SIDRA INTERSECTION

Sidra Analysis of Central / Lomas / San Pasqual
PM Peak Hour - Charrette Alternative

Movement Summary

West Central Project

Central / Lomas / San Pasqual

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Central (S)										
3L	L	652	2.0	0.747	14.6	LOS B	206	0.78	1.07	22.7
8T	T	11	8.3	0.750	8.2	LOS A	206	0.78	0.98	25.1
8R	R	11	8.3	0.027	8.0	LOS A	3	0.53	0.63	25.2
Approach		**676**	**2.2**	**0.747**	**14.4**	**LOS B**	**206**	**0.78**	**1.06**	**22.8**
WB Lomas										
1L	L	11	8.3	0.706	18.5	LOS B	233	0.95	1.16	21.4
6T	T	924	2.0	0.715	12.1	LOS B	233	0.95	1.15	23.3
6R	R	11	8.3	0.706	13.5	LOS B	233	0.95	1.15	22.7
Approach		**947**	**2.1**	**0.715**	**12.2**	**LOS B**	**233**	**0.95**	**1.15**	**23.2**
SB 19th St.										
7L	L	11	8.3	0.136	19.9	LOS B	22	0.82	0.93	20.9
4T	T	11	8.3	0.136	13.5	LOS B	22	0.82	0.86	22.7
4R	R	11	8.3	0.136	14.6	LOS B	22	0.82	0.79	22.2
Approach		**36**	**8.3**	**0.136**	**16.0**	**LOS B**	**22**	**0.82**	**0.86**	**21.9**
EB Central (W)										
5L	L	11	8.3	0.207	8.4	LOS A	35	0.14	0.58	25.1
2T	T	543	2.0	0.207	2.0	LOS A	35	0.14	0.23	28.1
2R	R	11	8.3	0.207	3.4	LOS A	35	0.14	0.36	27.3
Approach		**568**	**2.3**	**0.207**	**2.2**	**LOS A**	**35**	**0.14**	**0.24**	**28.0**
All Vehicles		**2227**	**2.3**	**0.750**	**10.4**	**LOS B**	**233**	**0.69**	**0.89**	**24.1**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue

#21 2008 J-13 West Central Project

- Density for continuous movement

SIDRA SOLUTIONS

Site: Charette_Alternative

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Sidra Analysis of Central / Lomas / San Pasqual
PM Peak Hour - Low Build / N. Connector Alternative

SIDRA INTERSECTION

Movement Summary

West Central Project

Central / Lomas / San Pasqual

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
San Pasqual										
3L	L	27	3.6	0.042	12.3	LOS B	6	0.62	0.78	23.6
8R	R	24	4.2	0.040	6.4	LOS A	5	0.62	0.64	26.0
Approach		**52**	**3.8**	**0.042**	**9.6**	**LOS A**	**6**	**0.62**	**0.72**	**24.6**
Central (West Leg)										
1L	L	11	8.3	0.857	29.6	LOS C	354	0.99	1.45	18.2
6T	T	1076	2.0	0.837	23.0	LOS C	360	0.99	1.46	19.4
6R	R	1	50.0	1.000	25.0	LOS C	360	0.99	1.40	18.7
Approach		**1091**	**2.2**	**0.838**	**23.1**	**LOS C**	**360**	**0.99**	**1.46**	**19.3**
Lomas										
17L	L	12	7.7	0.929	27.2	LOS C	295	0.97	1.38	19.1
14R	R	924	2.0	0.917	20.7	LOS C	304	0.98	1.39	20.1
Approach		**936**	**2.0**	**0.917**	**20.8**	**LOS C**	**304**	**0.98**	**1.39**	**20.1**
Central (South Leg)										
5L	L	815	2.0	0.531	7.4	LOS A	134	0.16	0.55	25.4
2T	T	326	2.1	0.317	2.0	LOS A	59	0.13	0.23	28.1
2R	R	54	1.9	0.318	3.5	LOS A	59	0.13	0.35	27.3
Approach		**1196**	**2.0**	**0.531**	**5.8**	**LOS A**	**134**	**0.15**	**0.45**	**26.1**
All Vehicles		**3275**	**2.1**	**1.000**	**15.9**	**LOS B**	**360**	**0.68**	**1.06**	**21.8**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: LowBuild_NConnector_Alternative
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Sidra Analysis of Central / San Felipe
PM Peak Hour - Charrette Alternative

SIDRA INTERSECTION

Movement Summary

West Central Project

Central Ave. / San Felipe Rd.

