delay	7.8	17.7	7.4	27.0
Queue Delay	0.1	1.4	0.0	0.0
Total Delay	7.9	19.1	7.4	27.0
Queue Length 50th (ft)	108	255	3	44
Queue Length 95th (ft)	207	m362	m9	96
Internal Link Dist (ft)	199	414		83
Turn Bay Length (ft)			150	
Base Capacity (vph)	1294	1317	1157	352
Starvation Cap Reductn	50	512	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.72	0.04	0.35

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	499	33	38	730	163	35	28	18	105	26	174
Future Volume (vph)	66	499	33	38	730	163	35	28	18	105	26	174
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	75		0	75		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.973				0.850		0.923	
Flt Protected	0.950			0.950				0.973			0.983	
Satd. Flow (prot)	1995	2024	0	1995	1994	0	0	2043	1785	0	1873	0
Flt Permitted	0.093			0.345				0.655			0.860	
Satd. Flow (perm)	195	2024	0	724	1994	0	0	1376	1785	0	1639	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			16				65		72	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		445			479			193			176	
Travel Time (s)		12.1			13.1			4.4			4.0	
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 (%)	0%	3%	0%	0%	3%	0%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	69	520	34	40	760	170	36	29	19	109	27	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	69	554	0	40	930	0	0	65	19	0	317	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	54.0	54.0		54.0	54.0		38.0	38.0	38.0	38.0	38.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		38.0%	38.0%	38.0%	38.0%	38.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	57.2	57.2		57.2	57.2			21.3	21.3		21.3	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.21	0.21		0.21	
v/c Ratio	0.62	0.48		0.10	0.81			0.22	0.04		0.78	
Control Delay	39.7	11.5		12.3	26.4			32.1	0.2		41.7	
Queue Delay	0.0	0.0		0.0	5.3			0.0	0.0		0.0	
Total Delay	39.7	11.5		12.3	31.7			32.1	0.2		41.7	
LOS	D	B		B	C			C	A		D	
Approach Delay		14.6			30.9			24.9			41.7	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	17	128		13	552			35	0		150	

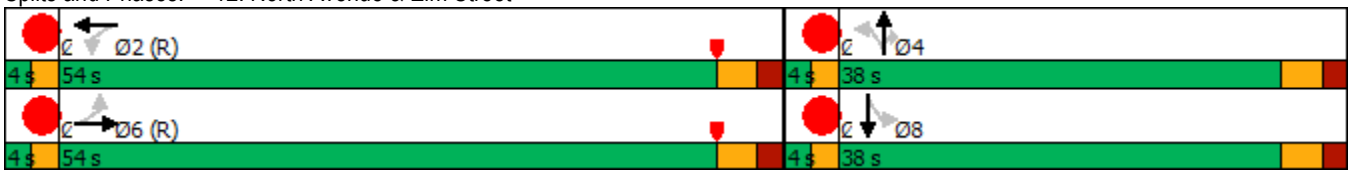
Lane Group	Ø1	Ø3	Ø5	Ø7
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Heavy Vehicles (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	3	5	7
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	1.0	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0	4.0
Total Split (%)	4%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m#102	262		m20	m#736			65	0		225	
Internal Link Dist (ft)		365			399			113			96	
Turn Bay Length (ft)	75			75								
Base Capacity (vph)	111	1160		414	1148			454	632		589	
Starvation Cap Reductn	0	0		0	164			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	0.62	0.48		0.10	0.95			0.14	0.03		0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 99 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 27.3		Intersection LOS: C	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

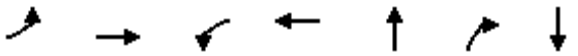
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	Ø1	Ø3	Ø5	Ø7
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	69	554	40	930	65	19	317
v/c Ratio	0.62	0.48	0.10	0.81	0.22	0.04	0.78
Control Delay	39.7	11.5	12.3	26.4	32.1	0.2	41.7
Queue Delay	0.0	0.0	0.0	5.3	0.0	0.0	0.0
Total Delay	39.7	11.5	12.3	31.7	32.1	0.2	41.7
Queue Length 50th (ft)	17	128	13	552	35	0	150
Queue Length 95th (ft)	m#102	262	m20	m#736	65	0	225
Internal Link Dist (ft)		365		399	113		96
Turn Bay Length (ft)	75		75				
Base Capacity (vph)	111	1160	414	1148	454	632	589
Starvation Cap Reductn	0	0	0	164	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	0.62	0.48	0.10	0.95	0.14	0.03	0.54

Intersection Summary

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.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Future Volume (vph)	39	495	183	221	677	62	212	542	223	57	668	21
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	60		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.959			0.987			0.966			0.996	
Flt Protected	0.950			0.950				0.989			0.996	
Satd. Flow (prot)	1956	1974	0	1956	2032	0	0	3737	0	0	3881	0
Flt Permitted	0.123			0.116				0.550			0.736	
Satd. Flow (perm)	253	1974	0	239	2032	0	0	2078	0	0	2868	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					6			50				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	41	521	193	233	713	65	223	571	235	60	703	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	714	0	233	778	0	0	1029	0	0	785	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		2.6	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	38.0	38.0		11.0	49.0		10.0	51.0		41.0	41.0	
Total Split (%)	38.0%	38.0%		11.0%	49.0%		10.0%	51.0%		41.0%	41.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		2.1	5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)	32.4	32.4		46.9	43.4			45.4			35.4	
Actuated g/C Ratio	0.32	0.32		0.47	0.43			0.45			0.35	
v/c Ratio	0.51	1.12		0.88	0.88			0.99			0.77	
Control Delay	51.0	105.5		53.1	38.8			50.3			35.0	
Queue Delay	0.0	0.0		0.0	1.0			37.5			1.1	
Total Delay	51.0	105.5		53.1	39.8			87.7			36.1	
LOS	D	F		D	D			F			D	
Approach Delay		102.5			42.9			87.7			36.1	
Approach LOS		F			D			F			D	
Queue Length 50th (ft)	24	~532		86	439			238			231	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m#61	#762		#224	#674			#394			306	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)	60			100								
Base Capacity (vph)	81	639		264	885			1043			1015	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	21			106			81	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.51	1.12		0.88	0.90			1.10			0.84	

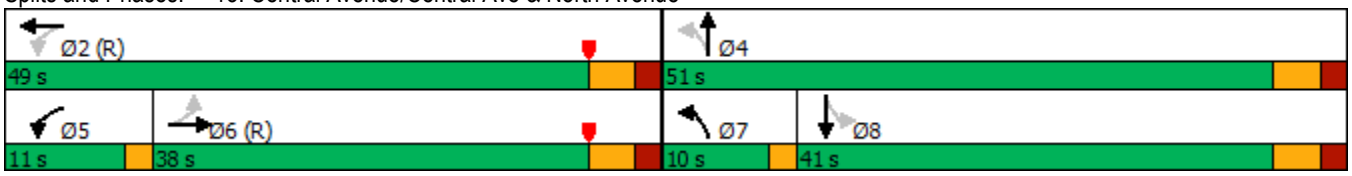
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 42 (42%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 66.9		Intersection LOS: E	
Intersection Capacity Utilization 107.0%		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: 13: Central Avenue/Central Ave & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	41	714	233	778	1029	785
v/c Ratio	0.51	1.12	0.88	0.88	0.99	0.77
Control Delay	51.0	105.5	53.1	38.8	50.3	35.0
Queue Delay	0.0	0.0	0.0	1.0	37.5	1.1
Total Delay	51.0	105.5	53.1	39.8	87.7	36.1
Queue Length 50th (ft)	24	~532	86	439	238	231
Queue Length 95th (ft)	m#61	#762	#224	#674	#394	306
Internal Link Dist (ft)		123		626	729	143
Turn Bay Length (ft)	60		100			
Base Capacity (vph)	81	639	264	885	1043	1015
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	21	106	81
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	1.12	0.88	0.90	1.10	0.84

Intersection Summary

~ 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.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↱
Traffic Vol, veh/h	0	760	673	0	0	59
Future Vol, veh/h	0	760	673	0	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	800	708	0	0	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	708
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	0	0	435
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	435
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	435
HCM Lane V/C Ratio	-	-	0.143
HCM Control Delay (s)	-	-	14.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.5

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	581	0	2	832	0	18
Future Vol, veh/h	581	0	2	832	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	632	0	2	904	0	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	632	0	-	632
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	-	3.318
Pot Cap-1 Maneuver	-	-	951	-	0	480
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	951	-	-	480
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	480	-	-	951	-
HCM Lane V/C Ratio	0.041	-	-	0.002	-
HCM Control Delay (s)	12.8	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	618	43	28	561	15	98	14	41	34	3	38
Future Volume (vph)	17	618	43	28	561	15	98	14	41	34	3	38
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	0		100	0		0	0		70	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.996			0.889			0.860	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1995	2079	0	1995	2092	0	1995	1867	0	1995	1806	0
Flt Permitted	0.309			0.243			0.729			0.719		
Satd. Flow (perm)	649	2079	0	510	2092	0	1531	1867	0	1510	1806	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			43			40	
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		511			126			500			138	
Travel Time (s)		13.9			2.9			13.6			3.8	
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%	0%	0%	0%	0%	0%
Adj. Flow (vph)	18	644	45	29	584	16	102	15	43	35	3	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	689	0	29	600	0	102	58	0	35	43	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	2		1	2			4			8	
Permitted Phases	2			2			4			8		
Detector Phase	1	2		1	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	8.0	21.0		8.0	21.0		19.0	19.0		19.0	19.0	
Total Split (s)	8.0	58.0		8.0	58.0		21.0	21.0		21.0	21.0	
Total Split (%)	8.4%	61.1%		8.4%	61.1%		22.1%	22.1%		22.1%	22.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	4.0		0.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.0		3.0	7.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	61.2	52.2		61.2	52.2		14.4	14.4		14.4	14.4	
Actuated g/C Ratio	0.64	0.55		0.64	0.55		0.15	0.15		0.15	0.15	
v/c Ratio	0.04	0.60		0.07	0.52		0.44	0.18		0.15	0.14	
Control Delay	0.9	9.9		5.0	21.4		43.1	16.7		36.6	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	0.9	9.9		5.0	21.4		43.1	16.7		36.6	13.5	
LOS	A	A		A	C		D	B		D	B	
Approach Delay		9.7			20.6			33.5			23.9	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)	0	56		3	209		57	8		19	2	

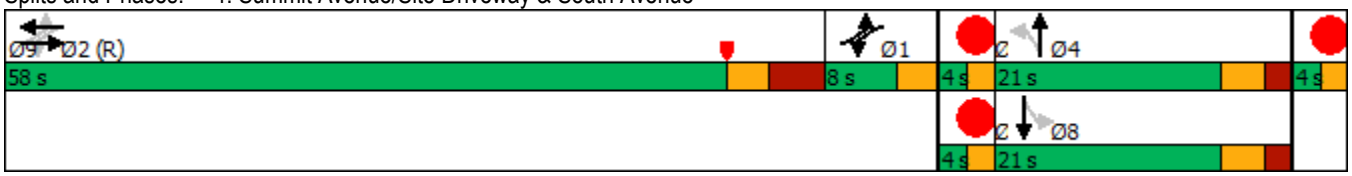
Lane Group	Ø3	Ø7	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	3	7	9
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0
Total Split (%)	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m1	81		m8	245		106	42		46	30	
Internal Link Dist (ft)		431			46			420			58	
Turn Bay Length (ft)												
Base Capacity (vph)	488	1144		406	1150		257	350		254	337	
Starvation Cap Reductn	0	17		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	0.61		0.07	0.52		0.40	0.17		0.14	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

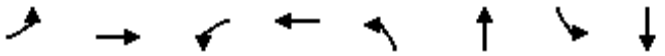
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Summit Avenue/Site Driveway & South Avenue



Lane Group	Ø3	Ø7	Ø9
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	689	29	600	102	58	35	43
v/c Ratio	0.04	0.60	0.07	0.52	0.44	0.18	0.15	0.14
Control Delay	0.9	9.9	5.0	21.4	43.1	16.7	36.6	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.9	9.9	5.0	21.4	43.1	16.7	36.6	13.5
Queue Length 50th (ft)	0	56	3	209	57	8	19	2
Queue Length 95th (ft)	m1	81	m8	245	106	42	46	30
Internal Link Dist (ft)		431		46		420		58
Turn Bay Length (ft)								
Base Capacity (vph)	488	1144	406	1150	257	350	254	337
Starvation Cap Reductn	0	17	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	0.61	0.07	0.52	0.40	0.17	0.14	0.13

Intersection Summary

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

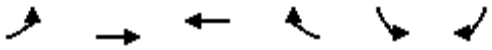
Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	651	43	32	554	43	105
Future Vol, veh/h	651	43	32	554	43	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	664	44	33	565	44	107

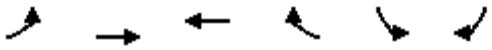
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	708	0	1317	686
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	900	-	175	451
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	534	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	900	-	166	451
Mov Cap-2 Maneuver	-	-	-	-	166	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	506	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	28.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	301	-	-	900	-
HCM Lane V/C Ratio	0.502	-	-	0.036	-
HCM Control Delay (s)	28.4	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.6	-	-	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Lane Configurations									
Traffic Volume (vph)	28	694	586	29	33	60			
Future Volume (vph)	28	694	586	29	33	60			
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100			
Storage Length (ft)	0			150	0	0			
Storage Lanes	0			1	1	0			
Taper Length (ft)	25				25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Frt				0.850	0.912				
Flt Protected		0.998			0.983				
Satd. Flow (prot)	0	2096	2100	1785	1883	0			
Flt Permitted		0.962			0.983				
Satd. Flow (perm)	0	2020	2100	1785	1883	0			
Right Turn on Red				Yes		Yes			
Satd. Flow (RTOR)				31	65				
Link Speed (mph)		30	30		25				
Link Distance (ft)		279	494		163				
Travel Time (s)		6.3	11.2		4.4				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%			
Adj. Flow (vph)	30	746	630	31	35	65			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	776	630	31	100	0			
Turn Type	Perm	NA	NA	Perm	Perm				
Protected Phases		4	8				3	5	7
Permitted Phases	4			8	6				
Detector Phase	4	4	8	8	6				
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0		1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0	23.0	19.0		4.0	4.0	4.0
Total Split (s)	64.0	64.0	64.0	64.0	23.0		4.0	4.0	4.0
Total Split (%)	67.4%	67.4%	67.4%	67.4%	24.2%		4%	4%	4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0	4.0	2.0		0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0				
Total Lost Time (s)		7.0	7.0	7.0	5.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max		None	None	None
Act Effct Green (s)		57.8	57.8	57.8	18.8				
Actuated g/C Ratio		0.61	0.61	0.61	0.20				
v/c Ratio		0.63	0.49	0.03	0.24				
Control Delay		9.3	9.8	3.1	15.6				
Queue Delay		0.0	0.4	0.0	0.0				
Total Delay		9.3	10.2	3.1	15.6				
LOS		A	B	A	B				
Approach Delay		9.3	9.9		15.6				
Approach LOS		A	A		B				
Queue Length 50th (ft)		144	142	0	18				

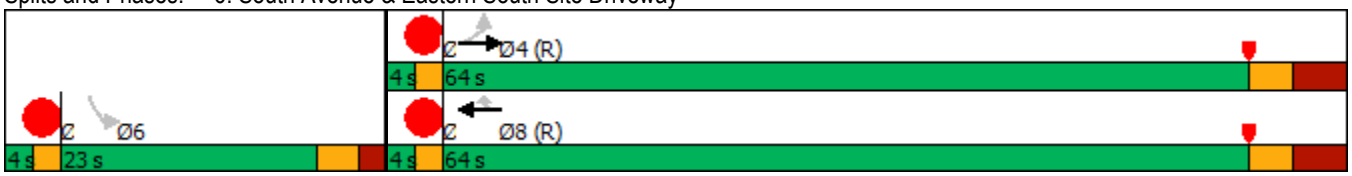


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3	Ø5	Ø7
Queue Length 95th (ft)		185	238	m7	61				
Internal Link Dist (ft)		199	414		83				
Turn Bay Length (ft)				150					
Base Capacity (vph)		1229	1278	1098	424				
Starvation Cap Reductn		13	248	0	0				
Spillback Cap Reductn		0	0	0	0				
Storage Cap Reductn		0	0	0	0				
Reduced v/c Ratio		0.64	0.61	0.03	0.24				

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 6: South Avenue & Eastern South Site Driveway

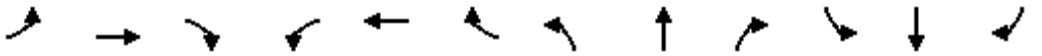




Lane Group	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	776	630	31	100
v/c Ratio	0.63	0.49	0.03	0.24
Control Delay	9.3	9.8	3.1	15.6
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	9.3	10.2	3.1	15.6
Queue Length 50th (ft)	144	142	0	18
Queue Length 95th (ft)	185	238	m7	61
Internal Link Dist (ft)	199	414		83
Turn Bay Length (ft)			150	
Base Capacity (vph)	1229	1278	1098	424
Starvation Cap Reductn	13	248	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.61	0.03	0.24

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	486	49	43	632	132	1	1	68	128	27	92
Future Volume (vph)	24	486	49	43	632	132	1	1	68	128	27	92
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	75		0	75		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.974				0.850		0.950	
Flt Protected	0.950			0.950				0.976			0.975	
Satd. Flow (prot)	1995	2071	0	1995	2045	0	0	2050	1785	0	1945	0
Flt Permitted	0.213			0.366				0.902			0.836	
Satd. Flow (perm)	447	2071	0	769	2045	0	0	1894	1785	0	1668	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			15				69		32	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		437			479			193			176	
Travel Time (s)		11.9			13.1			4.4			4.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	491	49	43	638	133	1	1	69	129	27	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	540	0	43	771	0	0	2	69	0	249	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4		4	8		
Detector Phase	6	6		2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		19.0	19.0	19.0	19.0	19.0	
Total Split (s)	54.0	54.0		54.0	54.0		38.0	38.0	38.0	38.0	38.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		38.0%	38.0%	38.0%	38.0%	38.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	59.3	59.3		59.3	59.3			19.2	19.2		19.2	
Actuated g/C Ratio	0.59	0.59		0.59	0.59			0.19	0.19		0.19	
v/c Ratio	0.09	0.44		0.09	0.63			0.01	0.17		0.72	
Control Delay	8.5	9.4		8.4	11.0			29.0	8.6		44.5	
Queue Delay	0.0	0.0		0.0	0.1			0.0	0.0		0.0	
Total Delay	8.5	9.4		8.4	11.2			29.0	8.6		44.5	
LOS	A	A		A	B			C	A		D	
Approach Delay		9.4			11.0			9.1			44.5	
Approach LOS		A			B			A			D	
Queue Length 50th (ft)	5	141		7	190			1	0		132	

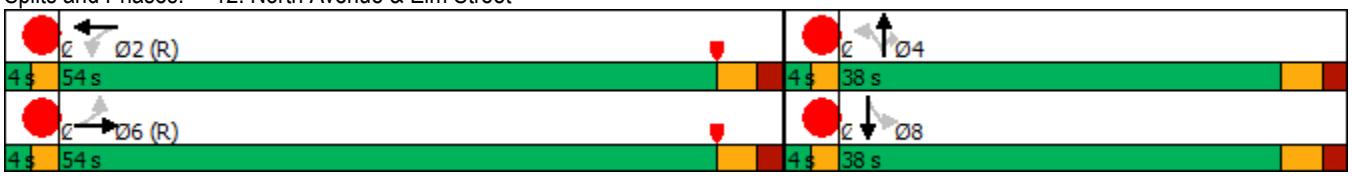
Lane Group	Ø1	Ø3	Ø5	Ø7
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Storage Length (ft)				
Storage Lanes				
Taper Length (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Heavy Vehicles (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	3	5	7
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	1.0	1.0	1.0	1.0
Minimum Split (s)	4.0	4.0	4.0	4.0
Total Split (s)	4.0	4.0	4.0	4.0
Total Split (%)	4%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Queue Length 50th (ft)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m15	206		m17	309			7	33		200	
Internal Link Dist (ft)		357			399			113			96	
Turn Bay Length (ft)	75			75								
Base Capacity (vph)	265	1231		456	1219			625	635		571	
Starvation Cap Reductn	0	0		0	44			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	0.09	0.44		0.09	0.66			0.00	0.11		0.44	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 3 (3%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

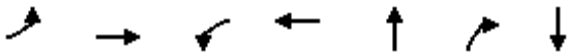
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: North Avenue & Elm Street



Lane Group	Ø1	Ø3	Ø5	Ø7
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	24	540	43	771	2	69	249
v/c Ratio	0.09	0.44	0.09	0.63	0.01	0.17	0.72
Control Delay	8.5	9.4	8.4	11.0	29.0	8.6	44.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	8.5	9.4	8.4	11.2	29.0	8.6	44.5
Queue Length 50th (ft)	5	141	7	190	1	0	132
Queue Length 95th (ft)	m15	206	m17	309	7	33	200
Internal Link Dist (ft)		357		399	113		96
Turn Bay Length (ft)	75		75				
Base Capacity (vph)	265	1231	456	1219	625	635	571
Starvation Cap Reductn	0	0	0	44	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	0.09	0.44	0.09	0.66	0.00	0.11	0.44

Intersection Summary

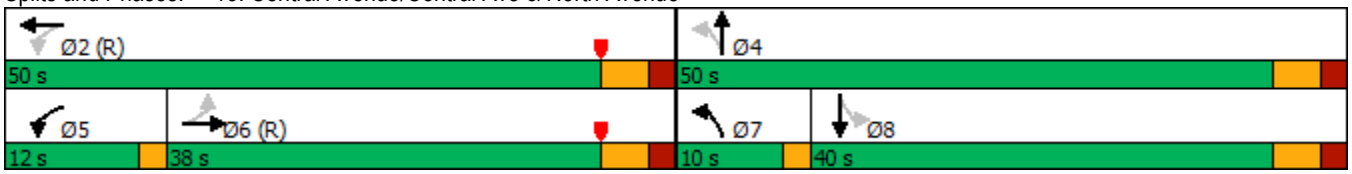
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Future Volume (vph)	77	395	211	218	537	59	219	494	171	44	457	30
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Storage Length (ft)	60		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.948			0.985			0.971			0.991	
Flt Protected	0.950			0.950				0.988			0.996	
Satd. Flow (prot)	1995	1991	0	1995	2069	0	0	3828	0	0	3938	0
Flt Permitted	0.353			0.116				0.616			0.800	
Satd. Flow (perm)	741	1991	0	244	2069	0	0	2387	0	0	3163	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)					7			38				
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		203			706			809			223	
Travel Time (s)		5.5			13.8			22.1			6.1	
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	79	403	215	222	548	60	223	504	174	45	466	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	618	0	222	608	0	0	901	0	0	542	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		5	2		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		5.0	7.0		7.0	7.0	
Minimum Split (s)	31.6	31.6		7.1	31.6		7.1	31.6		31.6	31.6	
Total Split (s)	38.0	38.0		12.0	50.0		10.0	50.0		40.0	40.0	
Total Split (%)	38.0%	38.0%		12.0%	50.0%		10.0%	50.0%		40.0%	40.0%	
Yellow Time (s)	3.5	3.5		2.1	3.5		2.1	3.5		3.5	3.5	
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.1		2.1	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		2.1	5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		Max	C-Max		Max	None		None	None	
Act Effct Green (s)	32.4	32.4		51.0	47.5			41.3			31.3	
Actuated g/C Ratio	0.32	0.32		0.51	0.48			0.41			0.31	
v/c Ratio	0.33	0.96		0.63	0.62			0.84			0.55	
Control Delay	24.8	52.7		26.5	23.5			32.0			30.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	24.8	52.7		26.5	23.5			32.0			30.3	
LOS	C	D		C	C			C			C	
Approach Delay		49.6			24.3			32.0			30.3	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	26	293		79	288			207			144	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	66	#600		#186	415			261			194	
Internal Link Dist (ft)		123			626			729			143	
Turn Bay Length (ft)	60			100								
Base Capacity (vph)	240	645		352	986			1144			1088	
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	0.33	0.96		0.63	0.62			0.79			0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 33.7		Intersection LOS: C	
Intersection Capacity Utilization 95.2%		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.			