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB San Felipe										
3L	L	1630	2.0	0.539	8.3	LOS A	123	0.09	0.59	25.2
8T	T	22	4.5	0.537	1.9	LOS A	122	0.09	0.22	28.3
Approach		**1653**	**2.1**	**0.539**	**8.3**	**LOS A**	**123**	**0.09**	**0.58**	**25.2**
SB San Felipe										
4T	T	22	4.5	0.077	7.9	LOS A	9	0.68	0.72	22.0
4R	R	11	8.3	0.077	9.0	LOS A	9	0.68	0.76	21.5
Approach		**34**	**5.9**	**0.077**	**8.3**	**LOS A**	**9**	**0.68**	**0.74**	**21.8**
Central Ave.										
5L	L	11	8.3	0.197	6.9	LOS A	34	0.11	0.54	25.1
2R	R	543	2.0	0.197	3.4	LOS A	34	0.11	0.35	27.4
Approach		**556**	**2.2**	**0.197**	**3.5**	**LOS A**	**34**	**0.11**	**0.35**	**27.4**
All Vehicles		**2243**	**2.1**	**0.539**	**7.1**	**LOS A**	**123**	**0.11**	**0.53**	**25.6**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: Central_SanFelipe

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Sidra Analysis of Mountain Rd. / Rio Grande Blvd.
PM Peak Hour - Charrette Alternative

SIDRA INTERSECTION

Movement Summary

West Central Project

Mountain Rd. / Rio Grande Blvd.

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Rio Grande Blvd.										
3L	L	35	2.9	0.547	10.6	LOS B	122	0.62	0.76	24.0
8T	T	965	2.0	0.546	4.2	LOS A	122	0.62	0.50	26.2
8R	R	89	2.2	0.546	5.9	LOS A	122	0.62	0.65	25.6
Approach		**1089**	**2.0**	**0.547**	**4.5**	**LOS A**	**122**	**0.62**	**0.52**	**26.1**
WB Mountain Rd.										
1L	L	322	1.9	0.863	23.8	LOS C	272	0.94	1.34	19.7
6T	T	193	2.1	0.862	17.4	LOS B	272	0.94	1.32	21.2
6R	R	291	2.1	0.613	12.8	LOS B	118	0.83	1.01	23.0
Approach		**806**	**2.0**	**0.862**	**18.3**	**LOS B**	**272**	**0.90**	**1.22**	**21.1**
SB Rio Grande Blvd.										
7L	L	168	1.8	1.263	138.9	LOS F	2094	1.00	3.78	7.4
4T	T	1634	2.0	1.261	132.7	LOS F	2104	1.00	3.79	7.2
4R	R	124	1.6	1.255	134.1	LOS F	2104	1.00	3.79	7.1
Approach		**1925**	**2.0**	**1.261**	**133.3**	**LOS F**	**2104**	**1.00**	**3.79**	**7.2**
EB Mountain Rd.										
5L	L	134	2.2	0.556	21.9	LOS C	110	0.93	1.08	20.3
2T	T	45	2.2	0.556	15.5	LOS B	110	0.93	1.05	21.9
2R	R	28	3.4	0.171	16.8	LOS B	23	0.87	0.92	21.4
Approach		**208**	**2.4**	**0.556**	**19.8**	**LOS B**	**110**	**0.92**	**1.05**	**20.7**
All Vehicles		**4028**	**2.0**	**1.263**	**69.6**	**LOS E**	**2104**	**0.87**	**2.25**	**11.3**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue

- Density for continuous movement

SIDRA SOLUTIONS

Site: New Site - 1

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Summary of Analysis for West Central Ave. Project

Charrette Alternative:

No.	Intersection:	Type	LOS / Delay	NO BUILD LOS / Delay
5	Solo Ave. / Rio Grande Blvd.	Signal	B - 10.1	N/A
6	Central Ave. / Rio Grande Blvd.	Signal	E - 68.0	F - 86.3
9	New York Ave. / Central Ave. (East)	Signal	B - 19.1	A - 7.5
22	Central Ave. / Simonds	Signal	E - 62.7	N/A
26	Merritt / New York Ave.	Signal	A - 9.3	N/A
27	New York Ave. / Central Ave. (West)	Signal	C - 29.0	A - 7.5
18	Central / Lomas / San Pasqual	Roundabout	B - 10.4	N/A

Low Build / North Connector Alternative:

18	Central / Lomas / San Pasqual	Roundabout	B - 15.9	

Detailed Comparative Table for Central / Lomas / San Pasqual

Charrette Alternative:

18 Central / Lomas San Pasqual — Roundabout

	LOS / Delay	95th Percentile Queue (Ft.)
NB Central Ave.		
Left Turn Movement	B - 14.6	206
Thru Movement	A - 8.2	206
Right Turn Movement	A - 8.0	3
WB Lomas Blvd.		
Left Turn Movement	B - 18.5	233
Thru Movement	B - 12.1	233
Right Turn Movement	B - 13.5	233
SB 19th St.		
Left Turn Movement	B - 19.9	22
Thru Movement	B - 13.5	22
Right Turn Movement	B - 14.6	22
Central Ave. (S. Leg)		
Left Turn Movement	A - 8.4	35
Thru Movement	A - 2.0	35
Right Turn Movement	A - 3.4	35

Low Build / North Connector Alternative:

18 Central / Lomas San Pasqual

	LOS / Delay	95th Percentile Queue (Ft.)

San Pasqual		
Left Turn Movement	B - 12.3	6
Right Turn Movement	A - 6.4	5
Central Ave. (W. Leg)		
Left Turn Movement	C - 29.6	354
Thru Movement	C - 23.0	360
Right Turn Movement	C - 25.0	360
Lomas Blvd.		
Left Turn Movement	C - 27.2	295
Right Turn Movement	C - 20.7	304
Central Ave. (S. Leg)		
Left Turn Movement	A - 7.4	134
Thru Movement	A - 2.0	59
Right Turn Movement	A - 3.5	59

NOTE: Roundabout Analyses performed utilizing Sidra 3.1 software
Signalized Intersection Analyses performed utilizing Synchro 7 software.

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Volume (vph)	260	30	900	1100
Turn Type		Perm		
Protected Phases	4		2	6
Permitted Phases		4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0
Total Split (s)	37.0	37.0	83.0	83.0
Total Split (%)	30.8%	30.8%	69.2%	69.2%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
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	Min	Min	C-Max	C-Max
Act Effct Green (s)	24.3	24.3	85.7	85.7
Actuated g/C Ratio	0.20	0.20	0.71	0.71
v/c Ratio	0.79	0.10	0.39	0.67
Control Delay	19.5	1.1	7.9	11.2
Queue Delay	0.0	0.0	0.7	0.0
Total Delay	19.5	1.1	8.6	11.2
LOS	B	A	A	B
Approach Delay	17.6		8.6	11.2
Approach LOS	B		A	B

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 92 (77%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Solo Ave. & Rio Grande Blvd.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	260	30	0	900	1100	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	0.96	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		3539	3398	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		3539	3398	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	33	0	978	1196	435
RTOR Reduction (vph)	0	26	0	0	25	0
Lane Group Flow (vph)	283	7	0	978	1606	0
Turn Type		Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.3	24.3		85.7	85.7	
Effective Green, g (s)	24.3	24.3		85.7	85.7	
Actuated g/C Ratio	0.20	0.20		0.71	0.71	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	358	321		2527	2427	
v/s Ratio Prot	c0.16			0.28	c0.47	
v/s Ratio Perm		0.00				
v/c Ratio	0.79	0.02		0.39	0.66	
Uniform Delay, d1	45.4	38.3		6.8	9.3	
Progression Factor	0.26	0.08		1.00	1.00	
Incremental Delay, d2	5.4	0.0		0.4	1.4	
Delay (s)	17.3	3.0		7.2	10.7	
Level of Service	B	A		A	B	
Approach Delay (s)	15.8			7.2	10.7	
Approach LOS	B			A	B	