Splits and Phases: 13: Central Avenue/Central Ave & North Avenue





Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	618	222	608	901	542
v/c Ratio	0.33	0.96	0.63	0.62	0.84	0.55
Control Delay	24.8	52.7	26.5	23.5	32.0	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	52.7	26.5	23.5	32.0	30.3
Queue Length 50th (ft)	26	293	79	288	207	144
Queue Length 95th (ft)	66	#600	#186	415	261	194
Internal Link Dist (ft)		123		626	729	143
Turn Bay Length (ft)	60		100			
Base Capacity (vph)	240	645	352	986	1144	1088
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	0.33	0.96	0.63	0.62	0.79	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↱
Traffic Vol, veh/h	0	671	606	0	0	12
Future Vol, veh/h	0	671	606	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	685	618	0	0	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	618
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	0	0	493
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	493
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	493
HCM Lane V/C Ratio	-	-	0.025
HCM Control Delay (s)	-	-	12.5
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	614	0	2	800	0	4
Future Vol, veh/h	614	0	2	800	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	640	0	2	833	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	640	0	-	320
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	954	-	0	682
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	954	-	-	682
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	682	-	-	954	-
HCM Lane V/C Ratio	0.006	-	-	0.002	-
HCM Control Delay (s)	10.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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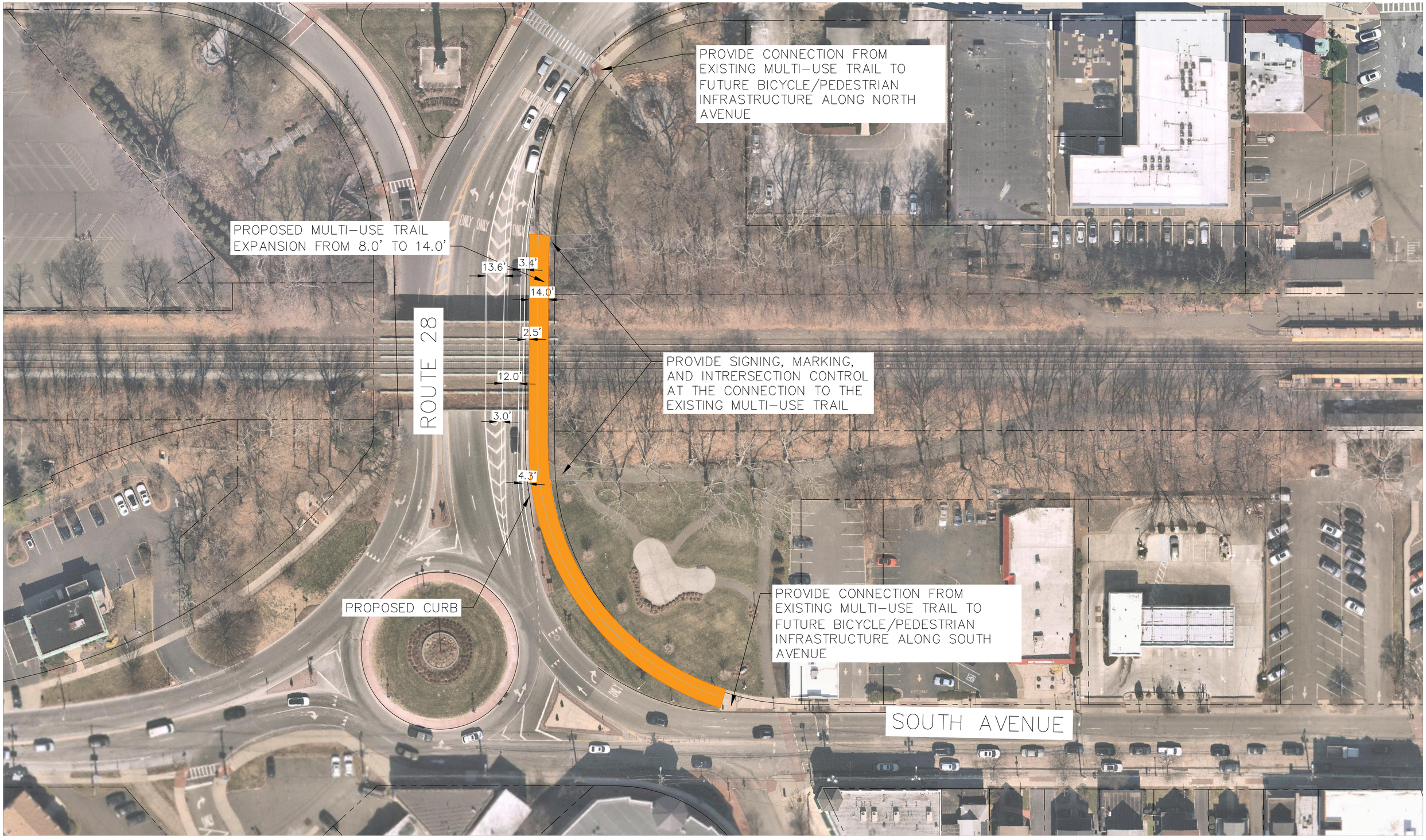
APPENDIX H

Intersection/Location Improvement Concepts



PROPOSED EXPANDED MULTI-USE TRAIL ALONG ROUTE 28

ONE WESTFIELD PLACE

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

11/14/2022

STREETWORKS DEVELOPMENT

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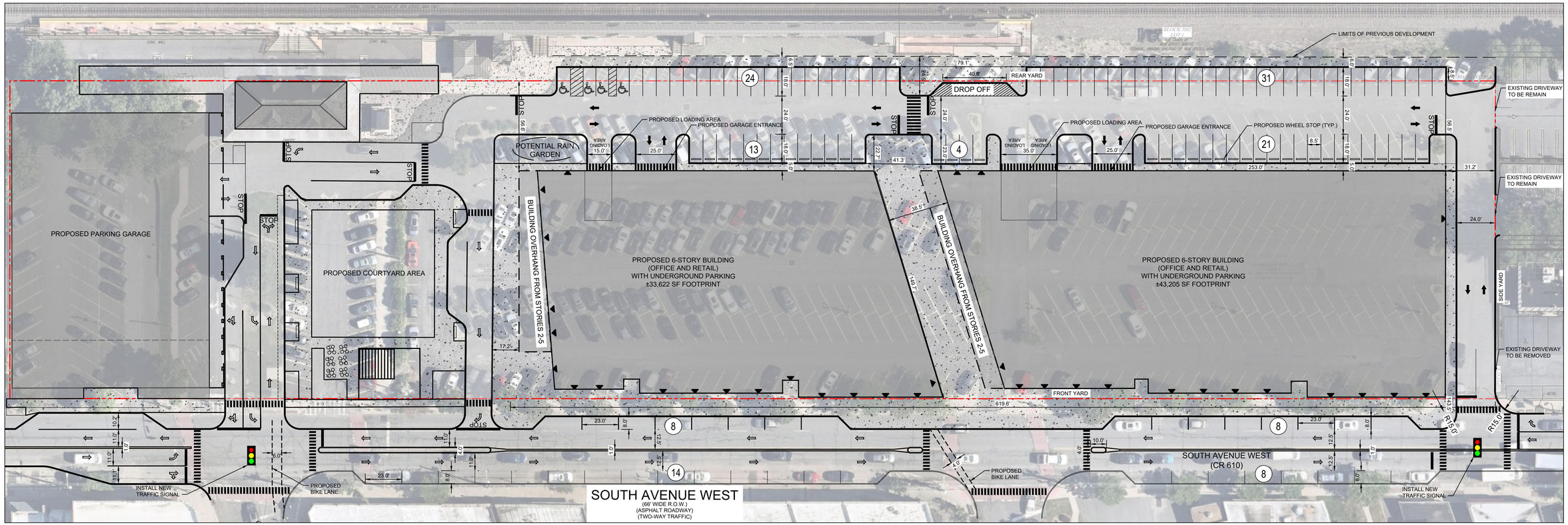

SOUTH AVENUE IMPROVEMENTS

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

LOT 5 - SOUTH AVENUE IMPROVEMENTS

ONE WESTFIELD PLACE

11/14/2022

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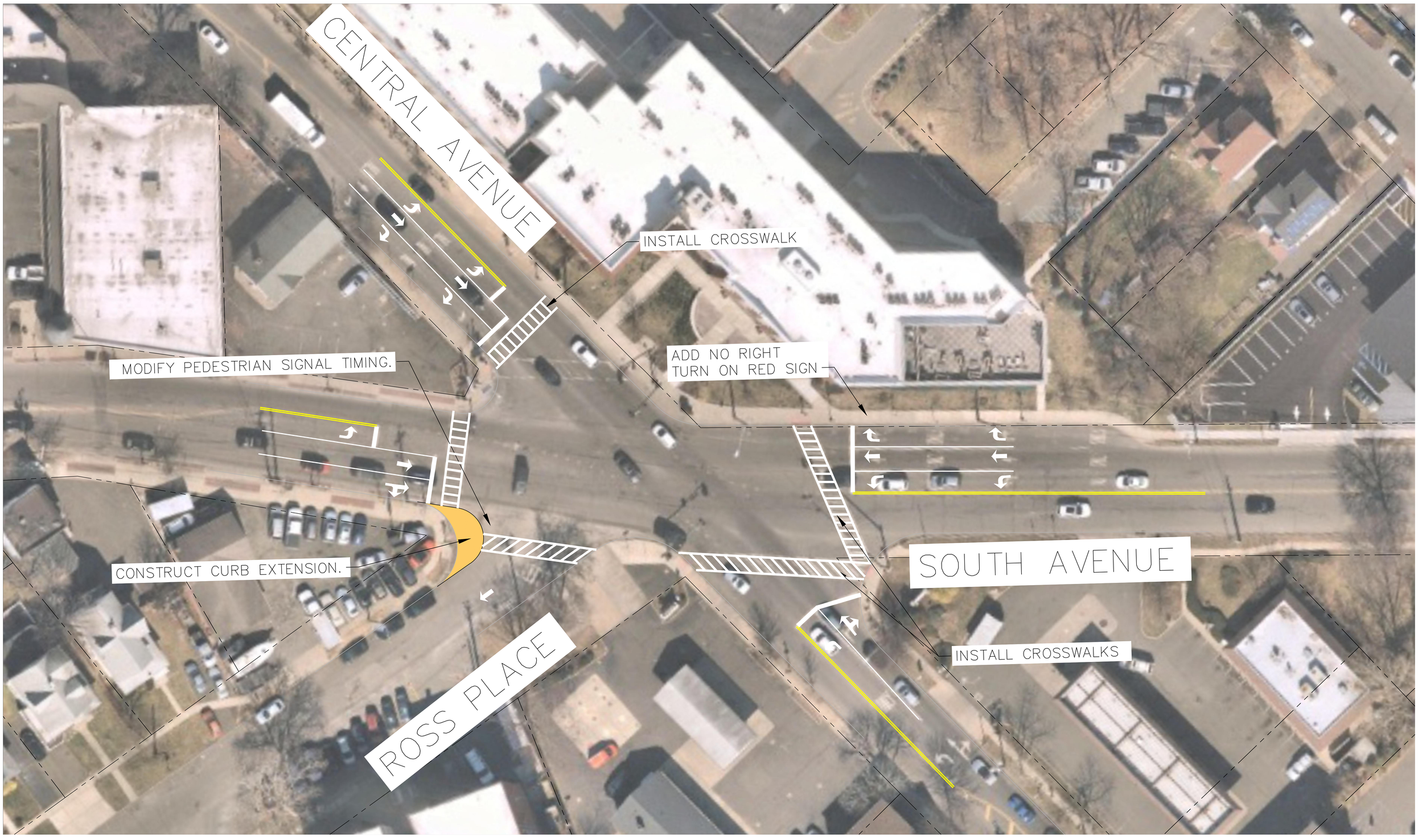

PROPOSED ROSS PLACE AND CENTRAL AVENUE AND SOUTH AVENUE

11/14/2022

ONE WESTFIELD PLACE

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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PROPOSED CLARK STREET AND NORTH AVENUE

ONE WESTFIELD PLACE

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

11/14/2022

STREETWORKS DEVELOPMENT

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PROPOSED ROUTE 28/E BROAD STREET AND NORTH AVENUE

11/14/2022

ONE WESTFIELD PLACE

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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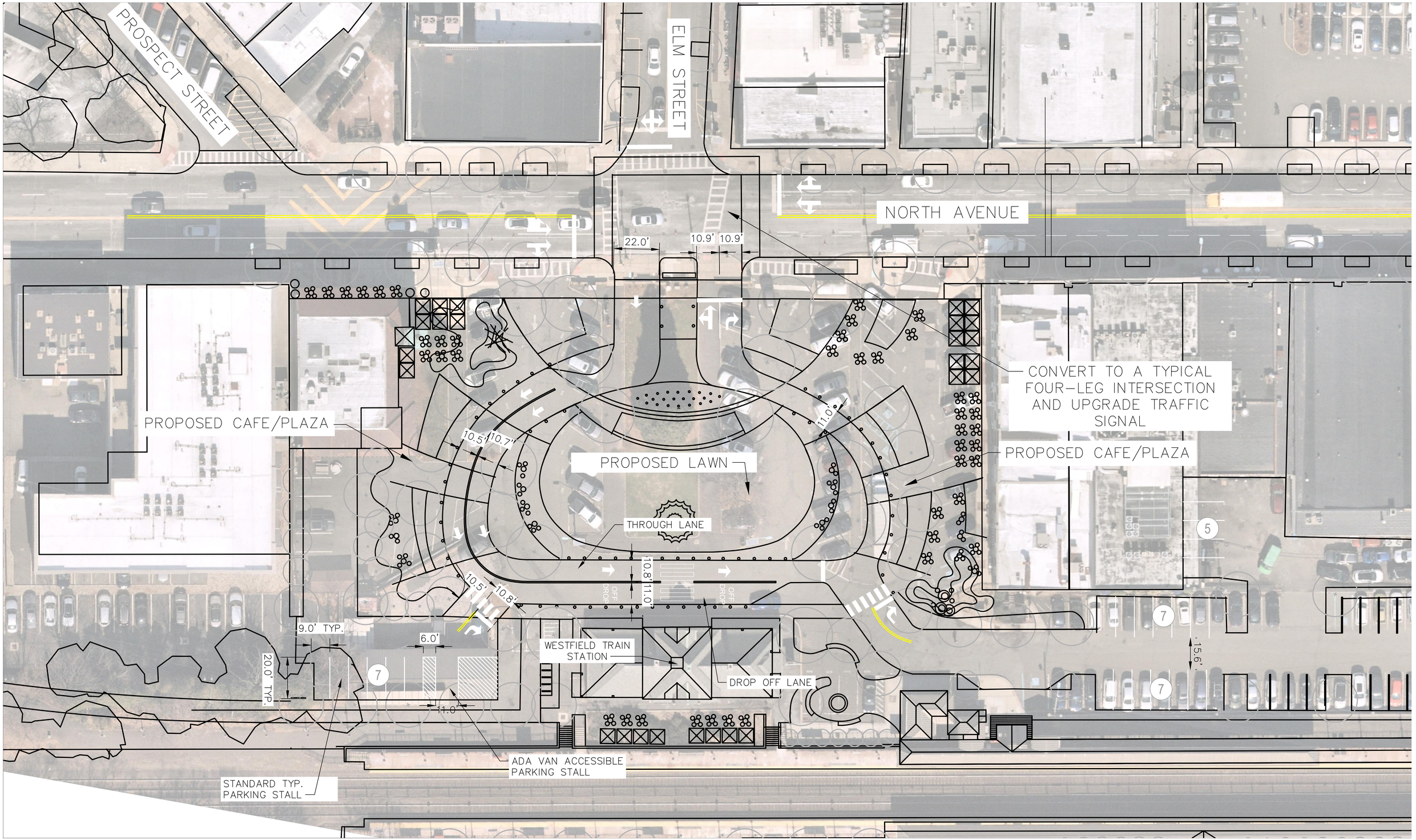

PROPOSED NORTH AVENUE AND ELM STREET PARKING LOT CHANGES

11/14/2022

ONE WESTFIELD PLACE

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

STREETWORKS DEVELOPMENT

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PROPOSED CENTRAL AVENUE AND NORTH AVENUE

ONE WESTFIELD PLACE

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

STREETWORKS DEVELOPMENT

Kimley»Horn

11/14/2022



PROPOSED PROSPECT STREET AND E BROAD STREET

ONE WESTFIELD PLACE

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

11/14/2022

STREETWORKS DEVELOPMENT

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APPENDIX I

Westfield Roundabout Memo

MEMORANDUM

To: Justin Poulos, Street-Works Development

From: Adam Gibson, PE

Kimley-Horn

Date: August 19th, 2021

Subject: Westfield Roundabout Analysis

The purpose of this memo is to document the analysis of the existing roundabout in Westfield, NJ at the intersection of South Avenue & NJ Route 28. The existing roundabout is currently experiencing operational issues and delay which will only be exacerbated with additional traffic generated from nearby development. Kimley-Horn was asked to analyze the roundabout and look for opportunities to improve operations at the intersection through modifying the geometry and/or lane assignments of the existing roundabout.

EXISTING CONDITIONS

The existing roundabout consists of three legs with multilane approaches and only a single circulating lane (see **Exhibit 1**)**.** The roundabout was re-striped within the past 5 years which modified lane assignments on the east leg and confusing lane usage in the circulating lane of the roundabout. While the roundabout is striped for a single circulating lane, it does have space available for multiple circulating lanes on each leg of the roundabout. There is an existing signal approximately 370 feet to the north of the roundabout and a railroad bridge whose piers fall within the existing roadway, dividing northbound lanes.

Two items noteworthy of the existing conditions are that the westbound approach traffic is split between thru and right turn movements and the eastbound to northbound movement is the highest movement of the intersection in the PM peak hour. The existing lane configuration does not balance these volumes on the approaches.

ANALYSIS METHODOLOGY

The 2030 future build traffic volumes used for the analysis were provided by WSP. Kimley-Horn analyzed the roundabout for multiple lane configurations based on the peak hour turning movement counts provided. SIDRA roundabout analysis software was used for the roundabout analysis to measure specific lane usage that is influenced by the signal 370 feet to the north of the roundabout.

Since the signal is close to the roundabout, it influences lane usage of the roundabout and can potentially have queues spill back into the roundabout impacting operations. Therefore, the signal was analyzed for operations and intersection turning movements at the signalized intersection were used to develop volume distributions for vehicles on the roundabout approaches.

The analysis looked to use the capacity within the existing roundabout by using multiple circulating lanes and also looked to balance lane usage on the approaches to determine if a solution exists to improve operations. The northbound roundabout exit poses an issue as it contains three lanes exiting the roundabout. There is little to no

time nor space for traffic to change lanes due to the railroad bridge piers and the close proximity of the downstream signalized intersection.

ROUNDABOUT ANALYSIS

The roundabout was analyzed for the following scenarios:

No-Build – this alternative analyzed the current configuration but with future volumes (see **Exhibit 1**). The results indicate LOS C in the AM peak hour and LOS F in the PM peak hour (see **Table 1** for results). As mentioned in the above, the lane assignments lead to unbalanced lane use. The westbound approach right-turn only lane serves roughly 1/8th of the traffic volumes. The outside eastbound approach lane serves 1/8th of the traffic, much like the westbound approach. When traffic volumes return to "normal", it is recommended to observe the operating conditions to verify the actual conditions versus the theoretical conditions.

Alternative 1 – This alternative maintained the same EB to NB configuration as in Alternative 1 but modified the westbound approach to a single right-turn lane and a thru/U-turn lane. This was done because the thru and right-turn volumes are almost evenly split in the PM peak hour. This alternative also looked at eliminating one of the exit lanes by shortening the right-turn lane at the downstream signalized intersection (see **Exhibit 2**). The results of this configuration are LOS B in the AM peak hour and LOS C in the PM peak hour (see **Table 2** for results).

Alternative 2 – This alternative evaluated adding an additional circulating lane on the eastbound approach to the northbound exit, which is the highest volume movement of the intersection. The westbound approach kept the existing lane configuration of an exclusive right and a combined thru/right/U-turn. This alternative also looked at eliminating one of the exit lanes by shortening the right turn lane at the downstream signalized intersection (see **Exhibit 3**). The results of this configuration are LOS B in the AM peak hour and LOS C in the PM peak hour (see **Table 3** for results). This alternative had the same LOS as Alternative 1 but performed slightly better with two seconds less average delay.

Alternative 3 – This alternative maintained the same EB to NB configuration as in Alternatives 1 and 2, maintains the existing three exit lanes for northbound Route 28, and adds a thru/right to the northbound signalized intersection approach. The westbound approach maintains the same geometry and lane assignments as existing conditions as well (**See Exhibit 4**). The results of this configuration are LOS B in the AM peak hour and LOS C in the PM peak hour (see **Table 4** for results).

Table 1 – No-Build Future (2030) Conditions Intersection Operations Analysis Results

Intersection Control	Peak Hour	Approach	APPROACH		Overall	
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Roundabout	AM	EB	40.8	E	22.2	C
		WB	9.8	A		
		SB	12.7	B		
	PM	EB	141.2	F	61.6	F
		WB	14.2	B		
		SB	21.4	C		

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Table 2 – Alternative 1: Future (2030) Conditions Intersection Operations Analysis Results

Intersection Control	Peak Hour	Approach	APPROACH		Overall	
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Roundabout	AM	EB	15.3	C	12.8	B
		WB	9.3	A		
		SB	12.6	B		
	PM	EB	20.8	C	22.3	C
		WB	25.5	D		
		SB	21.5	C		

Table 3 – Alternative 2: Future (2030) Conditions Intersection Operations Analysis Results

Intersection Control	Peak Hour	Approach	APPROACH		Overall	
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Roundabout	AM	EB	15.3	C	12.5	B
		WB	8.1	A		
		SB	12.5	B		
	PM	EB	20.6	C	20.1	C
		WB	18.3	C		
		SB	20.8	C		

Table 4 – Alternative 3: Future (2030) Conditions Intersection Operations Analysis Results

Intersection Control	Peak Hour	Approach	APPROACH		Overall	
			Average Delay (sec)	LOS	Delay (sec/veh)	LOS
Roundabout	AM	EB	17.6	C	13.6	B
		WB	9.3	A		
		SB	12.6	B		
	PM	EB	18.8	C	21.2	C
		WB	24.2	C		
		SB	21.2	C		

The supporting information for the roundabout analysis is provided in **Appendix A**.

SIGNAL ANALYSIS

The signal at N Avenue W / Route 28 was analyzed to determine if the queues on the northbound approach spilled back into the roundabout. Both the 50th percentile (average queue) and the 95th percentile queue in the peak hour were analyzed for the intersection. The results in **Table 5** show that the average queue length in the PM peak hour was 288 feet and the 95th percentile queue was over 500 feet long. These results show that queues will likely extend

back into the roundabout only during the peak times of the peak hour but on average will be short enough to avoid interfering with roundabout operations.