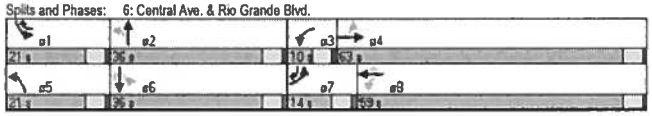
Intersection Summary					
HCM Average Control Delay		10.1	HCM Level of Service		B
HCM Volume to Capacity ratio		0.69			
Actuated Cycle Length (s)		120.0	Sum of lost time (s)		10.0
Intersection Capacity Utilization		65.9%	ICU Level of Service		C
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	200	360	20	1450	250	80	475	108	160	400
Turn Type	pm+pt		pm+pt		pm+ov	pm+pt		pm+pt		pm+ov
Protected Phases	7	4	3	8	1	5	2	1	6	7
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	3	8	1	5	2	1	6	7
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	21.0	21.0	21.0	21.0	10.0
Total Split (s)	14.0	63.0	10.0	59.0	21.0	21.0	36.0	21.0	36.0	14.0
Total Split (%)	10.8%	48.5%	7.7%	45.4%	16.2%	16.2%	27.7%	16.2%	27.7%	10.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	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	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?										
Recall Mode	Min	C-Max	Min	C-Max	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	67.0	58.0	59.0	54.0	70.0	45.5	36.0	48.5	37.5	51.5
Actuated g/C Ratio	0.52	0.45	0.45	0.42	0.54	0.35	0.28	0.37	0.29	0.40
v/c Ratio	1.21	0.26	0.05	1.07	0.31	0.20	1.03	0.56	0.32	0.60
Control Delay	162.4	22.9	15.6	82.2	13.2	26.2	92.3	36.5	39.1	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Total Delay	162.4	22.9	15.6	82.2	13.2	26.2	92.3	36.5	39.1	23.9
LOS	F	C	B	F	B	C	F	D	D	C
Approach Delay		71.8		71.4			82.9		29.6	
Approach LOS		E		E			F		C	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.21
Intersection Signal Delay: 65.4 — Intersection LOS: E
Intersection Capacity Utilization 99.4% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 6: Central Ave. & Rio Grande Blvd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	360	10	20	1450	250	80	475	10	108	160	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3525		1770	3539	1583	1770	1857		1770	1863	1583
Flt Permitted	0.07	1.00		0.51	1.00	1.00	0.59	1.00		0.11	1.00	1.00
Satd. Flow (perm)	128	3525		950	3539	1583	1092	1857		199	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	391	11	22	1576	272	87	516	11	117	174	435
RTOR Reduction (vph)	0	2	0	0	0	31	0	1	0	0	0	109
Lane Group Flow (vph)	217	400	0	22	1576	242	87	526	0	117	174	326
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	67.0	58.0		59.0	54.0	65.0	45.5	36.0		48.5	37.5	46.5
Effective Green, g (s)	67.0	58.0		59.0	54.0	65.0	45.5	36.0		48.5	37.5	46.5
Actuated g/C Ratio	0.52	0.45		0.45	0.42	0.50	0.35	0.28		0.37	0.29	0.36
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	180	1573		463	1470	852	432	514		207	537	627
v/s Ratio Prot	c0.06	0.11		0.00	0.45	0.02	0.01	c0.28		c0.05	0.09	0.04
v/s Ratio Perm	c0.54			0.02		0.13	0.06			0.16		0.17
v/c Ratio	1.21	0.25		0.05	1.07	0.28	0.20	1.02		0.57	0.32	0.52
Uniform Delay, d1	38.4	22.5		19.6	38.0	18.9	28.9	47.0		32.0	36.3	32.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	133.2	0.4		0.0	45.4	0.2	0.2	45.9		3.5	0.4	0.7
Delay (s)	171.6	22.9		19.7	83.4	19.1	29.2	92.9		35.5	36.7	33.7
Level of Service	F	C		B	F	B	C	F		D	D	C
Approach Delay (s)		75.0			73.3			83.9			34.7	
Approach LOS		E			E			F			C	

Intersection Summary

HCM Average Control Delay	68.0	HCM Level of Service		E
HCM Volume to Capacity ratio	1.11			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		20.0
Intersection Capacity Utilization	99.4%	ICU Level of Service		F
Analysis Period (min)	15			

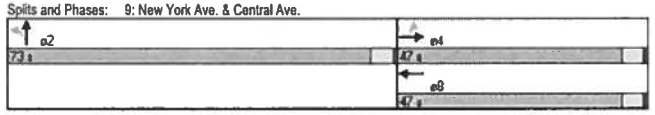
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Volume (vph)	6	10	310	60	1012
Turn Type	Perm			Perm	
Protected Phases		4	8		2
Permitted Phases	4			2	
Detector Phase	4	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0
Total Split (s)	47.0	47.0	47.0	73.0	73.0
Total Split (%)	39.2%	39.2%	39.2%	60.8%	60.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
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	Min	Min	Min	C-Max	C-Max
Act Effct Green (s)	28.1	28.1	28.1	81.9	81.9
Actuated g/C Ratio	0.23	0.23	0.23	0.68	0.68
v/c Ratio	0.07	0.03	0.80	0.05	0.53
Control Delay	25.2	23.6	56.3	7.8	11.2
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	25.2	23.6	56.4	7.9	11.2
LOS	C	C	E	A	B
Approach Delay		24.2	56.4		11.1
Approach LOS		C	E		B

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 16 (13%), Referenced to phase 2:NBTL and 6:, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 20.5 — Intersection LOS: C
Intersection Capacity Utilization 124.7% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 9: New York Ave. & Central Ave.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	10	0	0	310	10	60	1012	150	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95				
Frt	1.00	1.00			1.00		1.00	0.98				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	1863			1855		1770	3471				
Flt Permitted	0.22	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	405	1863			1855		1770	3471				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	11	0	0	337	11	65	1100	163	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	7	0	0	0	0
Lane Group Flow (vph)	7	11	0	0	346	0	65	1256	0	0	0	0
Turn Type	Perm						Perm					
Protected Phases		4			8			2				
Permitted Phases	4						2					
Actuated Green, G (s)	28.1	28.1			28.1		81.9	81.9				
Effective Green, g (s)	28.1	28.1			28.1		81.9	81.9				
Actuated g/C Ratio	0.23	0.23			0.23		0.68	0.68				
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	95	436			434		1208	2369				
v/s Ratio Prot		0.01			c0.19			c0.36				
v/s Ratio Perm	0.02						0.04					
v/c Ratio	0.07	0.03			0.80		0.05	0.53				
Uniform Delay, d1	35.8	35.4			43.3		6.3	9.5				
Progression Factor	0.74	0.75			1.00		1.00	1.00				
Incremental Delay, d2	0.3	0.0			9.9		0.1	0.9				
Delay (s)	26.8	26.5			53.1		6.4	10.3				
Level of Service	C	C			D		A	B				
Approach Delay (s)		26.6			53.1			10.1			0.0	
Approach LOS		C			D			B			A	

Intersection Summary

HCM Average Control Delay	19.1	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	124.7%	ICU Level of Service		H	
Analysis Period (min)	15				

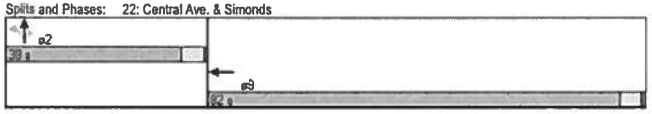
c Critical Lane Group

Lane Group	WBT	NBL	NBT	NBR
Lane Configurations				
Volume (vph)	2200	20	500	600
Turn Type		Perm		Perm
Protected Phases	8		2	
Permitted Phases		2		2
Detector Phase	8	2	2	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0
Total Split (s)	82.0	38.0	38.0	38.0
Total Split (%)	68.3%	31.7%	31.7%	31.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
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	None	C-Min	C-Min	C-Min
Act Effct Green (s)	77.0	33.0	33.0	33.0
Actuated g/C Ratio	0.64	0.28	0.28	0.28
v/c Ratio	1.05	0.04	1.06	0.56
Control Delay	57.0	33.4	96.2	12.3
Queue Delay	0.0	0.0	23.8	0.2
Total Delay	57.0	33.4	120.0	12.5
LOS	E	C	F	B
Approach Delay	57.0		60.9	
Approach LOS	E		E	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 58.3 — Intersection LOS: E
Intersection Capacity Utilization 115.7% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 22: Central Ave. & Simonds



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	2200	0	20	500	600	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		5.0	5.0	5.0			
Lane Util. Factor					0.95		1.00	1.00	0.88			
Frt					1.00		1.00	1.00	0.85			
Flt Protected					1.00		0.95	1.00	1.00			
Satd. Flow (prot)					3539		1770	1863	2787			
Flt Permitted					1.00		0.95	1.00	1.00			
Satd. Flow (perm)					3539		1770	1863	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	2391	0	22	543	652	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	4	0	397	0	0	0
Lane Group Flow (vph)	0	0	0	0	2391	0	18	543	255	0	0	0
Turn Type							Perm		Perm			
Protected Phases					8			2				
Permitted Phases							2		2			
Actuated Green, G (s)					77.0		33.0	33.0	33.0			
Effective Green, g (s)					77.0		33.0	33.0	33.0			
Actuated g/C Ratio					0.64		0.28	0.28	0.28			
Clearance Time (s)					5.0		5.0	5.0	5.0			
Vehicle Extension (s)					3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)					2271		487	512	766			
v/s Ratio Prot					c0.68			c0.29				
v/s Ratio Perm							0.01		0.09			
v/c Ratio					1.05		0.04	1.06	0.33			
Uniform Delay, d1					21.5		31.9	43.5	34.7			
Progression Factor					1.00		1.29	0.98	1.65			
Incremental Delay, d2					34.6		0.1	54.6	1.0			
Delay (s)					56.1		41.1	97.4	58.4			
Level of Service					E		D	F	E			
Approach Delay (s)		0.0			56.1			75.5			0.0	
Approach LOS		A			E			E			A	

Intersection Summary

HCM Average Control Delay	62.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	115.7%	ICU Level of Service	H
Analysis Period (min)	15		

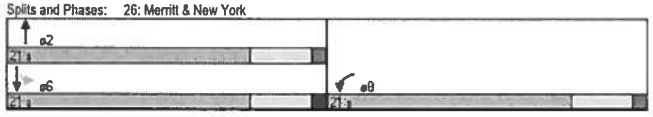
c Critical Lane Group

Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Volume (vph)	150	10	10	100
Turn Type			Perm	
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0
Total Split (s)	21.0	21.0	21.0	21.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
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	Max	Max	Max	Max
Act Effct Green (s)	16.0	16.0		16.0
Actuated g/C Ratio	0.38	0.38		0.38
v/c Ratio	0.26	0.24		0.17
Control Delay	9.7	3.4		9.5
Queue Delay	0.0	0.0		0.0
Total Delay	9.7	3.4		9.5
LOS	A	A		A
Approach Delay	9.7	3.4		9.5
Approach LOS	A	A		A

Intersection Summary

Cycle Length: 42
Actuated Cycle Length: 42
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 45
Control Type: Pretimed
Maximum v/c Ratio: 0.26
Intersection Signal Delay: 7.3 — Intersection LOS: A
Intersection Capacity Utilization 30.8% — ICU Level of Service A
Analysis Period (mn) 15

Splits and Phases: 26: Merritt & New York



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	150	10	10	150	10	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			5.0
Lane Util. Factor	1.00		1.00			1.00
Frt	0.99		0.87			1.00
Flt Protected	0.96		1.00			1.00
Satd. Flow (prot)	1764		1627			1854
Flt Permitted	0.96		1.00			0.97
Satd. Flow (perm)	1764		1627			1808
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	11	11	163	11	109
RTOR Reduction (vph)	6	0	101	0	0	0
Lane Group Flow (vph)	168	0	73	0	0	120
Turn Type					Perm	
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	16.0		16.0			16.0
Effective Green, g (s)	16.0		16.0			16.0
Actuated g/C Ratio	0.38		0.38			0.38
Clearance Time (s)	5.0		5.0			5.0
Lane Grp Cap (vph)	672		620			689
v/s Ratio Prot	c0.10		0.04			
v/s Ratio Perm						c0.07
v/c Ratio	0.25		0.12			0.17
Uniform Delay, d1	8.9		8.4			8.6
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.9		0.4			0.6
Delay (s)	9.8		8.8			9.2
Level of Service	A		A			A
Approach Delay (s)	9.8		8.8			9.2
Approach LOS	A		A			A

Intersection Summary

HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (mn)	15		

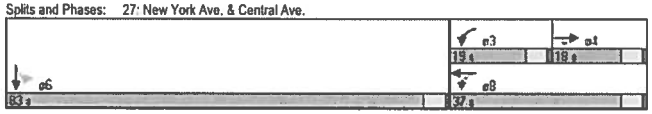
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Configurations	↑	↱	↰	↑	↓↑↑↑
Volume (vph)	16	137	300	10	2800
Turn Type		Perm	pm+pt		
Protected Phases	4		3	8	6
Permitted Phases		4	8		
Detector Phase	4	4	3	8	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	10.0	21.0	21.0
Total Split (s)	18.0	18.0	19.0	37.0	83.0
Total Split (%)	15.0%	15.0%	15.8%	30.8%	69.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
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	Lead		
Lead-Lag Optimize?					
Recall Mode	Min	Min	Min	Min	C-Max
Act Effct Green (s)	12.3	12.3	31.3	31.3	78.7
Actuated g/C Ratio	0.10	0.10	0.26	0.26	0.66
v/c Ratio	0.09	0.82	0.93	0.02	0.95
Control Delay	49.5	78.2	47.3	11.2	25.9
Queue Delay	0.0	0.0	20.5	0.0	0.0
Total Delay	49.5	78.2	67.8	11.2	25.9
LOS	D	E	E	B	C
Approach Delay	75.3			66.0	25.9
Approach LOS	E			E	C

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2: and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 31.8 — Intersection LOS: C
Intersection Capacity Utilization 124.7% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 27: New York Ave. & Central Ave.



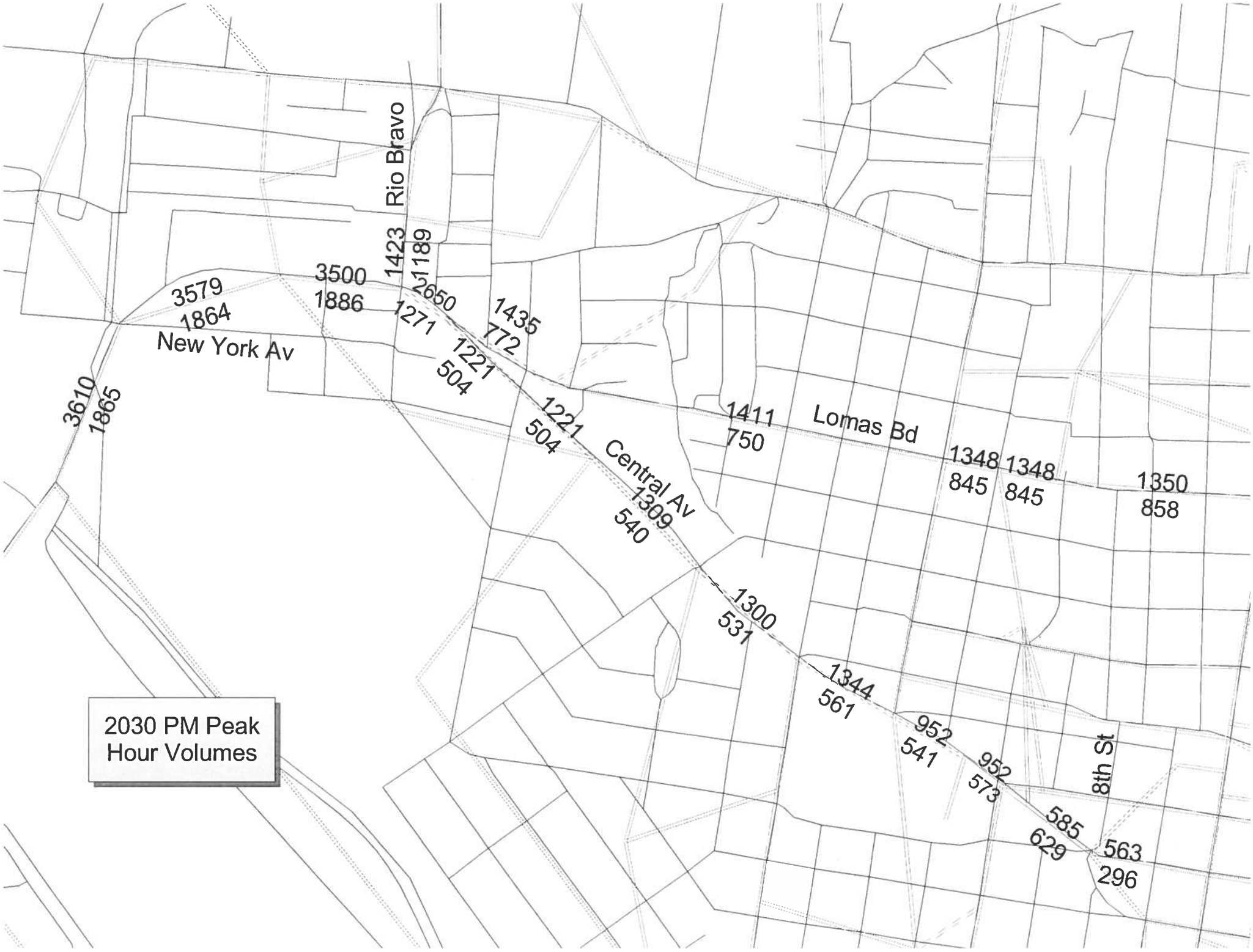
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑			↑			↓↑↑↑	
Volume (vph)	0	16	137	300	10	0	0	0	0	20	2800	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0						5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00						0.91	
Frt		1.00	0.85	1.00	1.00						1.00	
Flt Protected		1.00	1.00	0.95	1.00						1.00	
Satd. Flow (prot)		1863	1583	1770	1863						5063	
Flt Permitted		1.00	1.00	0.53	1.00						1.00	
Satd. Flow (perm)		1863	1583	988	1863						5063	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	17	149	326	11	0	0	0	0	22	3043	84
RTOR Reduction (vph)	0	0	19	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	17	130	326	11	0	0	0	0	0	3147	0
Turn Type			Perm	pm+pt						Perm		
Protected Phases		4		3	8						6	
Permitted Phases			4	8						6		
Actuated Green, G (s)		12.3	12.3	31.3	31.3						78.7	
Effective Green, g (s)		12.3	12.3	31.3	31.3						78.7	
Actuated g/C Ratio		0.10	0.10	0.26	0.26						0.66	
Clearance Time (s)		5.0	5.0	5.0	5.0						5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	
Lane Grp Cap (vph)		191	162	349	486						3320	
v/s Ratio Prot		0.01		c0.11	0.01							
v/s Ratio Perm			0.08	c0.13							0.62	
v/c Ratio		0.09	0.80	0.93	0.02						0.95	
Uniform Delay, d1		48.8	52.7	42.0	33.0						18.8	
Progression Factor		1.00	1.00	0.30	0.34						1.09	
Incremental Delay, d2		0.2	24.2	29.5	0.0						4.8	
Delay (s)		49.0	76.9	42.0	11.2						25.3	
Level of Service		D	E	D	B						C	
Approach Delay (s)		74.0			41.0			0.0			25.3	
Approach LOS		E			D			A			C	

Intersection Summary

HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	124.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group


Rio Bravo
1101
3530
New York Av
1139
3477
2306
699
420
1253
288
1062
1091
3556
288
1062
Central Av
297
1117
433
1224
Lomas Bd
621
1184
621
1185
639
1188
278
1110
295
1189
337
772
355
737
8th St
231
855
226
538
226
538
2030 AM Peak
Hour Volumes


Rio Bravo
1423
1189
2650
3500
1886
1271
1435
772
1221
504
3579
1864
New York Av
3610
1865
1221
504
Central Av
1309
540
1411
750
Lomas Bd
1348
845
1348
845
1350
858
1300
531
1344
561
952
541
952
573
8th St
585
629
563
296
2030 PM Peak
Hour Volumes