We examined a scenario that adjusted the signalized intersection approach geometry on the south leg to add an extra thru movement in order to minimize the 95th percentile queue length. The proposed geometry would keep the left and thru lanes as they are today but would change the right turn lane into a thru/right movement. **Table 5** shows the results which reduces the 95th percentile queue to 250 feet, thus avoiding the roundabout.

While this scenario reduces the queue length, it does have a fatal flaw that should eliminate it from consideration. The receiving lane on the north side of the intersection would have to be striped for two lanes and would require a lane drop in approximately 200 feet. The lane drop area also contains a left-turn lane which would add to vehicle conflicts and potentially confusing drivers. We feel the better balance between safety and operations would be to allow the queue to spill back into the roundabout at the peak operations during the peak hour.

Table 5 – Route 28/Broad Ave & North Ave Intersection NB Build Alternatives

Intersection Control	Peak Hour	Approach	Storage Length (ft)	50% Queue (ft)	95% Queue (ft)	Exceeds Capacity?
Existing NB Lane Configuration	AM	NBL	370	57	134	No
		NBT	370	132	211	No
		NBR	150	53	97	No
	PM	NBL	370	67	171	No
		NBT	370	288	499	Yes
		NBR	150	68	121	No
Alternate NB Lane Configuration	AM	NBL	370	57	134	No
		NBT/NBR	370	95	136	No
	PM	NBL	370	67	171	No
		NBT/NBR	370	173	135	No

The supporting information for the signal analysis is provided in **Appendix B**.

RECOMMENDATION

Kimley-Horn recommends **Alternative 2** (see **Exhibit 3**) for the following reasons:

- Balances lane usage and provides the best possible level of service with minimal changes to lane configurations.
- Contains the fewest conflict points than any of the proposed alternatives, thus is the potentially safest of the proposed alternatives.
- Eliminates the three-lane exit on the north side of the roundabout while maintaining the same approach geometry at the signal.
- Traffic is anticipated to spill back into the roundabout from the signal at North Avenue W & Route 28 during the peak of the PM peak hour. The roundabout is anticipated to operate freely for the remainder of the day, assuming the non-peak hours have fewer trips than the current data set.

EXHIBITS

Exhibit 1: Existing Conditions

Exhibit 2: Alternative 1

Exhibit 3: Alternative 2

Exhibit 4: Alternative 3

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Ph: 651-645-4197 www.kimley-horn.com

NJ 28 ROUNDABOUT - WESTFIELD, NEW JERSEY
EXHIBIT 1 - EXISTING CONDITIONS



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SCALE IN FEET

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NJ 28 ROUNDABOUT - WESTFIELD, NEW JERSEY
EXHIBIT 2 - ALTERNATIVE 1

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NJ 28 ROUNDABOUT - WESTFIELD, NEW JERSEY
EXHIBIT 3 - ALTERNATIVE 2

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NJ 28 ROUNDABOUT - WESTFIELD, NEW JERSEY
EXHIBIT 4 - ALTERNATIVE 3

APPENDIX

Appendix A: Roundabout Analysis Sidra Output

Appendix B: Signal Analysis Synchro Output

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Appendix A: Roundabout Analysis Sidra Output

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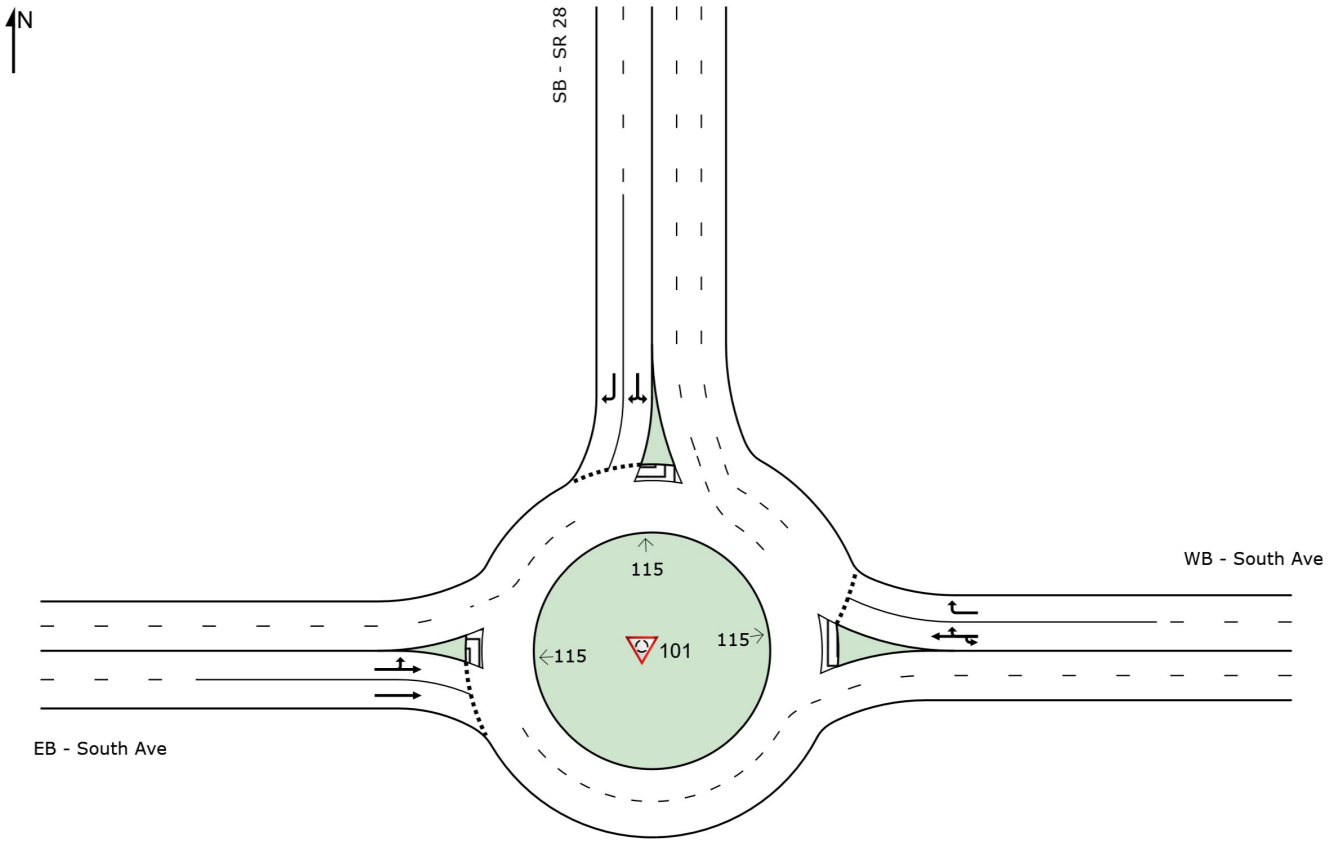
SITE LAYOUT

Site: 101 [Westfield RAB_Existing_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

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



LANE SUMMARY

Site: 101 [Westfield RAB_Existing_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	458	4.5	877	0.522	100	11.1	LOS B	3.8	97.9	Full	625	0.0	0.0
Lane 2	178	5.0	873	0.204	39[5]	6.2	LOS A	0.8	21.2	Full	625	0.0	0.0
Approach	636	4.7		0.522		9.8	LOS A	3.8	97.9				
North: SB - SR 28													
Lane 1[d]	673	5.0	980	0.686	100	14.7	LOS B	8.7	226.7	Full	375	0.0	0.0
Lane 2	499	5.0	980	0.509	74[5]	10.0	LOS A	3.4	89.5	Full	375	0.0	0.0
Approach	1172	5.0		0.686		12.7	LOS B	8.7	226.7				
West: EB - South Ave													
Lane 1[d]	815	5.0	830	0.982	100	49.1	LOS E	29.9	777.3	Full	375	0.0	34.6
Lane 2	199	5.0	830	0.239	24[5]	6.9	LOS A	0.9	23.9	Full	375	0.0	0.0
Approach	1014	5.0		0.982		40.8	LOS E	29.9	777.3				
Intersection	2822	4.9		0.982		22.2	LOS C	29.9	777.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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LANE SUMMARY

Site: 101 [Westfield RAB_Existing_PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	488	4.8	760	0.642	100	16.0	LOS C	5.6	145.6	Full	625	0.0	0.0
Lane 2	376	5.0	759	0.495	77[5]	11.8	LOS B	3.1	79.6	Full	625	0.0	0.0
Approach	864	4.9		0.642		14.2	LOS B	5.6	145.6				
North: SB - SR 28													
Lane 1	542	5.0	872	0.622	73[5]	13.8	LOS B	5.7	148.9	Full	375	0.0	0.0
Lane 2[d]	742	5.0	872	0.851	100	26.9	LOS D	16.5	427.8	Full	375	0.0	9.0
Approach	1284	5.0		0.851		21.4	LOS C	16.5	427.8				
West: EB - South Ave													
Lane 1[d]	1059	5.0	825	1.284	100	154.5	LOS F	94.9	2468.1	Full	375	0.0	100.0
Lane 2	103	5.0	825	0.125	10[5]	5.6	LOS A	0.4	11.6	Full	375	0.0	0.0
Approach	1162	5.0		1.284		141.2	LOS F	94.9	2468.1				
Intersection	3310	5.0		1.284		61.6	LOS F	94.9	2468.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

SITE LAYOUT

Site: 101 [Westfield RAB_Proposed_01_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

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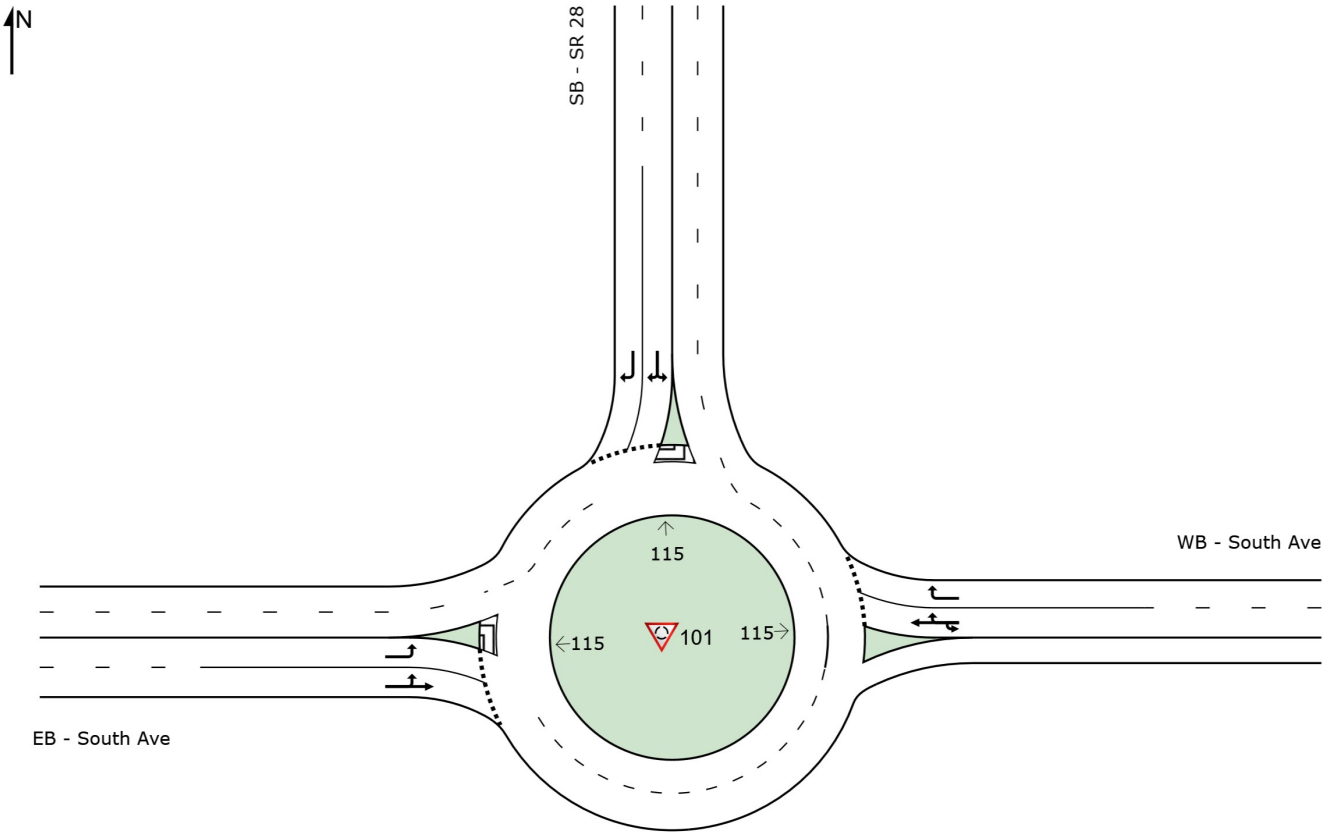

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LANE SUMMARY

Site: 101 [Westfield RAB_Proposed_01_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	468	4.5	927	0.505	100	10.3	LOS B	3.3	85.0	Full	625	0.0	0.0
Lane 2	168	5.0	850	0.197	39[5]	6.3	LOS A	0.7	18.7	Full	625	0.0	0.0
Approach	636	4.7		0.505		9.3	LOS A	3.3	85.0				
North: SB - SR 28													
Lane 1[d]	673	5.0	984	0.683	100	14.6	LOS B	8.6	222.5	Full	375	0.0	0.0
Lane 2	499	5.0	984	0.507	74[5]	9.9	LOS A	3.4	87.7	Full	375	0.0	0.0
Approach	1172	5.0		0.683		12.6	LOS B	8.6	222.5				
West: EB - South Ave													
Lane 1	415	5.0	832	0.499	69[5]	11.1	LOS B	3.2	82.4	Full	375	0.0	0.0
Lane 2[d]	599	5.0	832	0.721	100	18.3	LOS C	8.2	213.9	Full	375	0.0	0.0
Approach	1014	5.0		0.721		15.3	LOS C	8.2	213.9				
Intersection	2822	4.9		0.721		12.8	LOS B	8.6	222.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Project: K:\SAC_TPTO\Atlantic Projects\Westfield Roundabout Analysis\03 Analysis Files\Sidra\Westfield Roundabout.sip9

LANE SUMMARY

Site: 101 [Westfield RAB_Proposed_01_PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	597	4.9	701	0.852	100	31.6	LOS D	11.6	300.1	Full	625	0.0	0.0
Lane 2	267	5.0	630	0.423	50[5]	12.0	LOS B	2.1	53.5	Full	625	0.0	0.0
Approach	864	4.9		0.852		25.5	LOS D	11.6	300.1				
North: SB - SR 28													
Lane 1[d]	728	5.0	860	0.847	100	26.7	LOS D	16.0	417.1	Full	375	0.0	8.2
Lane 2	556	5.0	860	0.647	76[5]	14.8	LOS B	6.4	166.7	Full	375	0.0	0.0
Approach	1284	5.0		0.847		21.5	LOS C	16.0	417.1				
West: EB - South Ave													
Lane 1[d]	657	5.0	803	0.817	100	25.2	LOS D	12.6	326.6	Full	375	0.0	1.1
Lane 2	505	5.0	803	0.629	77[5]	14.9	LOS B	5.6	145.0	Full	375	0.0	0.0
Approach	1162	5.0		0.817		20.8	LOS C	12.6	326.6				
Intersection	3310	5.0		0.852		22.3	LOS C	16.0	417.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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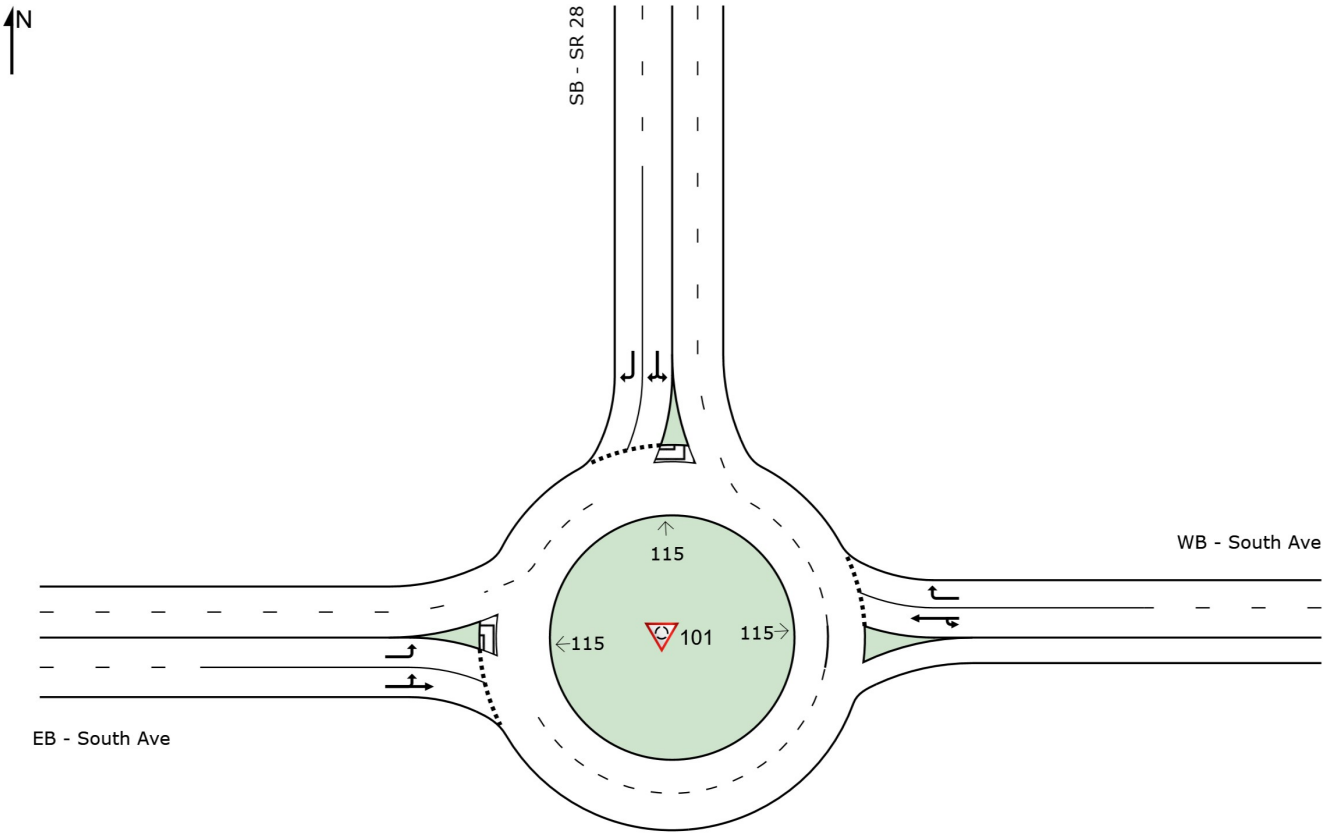
SITE LAYOUT

Site: 101 [Westfield RAB_Proposed_02_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

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



LANE SUMMARY

Site: 101 [Westfield RAB_Proposed_02_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	368	4.4	928	0.396	100	8.4	LOS A	1.8	46.2	Full	625	0.0	0.0
Lane 2	268	5.0	850	0.315	100	7.8	LOS A	1.3	32.6	Full	625	0.0	0.0
Approach	636	4.7		0.396		8.1	LOS A	1.8	46.2				
North: SB - SR 28													
Lane 1[d]	673	5.0	988	0.681	100	14.4	LOS B	8.4	218.9	Full	375	0.0	0.0
Lane 2	499	5.0	988	0.505	74[5]	9.8	LOS A	3.3	86.1	Full	375	0.0	0.0
Approach	1172	5.0		0.681		12.5	LOS B	8.4	218.9				
West: EB - South Ave													
Lane 1	415	5.0	833	0.498	69[5]	11.1	LOS B	3.2	82.1	Full	375	0.0	0.0
Lane 2[d]	599	5.0	833	0.720	100	18.2	LOS C	8.2	213.0	Full	375	0.0	0.0
Approach	1014	5.0		0.720		15.3	LOS C	8.2	213.0				
Intersection	2822	4.9		0.720		12.5	LOS B	8.4	218.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Project: K:\SAC_TPTO\Atlantic Projects\Westfield Roundabout Analysis\03 Analysis Files\Sidra\Westfield Roundabout.sip9

LANE SUMMARY

Site: 101 [Westfield RAB_Proposed_02_PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	488	4.8	701	0.696	100	19.5	LOS C	6.0	154.7	Full	625	0.0	0.0
Lane 2	376	5.0	631	0.596	100	16.8	LOS C	4.0	103.8	Full	625	0.0	0.0
Approach	864	4.9		0.696		18.3	LOS C	6.0	154.7				
North: SB - SR 28													
Lane 1[d]	728	5.0	868	0.838	100	25.7	LOS D	15.4	399.8	Full	375	0.0	6.9
Lane 2	556	5.0	868	0.640	76[5]	14.4	LOS B	6.2	161.2	Full	375	0.0	0.0
Approach	1284	5.0		0.838		20.8	LOS C	15.4	399.8				
West: EB - South Ave													
Lane 1[d]	657	5.0	805	0.815	100	25.1	LOS D	12.5	324.0	Full	375	0.0	0.8
Lane 2	505	5.0	805	0.628	77[5]	14.9	LOS B	5.5	144.1	Full	375	0.0	0.0
Approach	1162	5.0		0.815		20.6	LOS C	12.5	324.0				
Intersection	3310	5.0		0.838		20.1	LOS C	15.4	399.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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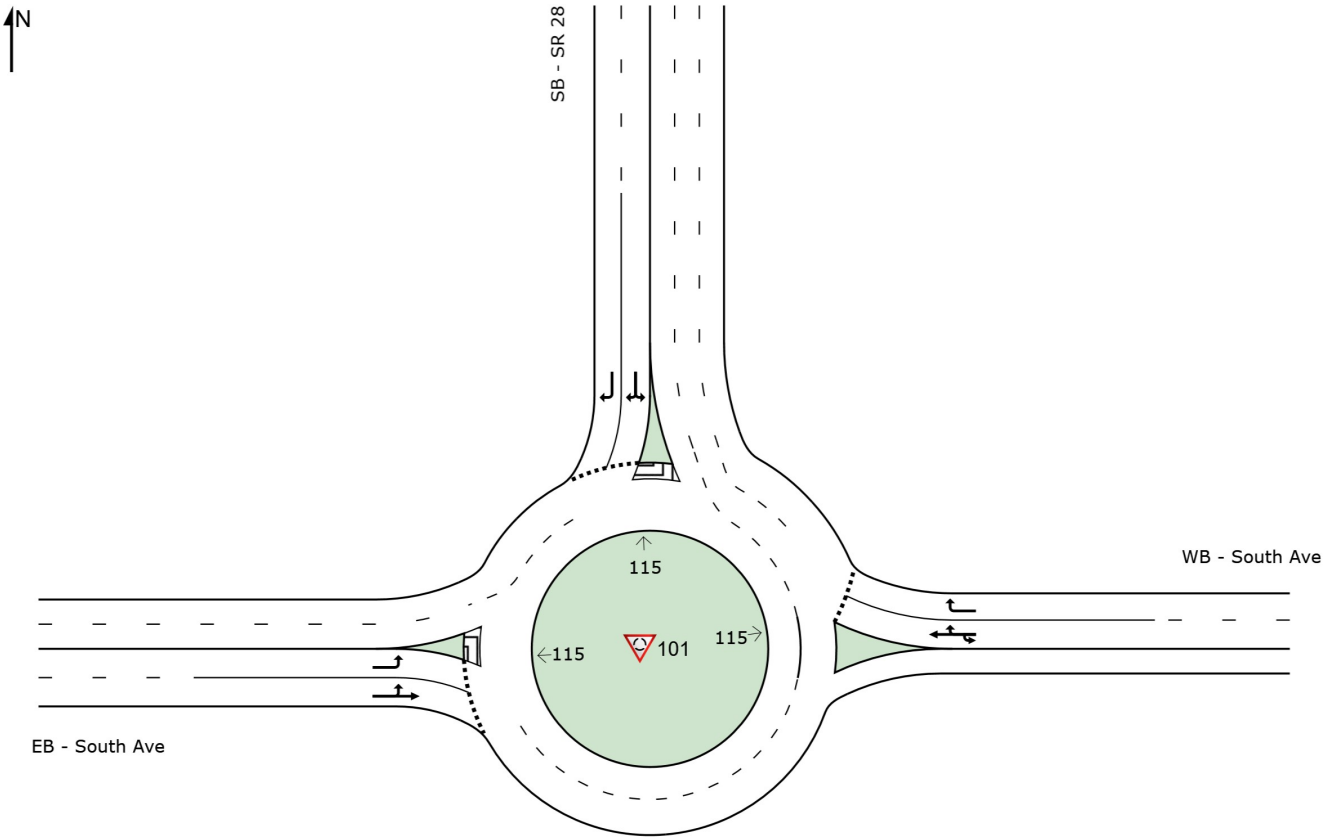
SITE LAYOUT

Site: 101 [Westfield RAB_Proposed_03_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

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



LANE SUMMARY

Site: 101 [Westfield RAB_Proposed_03_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	468	4.5	927	0.505	100	10.3	LOS B	3.3	85.1	Full	625	0.0	0.0
Lane 2	168	5.0	850	0.197	39[5]	6.3	LOS A	0.7	18.7	Full	625	0.0	0.0
Approach	636	4.7		0.505		9.3	LOS A	3.3	85.1				
North: SB - SR 28													
Lane 1[d]	673	5.0	984	0.683	100	14.6	LOS B	8.6	222.6	Full	375	0.0	0.0
Lane 2	499	5.0	984	0.507	74[5]	9.9	LOS A	3.4	87.7	Full	375	0.0	0.0
Approach	1172	5.0		0.683		12.6	LOS B	8.6	222.6				
West: EB - South Ave													
Lane 1	363	5.0	832	0.437	56[5]	9.8	LOS A	2.4	61.3	Full	375	0.0	0.0
Lane 2[d]	651	5.0	832	0.783	100	22.0	LOS C	10.9	282.1	Full	375	0.0	0.0
Approach	1014	5.0		0.783		17.6	LOS C	10.9	282.1				
Intersection	2822	4.9		0.783		13.6	LOS B	10.9	282.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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LANE SUMMARY

Site: 101 [Westfield RAB_Proposed_03_PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: WB - South Ave													
Lane 1[d]	597	4.9	711	0.839	100	29.9	LOS D	11.0	284.6	Full	625	0.0	0.0
Lane 2	267	5.0	641	0.417	50[5]	11.7	LOS B	2.0	52.0	Full	625	0.0	0.0
Approach	864	4.9		0.839		24.2	LOS C	11.0	284.6				
North: SB - SR 28													
Lane 1[d]	728	5.0	864	0.843	100	26.3	LOS D	15.8	411.7	Full	375	0.0	7.8
Lane 2	556	5.0	864	0.644	76[5]	14.6	LOS B	6.4	165.4	Full	375	0.0	0.0
Approach	1284	5.0		0.843		21.2	LOS C	15.8	411.7				
West: EB - South Ave													
Lane 1	561	5.0	807	0.695	93[5]	17.5	LOS C	7.4	192.2	Full	375	0.0	0.0
Lane 2[d]	601	5.0	807	0.744	100	20.0	LOS C	9.1	236.8	Full	375	0.0	0.0
Approach	1162	5.0		0.744		18.8	LOS C	9.1	236.8				
Intersection	3310	5.0		0.843		21.2	LOS C	15.8	411.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

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Appendix B: Signal Analysis Synchro Output

DRAFT

Queues
9: Route 28/Broad Street & North Avenue

08/16/2021



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	217	861	777	209	402	180	743
v/c Ratio	0.62	0.95	2.74dl	0.76	0.54	0.28	0.83
Control Delay	19.6	40.1	63.2	35.3	20.6	17.0	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	40.1	63.2	35.3	20.6	17.0	32.9
Queue Length 50th (ft)	49	322	~199	57	132	53	149
Queue Length 95th (ft)	#94	#573	#311	#134	211	97	#233
Internal Link Dist (ft)		329	324		418		350
Turn Bay Length (ft)	185						
Base Capacity (vph)	348	904	768	274	764	650	920
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	0.62	0.95	1.01	0.76	0.53	0.28	0.81

Intersection Summary

~ 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.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM 6th Signalized Intersection Summary
9: Route 28/Broad Street & North Avenue

08/16/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	445	347	297	408	10	192	370	166	32	523	129
Future Volume (veh/h)	200	445	347	297	408	10	192	370	166	32	523	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	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067
Adj Flow Rate, veh/h	217	484	0	323	443	11	209	402	180	35	568	140
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	955		374	636	16	278	728	617	80	685	166
Arrive On Green	0.07	0.46	0.00	0.35	0.35	0.35	0.07	0.35	0.35	0.24	0.24	0.24
Sat Flow, veh/h	1969	2067	0	780	1828	45	1969	2067	1752	100	2879	697
Grp Volume(v), veh/h	217	484	0	323	0	454	209	402	180	390	0	353
Grp Sat Flow(s),veh/h/ln	1969	2067	0	780	0	1873	1969	2067	1752	1920	0	1756
Q Serve(g_s), s	4.8	11.5	0.0	20.8	0.0	14.6	5.0	10.9	5.2	6.9	0.0	13.4
Cycle Q Clear(g_c), s	4.8	11.5	0.0	24.3	0.0	14.6	5.0	10.9	5.2	13.4	0.0	13.4
Prop In Lane	1.00		0.00	1.00		0.02	1.00		1.00	0.09		0.40
Lane Grp Cap(c), veh/h	374	955		374	0	651	278	728	617	513	0	418
V/C Ratio(X)	0.58	0.51		0.86	0.00	0.70	0.75	0.55	0.29	0.76	0.00	0.84
Avail Cap(c_a), veh/h	374	955		374	0	651	278	768	651	548	0	451
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	13.2	0.0	26.3	0.0	19.7	20.5	18.2	16.4	25.2	0.0	25.4
Incr Delay (d2), s/veh	2.3	1.9	0.0	22.3	0.0	6.1	11.0	0.8	0.3	5.8	0.0	13.0
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	3.7	8.9	0.0	12.3	0.0	11.5	5.8	8.8	3.7	11.0	0.0	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	15.1	0.0	48.6	0.0	25.7	31.5	19.0	16.6	31.0	0.0	38.4
LnGrp LOS	B	B		D	A	C	C	B	B	C	A	D
Approach Vol, veh/h		701	A		777			791			743	
Approach Delay, s/veh		15.7			35.2			21.8			34.6	
Approach LOS		B			D			C			C	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	8.0	31.3		30.7		39.3	8.0	22.7				
Change Period (Y+Rc), s	3.0	7.0		6.0		7.0	3.0	6.0				
Max Green Setting (Gmax), s	5.0	23.0		26.0		31.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	6.8	26.3		12.9		13.5	7.0	15.4				
Green Ext Time (p_c), s	0.0	0.0		2.7		2.8	0.0	1.2				

Intersection Summary		
HCM 6th Ctrl Delay		27.0
HCM 6th LOS		C

Notes

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

Queues
9: Route 28/Broad Street & North Avenue

08/16/2021



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	162	859	1093	241	714	225	756
v/c Ratio	0.59	0.95	2.53dl	0.88	0.93	0.35	1.30
Control Delay	19.3	37.5	258.3	50.9	43.5	17.8	174.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	37.5	258.3	50.9	43.5	17.8	174.1
Queue Length 50th (ft)	36	294	~371	67	288	68	~219
Queue Length 95th (ft)	#69	#546	#494	#171	#499	121	#326
Internal Link Dist (ft)		319	324		418		350
Turn Bay Length (ft)	185						
Base Capacity (vph)	275	907	725	273	764	650	580
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	0.59	0.95	1.51	0.88	0.93	0.35	1.30

Intersection Summary

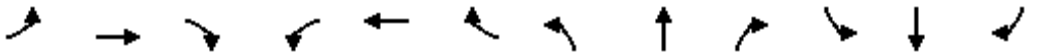
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM 6th Signalized Intersection Summary
9: Route 28/Broad Street & North Avenue

08/16/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	316	475	275	720	10	222	657	207	45	511	140
Future Volume (veh/h)	149	316	475	275	720	10	222	657	207	45	511	140
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	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067
Adj Flow Rate, veh/h	162	343	0	299	783	11	241	714	225	49	555	152
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	915		347	760	11	281	768	651	66	494	180
Arrive On Green	0.07	0.44	0.00	0.33	0.33	0.33	0.07	0.37	0.37	0.26	0.26	0.26
Sat Flow, veh/h	1969	2067	0	801	2313	33	1969	2067	1752	32	1920	698
Grp Volume(v), veh/h	162	343	0	475	0	618	241	714	225	374	0	382
Grp Sat Flow(s),veh/h/ln	1969	2067	0	1272	0	1875	1969	2067	1752	894	0	1756
Q Serve(g_s), s	3.6	7.8	0.0	23.0	0.0	23.0	5.0	23.2	6.5	2.8	0.0	14.5
Cycle Q Clear(g_c), s	3.6	7.8	0.0	23.0	0.0	23.0	5.0	23.2	6.5	18.0	0.0	14.5
Prop In Lane	1.00		0.00	0.63		0.02	1.00		1.00	0.13		0.40
Lane Grp Cap(c), veh/h	243	915		502	0	616	281	768	651	288	0	451
V/C Ratio(X)	0.67	0.37		0.95	0.00	1.00	0.86	0.93	0.35	1.30	0.00	0.85
Avail Cap(c_a), veh/h	243	915		502	0	616	281	768	651	288	0	451
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	13.0	0.0	24.9	0.0	23.5	21.6	21.1	15.9	25.9	0.0	24.7
Incr Delay (d2), s/veh	6.7	1.2	0.0	28.8	0.0	37.1	22.3	17.7	0.3	157.3	0.0	13.9
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	3.3	6.2	0.0	17.5	0.0	22.5	7.9	20.4	4.5	27.6	0.0	12.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	14.2	0.0	53.7	0.0	60.6	43.9	38.8	16.2	183.1	0.0	38.6
LnGrp LOS	C	B		D	A	F	D	D	B	F	A	D
Approach Vol, veh/h		505	A		1093			1180			756	
Approach Delay, s/veh		17.2			57.6			35.6			110.1	
Approach LOS		B			E			D			F	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	8.0	30.0		32.0		38.0	8.0	24.0				
Change Period (Y+Rc), s	3.0	7.0		6.0		7.0	3.0	6.0				
Max Green Setting (Gmax), s	5.0	23.0		26.0		31.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	5.6	25.0		25.2		9.8	7.0	20.0				
Green Ext Time (p_c), s	0.0	0.0		0.5		1.9	0.0	0.0				

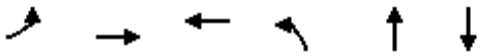
Intersection Summary	
HCM 6th Ctrl Delay	55.7
HCM 6th LOS	E

Notes

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

Queues
9: Route 28/Broad Street & North Avenue

08/16/2021



Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	162	859	1093	241	939	756
v/c Ratio	0.59	0.95	2.53dl	0.88	0.67	0.94
Control Delay	19.3	37.5	258.3	50.9	21.3	46.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	37.5	258.3	50.9	21.3	46.9
Queue Length 50th (ft)	36	294	~371	67	173	158
Queue Length 95th (ft)	#69	#546	#494	#171	235	#270
Internal Link Dist (ft)		319	324		418	350
Turn Bay Length (ft)	185					
Base Capacity (vph)	275	907	725	273	1400	801
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	0.59	0.95	1.51	0.88	0.67	0.94

Intersection Summary

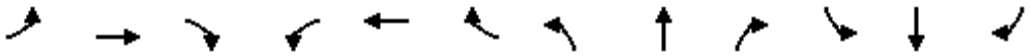
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM 6th Signalized Intersection Summary
9: Route 28/Broad Street & North Avenue

08/16/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	316	475	275	720	10	222	657	207	45	511	140
Future Volume (veh/h)	149	316	475	275	720	10	222	657	207	45	511	140
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	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067
Adj Flow Rate, veh/h	162	343	0	299	783	11	241	714	225	49	555	152
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	247	926		351	771	11	278	1077	339	91	650	178
Arrive On Green	0.07	0.45	0.00	0.33	0.33	0.33	0.07	0.37	0.37	0.25	0.25	0.25
Sat Flow, veh/h	1969	2067	0	802	2312	33	1969	2939	926	131	2578	706
Grp Volume(v), veh/h	162	343	0	474	0	619	241	477	462	378	0	378
Grp Sat Flow(s),veh/h/ln	1969	2067	0	1272	0	1875	1969	1964	1901	1662	0	1754
Q Serve(g_s), s	3.6	7.7	0.0	23.3	0.0	23.0	5.0	14.2	14.2	9.0	0.0	14.4
Cycle Q Clear(g_c), s	3.6	7.7	0.0	23.3	0.0	23.0	5.0	14.2	14.2	15.3	0.0	14.4
Prop In Lane	1.00		0.00	0.63		0.02	1.00		0.49	0.13		0.40
Lane Grp Cap(c), veh/h	247	926		508	0	625	278	720	697	477	0	442
V/C Ratio(X)	0.66	0.37		0.93	0.00	0.99	0.87	0.66	0.66	0.79	0.00	0.85
Avail Cap(c_a), veh/h	247	926		508	0	625	278	729	706	485	0	451
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.8	12.8	0.0	24.6	0.0	23.2	21.8	18.6	18.6	24.8	0.0	24.9
Incr Delay (d2), s/veh	6.1	1.1	0.0	26.5	0.0	33.5	23.6	2.2	2.3	8.7	0.0	14.5
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	3.3	6.2	0.0	17.1	0.0	21.7	8.0	10.7	10.5	11.2	0.0	12.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.0	13.9	0.0	51.0	0.0	56.7	45.5	20.8	20.8	33.5	0.0	39.4
LnGrp LOS	C	B		D	A	E	D	C	C	C	A	D
Approach Vol, veh/h		505	A		1093			1180			756	
Approach Delay, s/veh		16.8			54.2			25.8			36.4	
Approach LOS		B			D			C			D	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	8.0	30.3		31.7		38.3	8.0	23.7				
Change Period (Y+Rc), s	3.0	7.0		6.0		7.0	3.0	6.0				
Max Green Setting (Gmax), s	5.0	23.0		26.0		31.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	5.6	25.3		16.2		9.7	7.0	17.3				
Green Ext Time (p_c), s	0.0	0.0		4.4		1.9	0.0	0.4				

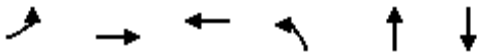
Intersection Summary			
HCM 6th Ctrl Delay		35.6	
HCM 6th LOS		D	

Notes

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

Queues
9: Route 28/Broad Street & North Avenue

08/16/2021



Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	217	861	777	209	582	743
v/c Ratio	0.63	0.95	2.74dl	0.76	0.43	0.84
Control Delay	19.7	40.4	63.2	35.5	17.8	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	40.4	63.2	35.5	17.8	34.1
Queue Length 50th (ft)	49	322	~199	57	95	150
Queue Length 95th (ft)	#95	#573	#310	#134	136	#238
Internal Link Dist (ft)		329	324		418	350
Turn Bay Length (ft)	185					
Base Capacity (vph)	346	902	768	274	1386	901
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	0.63	0.95	1.01	0.76	0.42	0.82

Intersection Summary

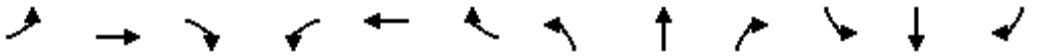
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM 6th Signalized Intersection Summary
9: Route 28/Broad Street & North Avenue

08/16/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	445	347	297	408	10	192	370	166	32	523	129
Future Volume (veh/h)	200	445	347	297	408	10	192	370	166	32	523	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	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067
Adj Flow Rate, veh/h	217	484	0	323	443	11	209	402	180	35	568	140
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	955		374	636	16	278	933	413	80	685	166
Arrive On Green	0.07	0.46	0.00	0.35	0.35	0.35	0.07	0.35	0.35	0.24	0.24	0.24
Sat Flow, veh/h	1969	2067	0	780	1828	45	1969	2649	1172	100	2879	697
Grp Volume(v), veh/h	217	484	0	323	0	454	209	297	285	390	0	353
Grp Sat Flow(s),veh/h/ln	1969	2067	0	780	0	1873	1969	1964	1856	1920	0	1756
Q Serve(g_s), s	4.8	11.5	0.0	20.8	0.0	14.6	5.0	8.1	8.2	6.9	0.0	13.4
Cycle Q Clear(g_c), s	4.8	11.5	0.0	24.3	0.0	14.6	5.0	8.1	8.2	13.4	0.0	13.4
Prop In Lane	1.00		0.00	1.00		0.02	1.00		0.63	0.09		0.40
Lane Grp Cap(c), veh/h	374	955		374	0	651	278	692	654	513	0	418
V/C Ratio(X)	0.58	0.51		0.86	0.00	0.70	0.75	0.43	0.44	0.76	0.00	0.84
Avail Cap(c_a), veh/h	374	955		374	0	651	278	729	690	548	0	451
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	13.2	0.0	26.3	0.0	19.7	20.5	17.3	17.4	25.2	0.0	25.4
Incr Delay (d2), s/veh	2.3	1.9	0.0	22.3	0.0	6.1	11.0	0.4	0.5	5.8	0.0	13.0
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	3.7	8.9	0.0	12.3	0.0	11.5	5.8	6.4	6.2	11.0	0.0	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	15.1	0.0	48.6	0.0	25.7	31.5	17.7	17.8	31.0	0.0	38.4
LnGrp LOS	B	B		D	A	C	C	B	B	C	A	D
Approach Vol, veh/h		701	A		777			791			743	
Approach Delay, s/veh		15.7			35.2			21.4			34.6	
Approach LOS		B			D			C			C	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	8.0	31.3		30.7		39.3	8.0	22.7				
Change Period (Y+Rc), s	3.0	7.0		6.0		7.0	3.0	6.0				
Max Green Setting (Gmax), s	5.0	23.0		26.0		31.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	6.8	26.3		10.2		13.5	7.0	15.4				
Green Ext Time (p_c), s	0.0	0.0		3.4		2.8	0.0	1.2				

Intersection Summary			
HCM 6th Ctrl Delay		26.9	
HCM 6th LOS		C	

Notes

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

Kimley»Horn

DRAFT

APPENDIX J

Signal Warrant Analysis

Westfield TOD

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: South Avenue at Eastern Site Driveway

COUNT DATE: SLD & Saturday Count Data

INTERSECTION CONDITION: Future 2027 Full Build

MAJOR STREET: South Avenue

OF APPROACH LANES: 1

MINOR STREET: Eastern Site Driveway

OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	MAJOR ST	HIGHEST HOUR MINOR ST	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
									CONDITION A			CONDITION B				
	BOTH APPROACHES	HIGHEST APPROACH	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES →			500	150		750	75		400	120		600	60			
06:00 AM TO 07:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
07:00 AM TO 08:00 AM	1,389	44	Y			Y			Y			Y				
08:00 AM TO 09:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
09:00 AM TO 10:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
10:00 AM TO 11:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
11:00 AM TO 12:00 PM	#VALUE!	93	#VALUE!		######	#VALUE!	Y	######	#VALUE!		######	#VALUE!	Y	######	**#VALUE!**	**#VALUE!**
12:00 PM TO 01:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
01:00 PM TO 02:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
02:00 PM TO 03:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
03:00 PM TO 04:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
04:00 PM TO 05:00 PM	1,354	118	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
06:00 PM TO 07:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
07:00 PM TO 08:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
08:00 PM TO 09:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
09:00 PM TO 10:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
	#VALUE!	255			######			######			######			######	**#VALUE!**	**#VALUE!**
			8 HOURS NEEDED **#VALUE!**			8 HOURS NEEDED **#VALUE!**			8 HOURS OF BOTH COND. A AND COND. B NEEDED **#VALUE!**						4 HRS NEEDED **#VALUE!**	1 HR NEEDED **#VALUE!**

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

Westfield TOD

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: North Avenue at Clark Street

COUNT DATE: Weekday and Saturday Count Data

INTERSECTION CONDITION: Future 2027 Full Build

MAJOR STREET: North Avenue — # OF APPROACH LANES: 1

MINOR STREET: Clark Street — # OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

			MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
											CONDITION A			CONDITION B				
					MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES				→	500	150		750	75		400	120		600	60			
06:00 AM	TO	07:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
07:00 AM	TO	08:00 AM	1,550	213	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:00 AM	TO	09:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
09:00 AM	TO	10:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
10:00 AM	TO	11:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
11:00 AM	TO	12:00 PM	#VALUE!	196	#VALUE!	Y	######	#VALUE!	Y	######	#VALUE!	Y	######	#VALUE!	Y	######	**#VALUE!**	**#VALUE!**
12:00 PM	TO	01:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
01:00 PM	TO	02:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
02:00 PM	TO	03:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
03:00 PM	TO	04:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
04:00 PM	TO	05:00 PM	1,584	268	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
06:00 PM	TO	07:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
07:00 PM	TO	08:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
08:00 PM	TO	09:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
09:00 PM	TO	10:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	**#VALUE!**	**#VALUE!**
			#VALUE!	677			######			######			######			######	**#VALUE!**	**#VALUE!**
					8 HOURS NEEDED **#VALUE!**			8 HOURS NEEDED **#VALUE!**			8 HOURS OF BOTH COND. A AND COND. B NEEDED **#VALUE!**						4 HRS NEEDED **#VALUE!**	1 HR NEEDED **#VALUE!**

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

Westfield TOD

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Broad Street at Prospect Street

COUNT DATE: StreetLight data & Saturday Count Data

INTERSECTION CONDITION: Future 2027 Full Build

MAJOR STREET: Broad Street — # OF APPROACH LANES: 1

MINOR STREET: Prospect Street — # OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

			MAJOR ST	HIGHEST HOUR MINOR ST	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
											CONDITION A			CONDITION B				
			BOTH APPROACHES	HIGHEST APPROACH	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES				→	500	150		750	75		400	120		600	60			
06:00 AM	TO	07:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
07:00 AM	TO	08:00 AM	1,220	139	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
08:00 AM	TO	09:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
09:00 AM	TO	10:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
10:00 AM	TO	11:00 AM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
11:00 AM	TO	12:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
12:00 PM	TO	01:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
01:00 PM	TO	02:00 PM	1,039	172	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
02:00 PM	TO	03:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
03:00 PM	TO	04:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
04:00 PM	TO	05:00 PM	1,364	150	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
06:00 PM	TO	07:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
07:00 PM	TO	08:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
08:00 PM	TO	09:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
09:00 PM	TO	10:00 PM	#VALUE!	0	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!		######	#VALUE!	#VALUE!
			#VALUE!	461			######			######			######			######	#VALUE!	#VALUE!
					8 HOURS NEEDED **#VALUE!**			8 HOURS NEEDED **#VALUE!**			8 HOURS OF BOTH COND. A AND COND. B NEEDED **#VALUE!**						4 HRS NEEDED **#VALUE!**	1 HR NEEDED **#VALUE!**

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant