

APPENDIX L

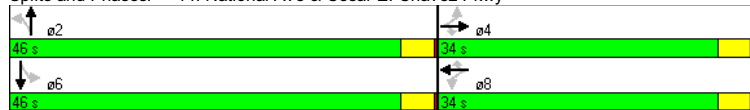
- Synchro analysis for queuing related mitigations

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	190	250	180	120	350	120	90	580	70	745
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	
Protected Phases		4			8			2		6
Permitted Phases	4		4	8		8	2		2	6
Detector Phases	4	4	4	8	8	8	2	2	6	6
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)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	27.1	27.1	27.1	27.1	27.1	27.1	44.9	44.9	44.9	44.9
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.56	0.56	0.56	0.56
v/c Ratio	0.89	0.43	0.31	0.42	0.60	0.21	0.65	0.38	0.25	0.68
Control Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	15.2
LOS	E	C	A	C	C	A	D	A	B	B
Approach Delay		30.1			20.9			12.2		15.1
Approach LOS		C			C			B		B

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 77.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	272	196	130	380	130	98	684	76	1147
v/c Ratio	0.89	0.43	0.31	0.42	0.60	0.21	0.65	0.38	0.25	0.68
Control Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	62.7	21.9	7.0	23.7	25.7	4.3	36.5	8.7	13.4	15.2
Queue Length 50th (ft)	84	91	16	43	136	0	26	82	22	212
Queue Length 95th (ft)	#211	160	59	94	230	33 m#123	105	48	270	
Internal Link Dist (ft)		608			780		301		299	
Turn Bay Length (ft)										
Base Capacity (vph)	263	713	694	353	713	686	153	1820	311	1717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	267
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	0.79	0.38	0.28	0.37	0.53	0.19	0.64	0.38	0.24	0.79

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.

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	1.00	0.96	1.00	0.96
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3185	1530	2924	1530	2924
Flt Permitted	0.34	1.00	1.00	0.47	1.00	1.00	0.17	1.00	0.35	1.00	0.35	1.00
Satd. Flow (perm)	625	1863	1583	882	1863	1583	292	3185	563	2924	563	2924
Volume (vph)	190	250	180	120	350	120	90	580	50	70	745	310
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)	207	272	196	130	380	130	98	630	54	76	810	337
RTOR Reduction (vph)	0	0	95	0	0	86	0	7	0	0	53	0
Lane Group Flow (vph)	207	272	101	130	380	44	98	677	0	76	1094	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases		4			8			2				6
Permitted Phases	4		4	8		8	2				6	
Actuated Green, G (s)	27.1	27.1	27.1	27.1	27.1	27.1	44.9	44.9		44.9	44.9	
Effective Green, g (s)	27.1	27.1	27.1	27.1	27.1	27.1	44.9	44.9		44.9	44.9	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.56	0.56		0.56	0.56	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
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)	212	631	536	299	631	536	164	1788		316	1641	
v/s Ratio Prot		0.15			0.20			0.21			0.37	
v/s Ratio Perm	c0.33		0.06	0.15		0.03	0.34			0.13		
v/c Ratio	0.98	0.43	0.19	0.43	0.60	0.08	0.60	0.38		0.24	0.67	
Uniform Delay, d1	26.1	20.5	18.7	20.5	22.0	18.0	11.6	9.8		8.9	12.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.77		1.00	1.00	
Incremental Delay, d2	54.5	0.5	0.2	1.0	1.6	0.1	14.9	0.6		1.8	2.2	
Delay (s)	80.7	21.0	18.9	21.5	23.6	18.1	24.1	8.1		10.7	14.5	
Level of Service	F	C	B	C	C	B	C	A		B	B	
Approach Delay (s)		38.7			22.1			10.1			14.2	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

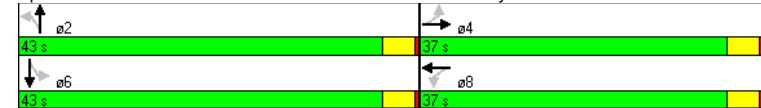
c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Volume (vph)	75	40	40	50	40	410	95	810
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	37.0	37.0	37.0	37.0	43.0	43.0	43.0	43.0
Total Split (%)	46.3%	46.3%	46.3%	46.3%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	9.8	9.8	9.8	9.8	64.9	64.9	64.9	64.9
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.81	0.81	0.81	0.81
v/c Ratio	0.53	0.41	0.28	0.46	0.17	0.18	0.17	0.40
Control Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.7
LOS	D	B	C	C	A	A	A	A
Approach Delay		30.3		24.5		3.5		1.7
Approach LOS		C		C		A		A

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 33 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 51.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	108	43	125	43	479	103	1032
v/c Ratio	0.53	0.41	0.28	0.46	0.17	0.18	0.17	0.40
Control Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.7	19.3	35.0	20.9	5.6	3.3	1.6	1.7
Queue Length 50th (ft)	39	20	20	25	6	33	3	16
Queue Length 95th (ft)	78	61	47	69	m17	53	m7	40
Internal Link Dist (ft)		598	178		305		301	
Turn Bay Length (ft)								
Base Capacity (vph)	520	737	528	745	248	2593	613	2565
Starvation Cap Reductn	0	0	0	0	0	0	0	714
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	0.16	0.15	0.08	0.17	0.17	0.18	0.17	0.56

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

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1704		1612	3190		1612	3152	
Flt Permitted	0.57	1.00		0.64	1.00		0.26	1.00		0.48	1.00	
Satd. Flow (perm)	1069	1695		1199	1704		447	3190		811	3152	
Volume (vph)	75	40	60	40	50	65	40	410	30	95	810	140
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)	82	43	65	43	54	71	43	446	33	103	880	152
RTOR Reduction (vph)	0	58	0	0	63	0	0	3	0	0	7	0
Lane Group Flow (vph)	82	50	0	43	62	0	43	476	0	103	1025	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.7	8.7		8.7	8.7		63.3	63.3		63.3	63.3	
Effective Green, g (s)	8.7	8.7		8.7	8.7		63.3	63.3		63.3	63.3	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.79	0.79		0.79	0.79	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	116	184		130	185		354	2524		642	2494	
v/s Ratio Prot		0.03			0.04			0.15			c0.33	
v/s Ratio Perm	c0.08			0.04			0.10			0.13		
v/c Ratio	0.71	0.27		0.33	0.33		0.12	0.19		0.16	0.41	
Uniform Delay, d1	34.4	32.7		33.0	33.0		1.9	2.0		2.0	2.6	
Progression Factor	1.00	1.00		1.00	1.00		1.23	1.31		0.37	0.37	
Incremental Delay, d2	17.8	0.8		1.5	1.1		0.7	0.2		0.4	0.4	
Delay (s)	52.2	33.5		34.5	34.0		3.0	2.8		1.2	1.4	
Level of Service	D	C		C	C		A	A		A	A	
Approach Delay (s)		41.6			34.1			2.9			1.4	
Approach LOS		D			C			A			A	

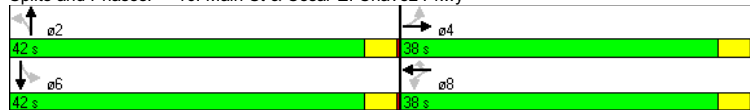
Intersection Summary
 HCM Average Control Delay 8.3 HCM Level of Service A
 HCM Volume to Capacity ratio 0.45
 Actuated Cycle Length (s) 80.0 Sum of lost time (s) 8.0
 Intersection Capacity Utilization 51.0% ICU Level of Service A
 Analysis Period (min) 15
 c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↕↔	↔	↕↔
Volume (vph)	150	190	70	330	190	70	340	150	580
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8		8	2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0	42.0	42.0	42.0	42.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	52.5%	52.5%	52.5%	52.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	23.1	23.1	23.1	23.1	23.1	48.9	48.9	48.9	48.9
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.61	0.61	0.61	0.61
v/c Ratio	0.72	0.42	0.25	0.67	0.36	0.30	0.25	0.36	0.45
Control Delay	42.4	23.1	21.0	30.3	4.5	14.6	7.9	9.6	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	42.4	23.1	21.0	30.3	4.5	14.6	8.2	9.6	6.7
LOS	D	C	C	C	A	B	A	A	A
Approach Delay		31.2		20.8			9.1		7.2
Approach LOS		C		C			A		A

Intersection Summary	
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	25 (31%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	14.6
Intersection LOS:	B
Intersection Capacity Utilization:	70.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	223	76	359	207	76	468	163	826
v/c Ratio	0.72	0.42	0.25	0.67	0.36	0.30	0.25	0.36	0.45
Control Delay	42.4	23.1	21.0	30.3	4.5	14.6	7.9	9.6	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	42.4	23.1	21.0	30.3	4.5	14.6	8.2	9.6	6.7
Queue Length 50th (ft)	67	80	27	145	0	19	50	25	57
Queue Length 95th (ft)	122	122	52	203	38	59	91	90	77
Internal Link Dist (ft)		588		983			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	332	785	448	792	761	254	1856	449	1834
Starvation Cap Reductn	0	0	0	0	0	0	741	0	175
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	0.49	0.28	0.17	0.45	0.27	0.30	0.42	0.36	0.50

Intersection Summary

Barrio Logan CPU
 16: Main St & Cesar E. Chavez Pkwy
 Horizon Year Alt 1 with Grade Separation and Coordination
 Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	[Diagrammatic Lane Configurations]											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	0.95			1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.98	1.00		0.99	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1740	1839		1750	1863	1511	1537	2996		1549	2955	
Flt Permitted	0.31	1.00		0.51	1.00	1.00	0.30	1.00		0.47	1.00	
Satd. Flow (perm)	560	1839		941	1863	1511	484	2996		773	2955	
Volume (vph)	150	190	15	70	330	190	70	340	90	150	580	180
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)	163	207	16	76	359	207	76	370	98	163	630	196
RTOR Reduction (vph)	0	4	0	0	0	147	0	22	0	0	27	0
Lane Group Flow (vph)	163	219	0	76	359	60	76	446	0	163	799	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	[Turn Type Legend]											
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.1	23.1		23.1	23.1	23.1	48.9	48.9		48.9	48.9	
Effective Green, g (s)	23.1	23.1		23.1	23.1	23.1	48.9	48.9		48.9	48.9	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.61	0.61		0.61	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	531		272	538	436	296	1831		472	1806	
v/s Ratio Prot		0.12			0.19			0.15			c0.27	
v/s Ratio Perm	c0.29			0.08		0.04	0.16			0.21		
v/c Ratio	1.01	0.41		0.28	0.67	0.14	0.26	0.24		0.35	0.44	
Uniform Delay, d1	28.4	23.0		22.0	25.1	21.1	7.2	7.1		7.7	8.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.68	0.64	
Incremental Delay, d2	72.3	0.5		0.6	3.1	0.1	2.1	0.3		1.9	0.7	
Delay (s)	100.8	23.5		22.6	28.2	21.2	9.3	7.4		7.1	6.0	
Level of Service	F	C		C	C	C	A	A		A	A	
Approach Delay (s)		56.1			25.3			7.7			6.2	
Approach LOS		E			C			A			A	

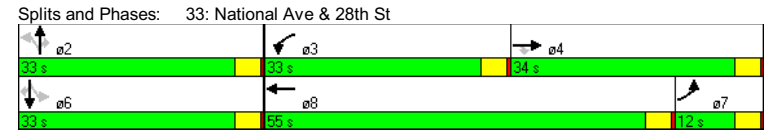
Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

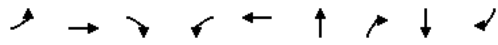
Barrio Logan CPU
 33: National Ave & 28th St
 Horizon Year Alt 1 with Grade Separation and Coordination
 Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	[Diagrammatic Lane Configurations]											
Volume (vph)	106	258	18	192	628	33	98	86	115	205	307	
Turn Type	Prot			Perm			Prot			Perm		
Protected Phases	7			4			3			8		
Permitted Phases	7			4			2			2		
Detector Phases	7			4			3			8		
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	
Total Split (s)	12.0	34.0	34.0	33.0	55.0	33.0	33.0	33.0	33.0	33.0	33.0	
Total Split (%)	12.0%	34.0%	34.0%	33.0%	55.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min	
Act Effct Green (s)	8.8	26.7	26.7	33.9	51.8		27.3	27.3		27.3	27.3	
Actuated g/C Ratio	0.09	0.27	0.27	0.34	0.52		0.27	0.27		0.27	0.27	
v/c Ratio	0.73	0.30	0.05	0.47	0.86		0.40	0.19		0.92	0.52	
Control Delay	72.5	29.1	10.7	32.8	32.4		40.4	14.4		66.5	7.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	72.5	29.1	10.7	32.8	32.4		40.4	14.4		66.5	7.0	
LOS	E	C	B	C	C		D	B		E	A	
Approach Delay		40.3			32.5			30.1			37.4	
Approach LOS		D			C			C			D	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 82 (82%), Referenced to phase 3:WBL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 35.0		Intersection LOS: D	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			



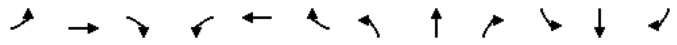
Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	115	280	20	209	817	143	93	348	334
v/c Ratio	0.73	0.30	0.05	0.47	0.86	0.40	0.19	0.92	0.52
Control Delay	72.5	29.1	10.7	32.8	32.4	40.4	14.4	66.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	29.1	10.7	32.8	32.4	40.4	14.4	66.5	7.0
Queue Length 50th (ft)	73	71	0	113	441	76	13	210	6
Queue Length 95th (ft)	#171	105	17	189	#694	135	59	#372	74
Internal Link Dist (ft)		590		82	454		221		
Turn Bay Length (ft)									
Base Capacity (vph)	157	1062	489	441	958	375	504	400	665
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	0.73	0.26	0.04	0.47	0.85	0.38	0.18	0.87	0.50

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

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	0.98	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.99	1.00	0.98	1.00	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1299	1817	1770	1754	1509	1744	1509	1744	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.68	1.00	0.76	1.00	0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1299	1817	1770	1216	1509	1349	1509	1349	1509
Volume (vph)	106	258	18	192	628	123	33	98	86	115	205	307
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)	115	280	20	209	683	134	36	107	93	125	223	334
RTOR Reduction (vph)	0	0	15	0	7	0	0	0	68	0	0	233
Lane Group Flow (vph)	115	280	5	209	810	0	0	143	25	0	348	101
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.8	26.7	26.7	34.0	51.9			27.3	27.3		27.3	27.3
Effective Green, g (s)	8.8	26.7	26.7	34.0	51.9			27.3	27.3		27.3	27.3
Actuated g/C Ratio	0.09	0.27	0.27	0.34	0.52			0.27	0.27		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	156	945	423	442	943			332	412		368	412
v/s Ratio Prot	c0.06	0.08		0.16	c0.45							
v/s Ratio Perm			0.00					0.12	0.02		c0.26	0.07
v/c Ratio	0.74	0.30	0.01	0.47	0.86			0.43	0.06		0.95	0.25
Uniform Delay, d1	44.5	29.2	27.0	26.0	20.9			29.9	26.9		35.6	28.3
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.25	2.29		1.00	1.00
Incremental Delay, d2	16.5	0.2	0.0	3.6	7.9			0.9	0.1		32.8	0.3
Delay (s)	61.0	29.3	27.0	29.6	28.8			38.4	61.7		68.5	28.6
Level of Service	E	C	C	C	C			D	E		E	C
Approach Delay (s)		38.0			28.9			47.5			49.0	
Approach LOS		D			C			D			D	

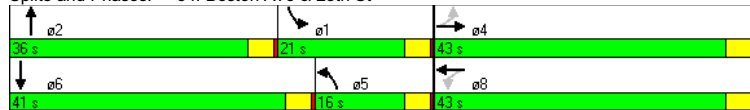
Intersection Summary
HCM Average Control Delay 38.2 HCM Level of Service D
HCM Volume to Capacity ratio 0.87
Actuated Cycle Length (s) 100.0 Sum of lost time (s) 12.0
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15
c Critical Lane Group

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	230	180	45	70	90	700	160	860
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases	4		8		5	2	1	6
Permitted Phases	4	4	8	8	5	2	1	6
Detector Phases	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	43.0	43.0	43.0	43.0	16.0	36.0	21.0	41.0
Total Split (%)	43.0%	43.0%	43.0%	43.0%	16.0%	36.0%	21.0%	41.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	28.4	28.4	28.4	28.4	10.1	44.9	14.7	51.5
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.10	0.45	0.15	0.52
v/c Ratio	0.87	0.69	0.24	0.39	0.55	0.52	0.67	0.50
Control Delay	61.8	33.6	27.1	14.7	59.1	18.1	49.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	9.4	0.6
Total Delay	61.8	33.6	27.1	14.7	59.1	18.5	58.5	14.6
LOS	E	C	C	B	E	B	E	B
Approach Delay	45.4		17.1		22.9		19.9	
Approach LOS	D		B		C		B	

Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	86 (86%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.87
Intersection Signal Delay:	25.3
Intersection LOS:	C
Intersection Capacity Utilization:	66.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 34: Boston Ave & 28th St



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	250	348	49	206	98	804	174	1272
v/c Ratio	0.87	0.69	0.24	0.39	0.55	0.52	0.67	0.50
Control Delay	61.8	33.6	27.1	14.7	59.1	18.1	49.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	9.4	0.6
Total Delay	61.8	33.6	27.1	14.7	59.1	18.5	58.5	14.6
Queue Length 50th (ft)	151	171	24	51	65	168	110	156
Queue Length 95th (ft)	219	230	48	95	m106	m305	m145	213
Internal Link Dist (ft)	207		577		298		139	
Turn Bay Length (ft)								
Base Capacity (vph)	392	675	278	688	212	1551	301	2548
Starvation Cap Reductn	0	0	0	0	0	302	94	801
Spillback Cap Reductn	0	0	0	0	0	0	0	12
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.52	0.18	0.30	0.46	0.64	0.84	0.73

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

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.91	
Frt	1.00	0.93		1.00	0.91		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1659		1687	1608		1770	3447		1770	4848	
Flt Permitted	0.51	1.00		0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	910	1659		526	1608		1770	3447		1770	4848	
Volume (vph)	230	180	140	45	70	120	90	700	40	160	860	310
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)	250	196	152	49	76	130	98	761	43	174	935	337
RTOR Reduction (vph)	0	33	0	0	72	0	0	3	0	0	51	0
Lane Group Flow (vph)	250	315	0	49	134	0	98	801	0	174	1221	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2			1	6
Permitted Phases	4			8								
Actuated Green, G (s)	28.4	28.4		28.4	28.4		8.8	44.2		15.4	50.8	
Effective Green, g (s)	28.4	28.4		28.4	28.4		8.8	44.2		15.4	50.8	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.09	0.44		0.15	0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	471		149	457		156	1524		273	2463	
v/s Ratio Prot		0.19			0.08		0.06	c0.23		c0.10	0.25	
v/s Ratio Perm	c0.27			0.09								
v/c Ratio	0.97	0.67		0.33	0.29		0.63	0.53		0.64	0.50	
Uniform Delay, d1	35.4	31.6		28.3	28.0		44.0	20.3		39.7	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.14	0.76		1.00	0.79	
Incremental Delay, d2	46.8	3.6		1.3	0.4		7.3	1.2		3.3	0.5	
Delay (s)	82.2	35.2		29.6	28.3		57.3	16.5		43.0	13.3	
Level of Service	F	D		C	C		E	B		D	B	
Approach Delay (s)		54.9			28.6			21.0			16.9	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↔	↕
Volume (vph)	190	400	90	490	45	170	120	180	750
Turn Type	Perm		Perm		Prot		Perm	Prot	
Protected Phases		4			8	5	2		1 6
Permitted Phases	4		8						
Detector Phases	4	4	8	8	5	2	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	34.0	34.0	8.0	35.0
Total Split (s)	49.0	49.0	49.0	49.0	8.0	35.0	35.0	16.0	43.0
Total Split (%)	49.0%	49.0%	49.0%	49.0%	8.0%	35.0%	35.0%	16.0%	43.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	46.2	46.2	46.2	46.2	5.0	21.9	21.9	19.9	38.8
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.05	0.22	0.22	0.20	0.39
v/c Ratio	0.97	0.33	0.27	0.46	0.57	0.24	0.32	0.57	0.88
Control Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
LOS	F	B	B	B	E	C	B	C	C
Approach Delay		37.8			18.1		30.7		24.5
Approach LOS		D			B		C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 90 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

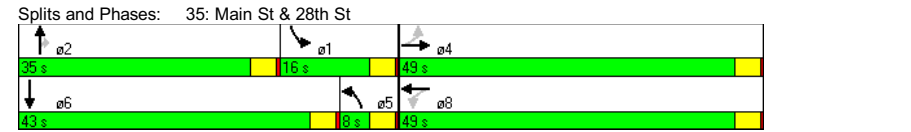
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 26.5 Intersection LOS: C

Intersection Capacity Utilization 77.9% ICU Level of Service D

Analysis Period (min) 15



Barrio Logan CPU
35: Main St & 28th St

Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	207	489	98	729	49	185	130	196	1087
v/c Ratio	0.97	0.33	0.27	0.46	0.57	0.24	0.32	0.57	0.88
Control Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.9	17.5	19.8	17.9	70.0	34.7	10.0	33.9	22.8
Queue Length 50th (ft)	128	99	38	149	29	52	0	111	275
Queue Length 95th (ft)	#281	137	78	200	#92	83	51	m194	#355
Internal Link Dist (ft)		327		314		279			298
Turn Bay Length (ft)									
Base Capacity (vph)	213	1496	359	1597	86	1076	519	345	1253
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	1	0	66	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.33	0.27	0.46	0.57	0.18	0.25	0.57	0.87
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.								

Barrio Logan CPU
35: Main St & 28th St

Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

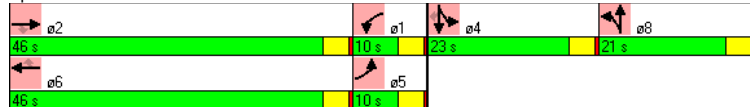
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	0.95
Flpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.89	1.00	0.99	0.99
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.96	0.96
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1538	3219		1760	3375		1736	3471	1383	1736	3100	3100
Flt Permitted	0.29	1.00		0.42	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	468	3219		783	3375		1736	3471	1383	1736	3100	3100
Volume (vph)	190	400		50	90		45	170	120	180	750	250
Peak-hour factor, PHF	0.92	0.92		0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	435		54	98		49	185	130	196	815	272
RTOR Reduction (vph)	0	9		0	37		0	0	103	0	33	0
Lane Group Flow (vph)	207	480		98	692		49	185	27	196	1054	0
Confl. Peds. (#/hr)	10			12	12		10		72			27
Confl. Bikes (#/hr)				2			4		6			1
Heavy Vehicles (%)	17%	11%		2%	2%		2%	4%	4%	4%	4%	31%
Turn Type	Perm			Perm			Prot		Perm		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2					
Actuated Green, G (s)	46.2	46.2		46.2	46.2		3.8	21.1	21.1	20.7	38.0	
Effective Green, g (s)	46.2	46.2		46.2	46.2		3.8	21.1	21.1	20.7	38.0	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.04	0.21	0.21	0.21	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	216	1487		362	1559		66	732	292	359	1178	
v/s Ratio Prot		0.15			0.21		0.03	0.05		c0.11	c0.34	
v/s Ratio Perm	c0.44			0.13				0.02				
v/c Ratio	0.96	0.32		0.27	0.44		0.74	0.25	0.09	0.55	0.89	
Uniform Delay, d1	26.0	17.0		16.5	18.2		47.6	32.9	31.8	35.4	29.1	
Progression Factor	1.00	1.00		1.00	1.00		0.91	1.06	1.32	0.76	0.50	
Incremental Delay, d2	48.9	0.1		0.4	0.2		35.8	0.8	0.6	1.5	9.7	
Delay (s)	74.9	17.1		16.9	18.4		79.2	35.7	42.7	28.3	24.4	
Level of Service	E	B		B	B		E	D	D	C	C	
Approach Delay (s)		34.3			18.2			44.1			25.0	
Approach LOS		C			B			D			C	
Intersection Summary												
HCM Average Control Delay	27.5		HCM Level of Service				C					
HCM Volume to Capacity ratio	0.89											
Actuated Cycle Length (s)	100.0				Sum of lost time (s)				8.0			
Intersection Capacity Utilization	77.9%		ICU Level of Service				D					
Analysis Period (min)	15											
c Critical Lane Group												

Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	50	670	4	17	942	116	6	375	15	25
Turn Type	Prot		Perm	Prot		Perm		Split		Perm
Protected Phases	5	2		1	6		8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	6	8	4	4	4
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)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	46.0	46.0	10.0	46.0	46.0	21.0	23.0	23.0	23.0
Total Split (%)	10.0%	46.0%	46.0%	10.0%	46.0%	46.0%	21.0%	23.0%	23.0%	23.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	5.9	69.2	69.2	5.8	65.2	65.2	5.9	16.6	16.6	16.6
Actuated g/C Ratio	0.06	0.69	0.69	0.06	0.65	0.65	0.06	0.17	0.17	0.17
v/c Ratio	0.28	0.31	0.00	0.18	0.46	0.13	0.08	0.73	0.05	0.10
Control Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
LOS	D	A	A	D	B	A	D	C	B	A
Approach Delay		10.9			10.6		41.3		24.4	
Approach LOS		B			B		D		C	

Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	71 (71%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	13.4
Intersection LOS:	B
Intersection Capacity Utilization:	50.1%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 36: Harbor Dr & 28th St



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	54	728	4	18	1024	126	9	408	16	27
v/c Ratio	0.28	0.31	0.00	0.18	0.46	0.13	0.08	0.73	0.05	0.10
Control Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	8.2	6.5	49.1	11.0	2.3	41.2	26.1	16.2	4.9
Queue Length 50th (ft)	17	64	0	11	155	0	4	116	7	4
Queue Length 95th (ft)	37	186	5	34	285	27	20	m125	m8	m6
Internal Link Dist (ft)		247			310		22		224	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	198	2358	950	103	2243	977	302	640	347	311
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	0.31	0.00	0.17	0.46	0.13	0.03	0.64	0.05	0.09

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

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
36: Harbor Dr & 28th St Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.95	0.98	1.00	1.00	1.00	0.98	0.98
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	0.97	1.00	1.00	1.00	0.85	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3303	3406	1412	1719	3438	1457	1730	3367	1827	1520		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3303	3406	1412	1719	3438	1457	1730	3367	1827	1520		
Volume (vph)	50	670	4	17	942	116	0	6	2	375	15	25
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)	54	728	4	18	1024	126	0	7	2	408	16	27
RTOR Reduction (vph)	0	0	1	0	0	51	0	2	0	0	0	23
Lane Group Flow (vph)	54	728	3	18	1024	75	0	7	0	408	16	4
Confl. Peds. (#/hr)			69			80						7
Confl. Bikes (#/hr)						3				6		7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Perm	Perm	Prot	Perm	Split	Split	Split	Split	Perm		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	6.4	63.6	63.6	2.4	59.6	59.6	1.4	16.6	16.6	16.6	16.6	16.6
Effective Green, g (s)	6.4	63.6	63.6	2.4	59.6	59.6	1.4	16.6	16.6	16.6	16.6	16.6
Actuated g/C Ratio	0.06	0.64	0.64	0.02	0.60	0.60	0.01	0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	211	2166	898	41	2049	868	24	559	303	252		
v/s Ratio Prot	c0.02	0.21		0.01	c0.30		c0.00	c0.12	0.01			
v/s Ratio Perm			0.00			0.05						0.00
v/c Ratio	0.26	0.34	0.00	0.44	0.50	0.09	0.29	0.73	0.05	0.02		
Uniform Delay, d1	44.5	8.4	6.6	48.1	11.6	8.6	48.8	39.6	35.1	34.9		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.47	0.35		
Incremental Delay, d2	0.6	0.4	0.0	7.3	0.9	0.2	6.7	2.9	0.0	0.0		
Delay (s)	45.2	8.8	6.6	55.5	12.5	8.8	55.5	24.0	16.7	12.3		
Level of Service	D	A	A	E	B	A	E	C	B	B		
Approach Delay (s)		11.3			12.8		55.5		23.0			
Approach LOS		B			B		E		C			

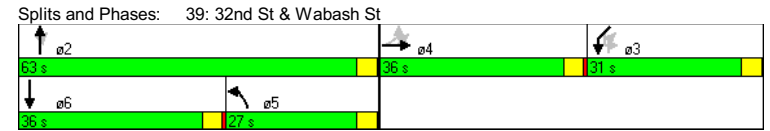
Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
39: 32nd St & Wabash St Timing Plan: AM Peak

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	25	235	70	505	55	694	735
Turn Type	Perm	Prot	Prot	custom			
Protected Phases		4	5	2		6	3
Permitted Phases	4			2 3			
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	27.0	27.0		36.0	27.0
Total Split (s)	36.0	36.0	27.0	63.0	94.0	36.0	31.0
Total Split (%)	27.7%	27.7%	20.8%	48.5%	72.3%	27.7%	23.8%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	Min		Min C-Max	
Act Effct Green (s)	28.5	28.5	20.1	52.7	93.5	28.6	36.8
Actuated g/C Ratio	0.22	0.22	0.15	0.41	0.72	0.22	0.28
v/c Ratio	0.25	0.85	0.29	0.75	0.03	0.81	0.93
Control Delay	41.8	65.5	48.2	37.1	7.1	54.7	63.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	41.8	65.5	48.2	37.3	7.1	54.7	63.1
LOS	D	E	D	D	A	D	E
Approach Delay		60.2		35.9		54.7	63.1
Approach LOS		E		D		D	E

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 104 (80%), Referenced to phase 3:SWL, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 53.6	Intersection LOS: D
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	



Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

	↖	→	↗	↑	↖	↓	↗
Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	98	342	76	549	60	871	881
v/c Ratio	0.25	0.85	0.29	0.75	0.03	0.81	0.93
Control Delay	41.8	65.5	48.2	37.1	7.1	54.7	63.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	41.8	65.5	48.2	37.3	7.1	54.7	63.1
Queue Length 50th (ft)	69	269	43	276	8	255	~441
Queue Length 95th (ft)	111	354	m99	411	m21	299	#610
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	447	465	311	821	2078	1196	946
Starvation Cap Reductn	0	0	0	33	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	0.22	0.74	0.24	0.70	0.03	0.73	0.93
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.						

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

	↖	↗	→	↖	↗	↑	↖	↓	↗	↖	↗	↖	↗
Movement	EBL2	EBL	EBT	EBR	NBL	NBT	NBR	SBT	SBR	SWL	SWR	SWR2	
Lane Configurations		↖	↗		↖	↑	↖	↖	↖	↖	↖	↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0			
Lane Util. Factor		1.00	1.00		1.00	1.00	0.88	0.91		0.97			
Flt		1.00	0.96		1.00	1.00	0.85	0.98		0.99			
Flt Protected		0.95	1.00		0.95	1.00	1.00	1.00		0.96			
Satd. Flow (prot)		1760	1792		1719	1810	2707	4859		3343			
Flt Permitted		0.95	1.00		0.95	1.00	1.00	1.00		0.96			
Satd. Flow (perm)		1760	1792		1719	1810	2707	4859		3343			
Volume (vph)	65	25	235	80	70	505	55	694	108	735	65	10	
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)	71	27	255	87	76	549	60	754	117	799	71	11	
RTOR Reduction (vph)	0	0	10	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	98	332	0	76	549	60	871	0	881	0	0	
Heavy Vehicles (%)	2%	4%	2%	2%	5%	5%	5%	5%	2%	4%	4%	4%	
Turn Type	Perm	Perm			Prot		custom						
Protected Phases			4		5	2		6		3			
Permitted Phases	4	4					2 3						
Actuated Green, G (s)		28.5	28.5		20.1	52.7	93.5	28.6		36.8			
Effective Green, g (s)		28.5	28.5		20.1	52.7	93.5	28.6		36.8			
Actuated g/C Ratio		0.22	0.22		0.15	0.41	0.72	0.22		0.28			
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0			
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		386	393		266	734	1947	1069		946			
v/s Ratio Prot			c0.19		0.04	c0.30		c0.18		c0.26			
v/s Ratio Perm		0.06					0.02						
v/c Ratio		0.25	0.84		0.29	0.75	0.03	0.81		0.93			
Uniform Delay, d1		42.0	48.6		48.6	33.0	5.2	48.2		45.4			
Progression Factor		1.00	1.00		0.94	0.93	1.10	1.00		1.00			
Incremental Delay, d2		0.3	15.2		0.6	3.9	0.0	4.9		16.7			
Delay (s)		42.3	63.8		46.4	34.7	5.8	53.1		62.1			
Level of Service		D	E		D	C	A	D		E			
Approach Delay (s)			59.0			33.5		53.1		62.1			
Approach LOS			E			C		D		E			
Intersection Summary													
HCM Average Control Delay			52.1			HCM Level of Service				D			
HCM Volume to Capacity ratio			0.84										
Actuated Cycle Length (s)			130.0			Sum of lost time (s)				12.0			
Intersection Capacity Utilization			77.1%			ICU Level of Service				D			
Analysis Period (min)			15										
c	Critical Lane Group												

Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Volume (vph)	70	657	140	300	735	390	30	160	30	130	1040	40
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	20.0	20.0	20.0
Total Split (s)	16.0	37.0	8.0	34.0	55.0	55.0	8.0	36.0	36.0	23.0	51.0	51.0
Total Split (%)	12.3%	28.5%	6.2%	26.2%	42.3%	42.3%	6.2%	27.7%	27.7%	17.7%	39.2%	39.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	Max	C-Min	C-Min	None	None	None	None	None	None
Act Effct Green (s)	10.1	30.6	34.6	30.0	52.6	52.6	4.0	38.2	38.2	15.2	49.4	49.4
Actuated g/C Ratio	0.08	0.24	0.27	0.23	0.40	0.40	0.03	0.29	0.29	0.12	0.38	0.38
v/c Ratio	0.57	0.88	0.33	0.84	0.59	0.50	0.62	0.17	0.07	0.70	0.87	0.07
Control Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
LOS	E	E	B	E	C	A	F	D	B	E	B	A
Approach Delay		54.5			32.4			42.9			20.7	
Approach LOS		D			C			D			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 94 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

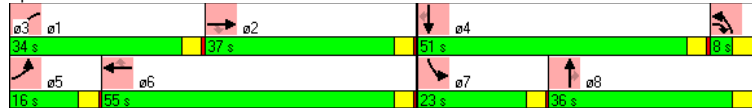
Maximum v/c Ratio: 0.88

Intersection Signal Delay: 34.4 Intersection LOS: C

Intersection Capacity Utilization 80.2% ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 40: Harbor Dr & 32nd St



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	714	152	326	799	424	33	174	33	141	1130	43
v/c Ratio	0.57	0.88	0.33	0.84	0.59	0.50	0.62	0.17	0.07	0.70	0.87	0.07
Control Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	61.1	13.6	67.3	32.8	5.0	106.7	36.5	12.4	63.0	16.2	1.2
Queue Length 50th (ft)	62	300	28	264	276	6	28	59	0	100	293	3
Queue Length 95th (ft)	115	376	67	#419	347	76	#85	94	28	m115	m#369	m3
Internal Link Dist (ft)		710			294			151			613	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	159	873	459	389	1368	858	53	1010	463	251	1306	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	9	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.82	0.33	0.84	0.58	0.49	0.62	0.17	0.07	0.56	0.87	0.07

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.

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
40: Harbor Dr & 32nd St Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1518	1687	3374	1509	1719	3438	1501	1719	3438	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1719	3438	1518	1687	3374	1509	1719	3438	1501	1719	3438	1538
Volume (vph)	70	657	140	300	735	390	30	160	30	130	1040	40
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)	76	714	152	326	799	424	33	174	33	141	1130	43
RTOR Reduction (vph)	0	0	54	0	0	248	0	0	23	0	0	21
Lane Group Flow (vph)	76	714	98	326	799	176	33	174	10	141	1130	22
Confl. Bikes (#/hr)			3					16				
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	pm+ov		Prot	Perm		Prot	Perm		Prot	Perm	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	8.8	30.6	34.6	30.0	51.8	51.8	4.0	38.2	38.2	15.2	49.4	49.4
Effective Green, g (s)	8.8	30.6	34.6	30.0	51.8	51.8	4.0	38.2	38.2	15.2	49.4	49.4
Actuated g/C Ratio	0.07	0.24	0.27	0.23	0.40	0.40	0.03	0.29	0.29	0.12	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	116	809	404	389	1344	601	53	1010	441	201	1306	584
v/s Ratio Prot	0.04	c0.21	0.01	c0.19	0.24		c0.02	0.05		0.08	c0.33	
v/s Ratio Perm			0.06			0.12			0.01			0.01
v/c Ratio	0.66	0.88	0.24	0.84	0.59	0.29	0.62	0.17	0.02	0.70	0.87	0.04
Uniform Delay, d1	59.1	48.0	37.4	47.7	30.8	26.6	62.3	34.1	32.6	55.2	37.2	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.30	0.10
Incremental Delay, d2	12.5	13.3	0.3	19.0	1.9	1.2	20.6	0.1	0.0	5.0	3.0	0.0
Delay (s)	71.7	61.3	37.7	66.7	32.8	27.8	82.8	34.2	32.6	59.5	14.2	2.4
Level of Service	E	E	D	E	C	C	F	C	C	E	B	A
Approach Delay (s)		58.3			38.6			40.7			18.7	
Approach LOS		E			D			D			B	
Intersection Summary												
HCM Average Control Delay	36.8		HCM Level of Service				D					
HCM Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	130.0		Sum of lost time (s)				16.0					
Intersection Capacity Utilization	80.2%		ICU Level of Service				D					
Analysis Period (min)	15											
c Critical Lane Group												

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
42: I-5 SB Off-ramp & 28th St Timing Plan: AM Peak

Lane Group	EBR	NBT	SBT	ø2
Lane Configurations	↔	↔↔	↔↔↔	
Volume (vph)	915	1050	415	
Turn Type	custom			
Protected Phases		2 4	6	2
Permitted Phases	4			
Detector Phases	4	2 4	6	
Minimum Initial (s)	4.0		4.0	4.0
Minimum Split (s)		20.0		20.0
Total Split (s)	79.0	100.0	21.0	21.0
Total Split (%)	79.0%	100.0%	21.0%	21%
Yellow Time (s)		3.5		3.5
All-Red Time (s)	0.5		0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None		C-Max	C-Max
Act Effct Green (s)	73.2	100.0	18.8	
Actuated g/C Ratio	0.73	1.00	0.19	
v/c Ratio	0.84	0.32	0.47	
Control Delay	16.7	0.2	25.1	
Queue Delay	9.9	0.0	0.1	
Total Delay	26.6	0.2	25.2	
LOS	C	A	C	
Approach Delay		0.2	25.2	
Approach LOS		A	C	
Intersection Summary				
Cycle Length: 100				
Actuated Cycle Length: 100				
Offset: 4 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green				
Natural Cycle: 65				
Control Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.84				
Intersection Signal Delay: 14.7	Intersection LOS: B			
Intersection Capacity Utilization 71.3%	ICU Level of Service C			
Analysis Period (min) 15				
Splits and Phases: 42: I-5 SB Off-ramp & 28th St				
↑ ø2	21 s	79 s		
↑ ø4				
↓ ø6	21 s			

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 42: I-5 SB Off-ramp & 28th St Timing Plan: AM Peak

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	995	1141	451
v/c Ratio	0.84	0.32	0.47
Control Delay	16.7	0.2	25.1
Queue Delay	9.9	0.0	0.1
Total Delay	26.6	0.2	25.2
Queue Length 50th (ft)	330	0	100
Queue Length 95th (ft)	556	m0	m106
Internal Link Dist (ft)		139	454
Turn Bay Length (ft)			
Base Capacity (vph)	1216	3539	956
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	203	0	63
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.98	0.32	0.51

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

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 42: I-5 SB Off-ramp & 28th St Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖					↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0					4.0			4.0	
Lane Util. Factor			1.00					0.95			0.91	
Fr't			0.86					1.00			1.00	
Flt Protected			1.00					1.00			1.00	
Satd. Flow (prot)			1611					3539			5085	
Flt Permitted			1.00					1.00			1.00	
Satd. Flow (perm)			1611					3539			5085	
Volume (vph)	0	0	915	0	0	0	0	1050	0	0	415	0
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	995	0	0	0	0	1141	0	0	451	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	987	0	0	0	0	1141	0	0	451	0
Turn Type	custom											
Protected Phases							2 4			6		
Permitted Phases							4					
Actuated Green, G (s)							73.2			100.0		
Effective Green, g (s)							73.2			100.0		
Actuated g/C Ratio							0.73			1.00		
Clearance Time (s)							4.0			4.0		
Vehicle Extension (s)							3.0			3.0		
Lane Grp Cap (vph)							1179			3539		
v/s Ratio Prot										0.32		
v/s Ratio Perm							c0.61					
v/c Ratio							0.84			0.32		
Uniform Delay, d1							9.3			0.0		
Progression Factor							1.00			1.00		
Incremental Delay, d2							5.3			0.0		
Delay (s)							14.6			0.0		
Level of Service							B			A		
Approach Delay (s)	14.6				0.0		0.0				24.5	
Approach LOS	B				A		A				C	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

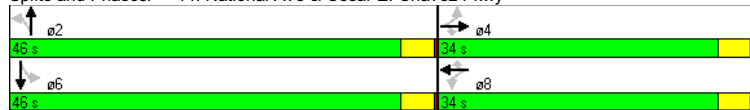
c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↔		↔		↔		↔		↔	
Volume (vph)	300	400	290	110	270	275	120	1000	120	550
Turn Type	Perm		Perm		Perm		Perm		Perm	
Protected Phases	4		8		8		2		6	
Permitted Phases	4		8		8		2		6	
Detector Phases	4		8		8		2		6	
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)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	46.0	46.0	46.0	46.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52	0.52	0.52
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.76	0.71	1.07	0.62
Control Delay	68.4	21.5	5.8	32.2	21.1	17.5	41.5	12.8	106.2	3.8
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.2
Total Delay	71.5	21.5	5.8	32.2	21.1	17.5	41.5	13.2	106.2	4.9
LOS	E	C	A	C	C	B	D	B	F	A
Approach Delay	32.0				21.5		16.0		16.1	
Approach LOS	C				C		B		B	

Intersection Summary	
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	78 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.07
Intersection Signal Delay:	21.0
Intersection LOS:	C
Intersection Capacity Utilization:	81.6%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	435	315	120	293	299	130	1196	130	1044
v/c Ratio	0.99	0.62	0.42	0.56	0.42	0.47	0.76	0.71	1.07	0.62
Control Delay	68.4	21.5	5.8	32.2	21.1	17.5	41.5	12.8	106.2	3.8
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.2
Total Delay	71.5	21.5	5.8	32.2	21.1	17.5	41.5	13.2	106.2	4.9
Queue Length 50th (ft)	146	113	11	45	104	81	29	137	~76	21
Queue Length 95th (ft) m#321	230	m55	#111	181	162	m#148	163	m#115	m45	
Internal Link Dist (ft)	608				780		301		299	
Turn Bay Length (ft)										
Base Capacity (vph)	328	699	748	215	699	637	170	1678	121	1672
Starvation Cap Reductn	0	0	0	0	0	0	0	119	0	375
Spillback Cap Reductn	4	0	0	0	0	7	0	6	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.62	0.42	0.56	0.42	0.47	0.76	0.77	1.07	0.80

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.

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	1.00	1.00	0.94	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3179	1530	2863	1530	2863
Flt Permitted	0.47	1.00	1.00	0.31	1.00	1.00	0.19	1.00	0.14	1.00	0.14	1.00
Satd. Flow (perm)	875	1863	1583	572	1863	1583	325	3179	231	2863	231	2863
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
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)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	0	154	0	0	43	0	10	0	0	169	0
Lane Group Flow (vph)	326	435	161	120	293	256	130	1187	0	130	875	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases		4			8			2				6
Permitted Phases	4		4	8		8	2				6	
Actuated Green, G (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	
Effective Green, g (s)	30.0	30.0	30.0	30.0	30.0	30.0	42.0	42.0		42.0	42.0	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.52	0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
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)	328	699	594	215	699	594	171	1669		121	1503	
v/s Ratio Prot		0.23			0.16			0.37			0.31	
v/s Ratio Perm	c0.37		0.10	0.21		0.16	0.40			c0.56		
v/c Ratio	0.99	0.62	0.27	0.56	0.42	0.43	0.76	0.71		1.07	0.58	
Uniform Delay, d1	24.9	20.4	17.4	19.8	18.5	18.6	15.0	14.4		19.0	13.0	
Progression Factor	0.86	0.86	0.92	1.02	1.02	1.02	0.68	0.71		0.56	0.31	
Incremental Delay, d2	42.3	1.4	0.2	3.1	0.4	0.5	25.3	2.4		85.0	1.0	
Delay (s)	63.7	19.0	16.2	23.3	19.2	19.5	35.5	12.7		95.6	5.1	
Level of Service	E	B	B	C	B	B	D	B		F	A	
Approach Delay (s)		31.7			20.0			15.0			15.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

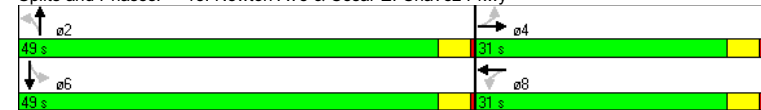
c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

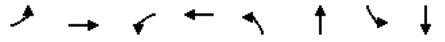
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Volume (vph)	135	130	90	70	40	795	165	890
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	49.0	49.0	49.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	15.6	15.6	15.6	15.6	56.4	56.4	56.4	56.4
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.70	0.70	0.70	0.70
v/c Ratio	0.72	0.58	0.49	0.49	0.17	0.41	0.61	0.46
Control Delay	48.7	29.3	35.6	15.9	7.4	6.2	18.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Total Delay	48.7	29.3	35.6	15.9	7.4	6.3	18.6	6.3
LOS	D	C	D	B	A	A	B	A
Approach Delay		37.1		22.3		6.4		8.1
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy




Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	147	217	98	206	43	929	179	1027
v/c Ratio	0.72	0.58	0.49	0.49	0.17	0.41	0.61	0.46
Control Delay	48.7	29.3	35.6	15.9	7.4	6.2	18.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Total Delay	48.7	29.3	35.6	15.9	7.4	6.3	18.6	6.3
Queue Length 50th (ft)	69	82	44	39	7	79	37	98
Queue Length 95th (ft)	118	132	81	87	m16	124	m#173	166
Internal Link Dist (ft)		598		178		305		301
Turn Bay Length (ft)								
Base Capacity (vph)	353	620	344	646	253	2255	294	2256
Starvation Cap Reductn	0	0	0	0	0	446	0	554
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	0.42	0.35	0.28	0.32	0.17	0.51	0.61	0.60

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.

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	0.95		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1686		1612	3189		1612	3195	
Flt Permitted	0.45	1.00		0.43	1.00		0.25	1.00		0.28	1.00	
Satd. Flow (perm)	847	1765		801	1686		422	3189		477	3195	
Volume (vph)	135	130	70	90	70	120	40	795	60	165	890	55
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)	147	141	76	98	76	130	43	864	65	179	967	60
RTOR Reduction (vph)	0	30	0	0	93	0	0	5	0	0	4	0
Lane Group Flow (vph)	147	187	0	98	113	0	43	924	0	179	1023	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Effective Green, g (s)	15.6	15.6		15.6	15.6		56.4	56.4		56.4	56.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.70	0.70		0.70	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	344		156	329		298	2248		336	2252	
v/s Ratio Prot		0.11			0.07			0.29			0.32	
v/s Ratio Perm	c0.17			0.12			0.10			c0.38		
v/c Ratio	0.89	0.54		0.63	0.34		0.14	0.41		0.53	0.45	
Uniform Delay, d1	31.4	29.0		29.5	27.8		3.9	4.9		5.6	5.1	
Progression Factor	1.00	1.00		1.00	1.00		0.99	0.99		0.89	0.90	
Incremental Delay, d2	40.3	1.8		7.7	0.6		0.9	0.5		5.3	0.6	
Delay (s)	71.7	30.8		37.2	28.4		4.7	5.4		10.3	5.2	
Level of Service	E	C		D	C		A	A		B	A	
Approach Delay (s)		47.3			31.2			5.3			5.9	
Approach LOS		D			C			A			A	
Intersection Summary												
HCM Average Control Delay		13.7					HCM Level of Service			B		
HCM Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		80.0					Sum of lost time (s)			8.0		
Intersection Capacity Utilization		64.9%					ICU Level of Service			C		
Analysis Period (min)		15										
c Critical Lane Group												

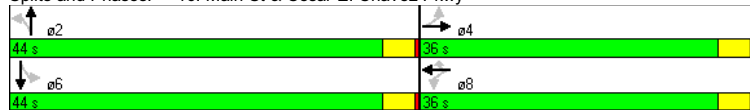
Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗	↖
Volume (vph)	120	290	70	230	270	70	640	250	540
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8		8	2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	44.0	44.0	44.0	44.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	20.1	20.1	20.1	20.1	20.1	51.9	51.9	51.9	51.9
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.65	0.65	0.65	0.65
v/c Ratio	0.53	0.74	0.38	0.54	0.58	0.29	0.46	1.08	0.45
Control Delay	32.3	35.9	28.4	29.0	15.6	12.2	8.4	96.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1
Total Delay	32.3	35.9	28.4	29.0	15.6	12.2	9.6	96.4	5.1
LOS	C	D	C	C	B	B	A	F	A
Approach Delay		34.9		22.6			9.8		26.8
Approach LOS		C		C			A		C

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 5 (6%), Referenced to phase 2:NBT, and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.08
 Intersection Signal Delay: 22.1 Intersection LOS: C
 Intersection Capacity Utilization 74.9% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	342	76	250	293	76	892	272	870
v/c Ratio	0.53	0.74	0.38	0.54	0.58	0.29	0.46	1.08	0.45
Control Delay	32.3	35.9	28.4	29.0	15.6	12.2	8.4	96.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1
Total Delay	32.3	35.9	28.4	29.0	15.6	12.2	9.6	96.4	5.1
Queue Length 50th (ft)	58	159	32	111	57	13	86	~144	12
Queue Length 95th (ft)	98	216	63	157	116	51	172	#319	90
Internal Link Dist (ft)		588		279			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	393	738	316	745	709	261	1954	251	1943
Starvation Cap Reductn	0	0	0	0	0	0	786	0	207
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	0.33	0.46	0.24	0.34	0.41	0.29	0.76	1.08	0.50

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.

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	0.95			1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1751	1836		1751	1863	1535	1545	2974		1542	2915	
Flt Permitted	0.43	1.00		0.28	1.00	1.00	0.29	1.00		0.28	1.00	
Satd. Flow (perm)	800	1836		512	1863	1535	473	2974		459	2915	
Volume (vph)	120	290	25	70	230	270	70	640	180	250	540	260
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)	130	315	27	76	250	293	76	696	196	272	587	283
RTOR Reduction (vph)	0	4	0	0	0	118	0	23	0	0	51	0
Lane Group Flow (vph)	130	338	0	76	250	175	76	869	0	272	819	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8		2			6	
Actuated Green, G (s)	20.1	20.1		20.1	20.1	20.1	51.9	51.9		51.9	51.9	
Effective Green, g (s)	20.1	20.1		20.1	20.1	20.1	51.9	51.9		51.9	51.9	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.65	0.65		0.65	0.65	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	461		129	468	386	307	1929		298	1891	
v/s Ratio Prot		c0.18			0.13			0.29			0.28	
v/s Ratio Perm	0.16			0.15		0.11	0.16			c0.59		
v/c Ratio	0.65	0.73		0.59	0.53	0.45	0.25	0.45		0.91	0.43	
Uniform Delay, d1	26.8	27.5		26.3	25.9	25.3	5.9	7.0		12.1	6.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.66	0.64	
Incremental Delay, d2	7.0	5.9		6.7	1.2	0.8	1.9	0.8		31.5	0.7	
Delay (s)	33.8	33.4		33.0	27.1	26.1	7.8	7.7		39.5	5.1	
Level of Service	C	C		C	C	C	A	A		D	A	
Approach Delay (s)		33.5			27.4			7.7			13.3	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

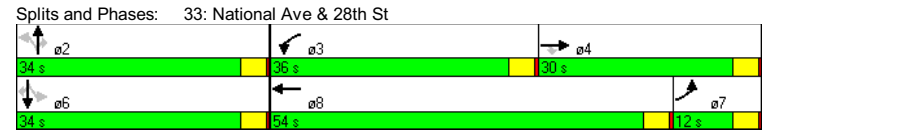
c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 33: National Ave & 28th St Timing Plan: PM Peak

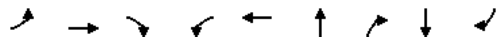
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	94	612	85	463	427	18	98	168	199	210	102
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm	Perm
Protected Phases	7	4		3	8		2		6		6
Permitted Phases			4				2		2	6	6
Detector Phases	7	4	4	3	8	2	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	35.0	35.0	8.0	35.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	12.0	30.0	30.0	36.0	54.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	12.0%	30.0%	30.0%	36.0%	54.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	12.4	23.2	23.2	32.0	42.9		32.8	32.8		32.8	32.8
Actuated g/C Ratio	0.12	0.23	0.23	0.32	0.43		0.33	0.33		0.33	0.33
v/c Ratio	0.47	0.81	0.21	0.98	0.93		0.30	0.30		1.02	0.20
Control Delay	51.2	44.5	7.5	71.4	44.6		37.7	15.3		84.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	51.2	44.5	7.5	71.4	44.6		37.7	15.3		84.3	6.0
LOS	D	D	A	E	D		D	B		F	A
Approach Delay		41.3			55.6		24.5			68.7	
Approach LOS		D			E		C			E	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 98 (98%), Referenced to phase 3:WBL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 50.6 Intersection LOS: D
 Intersection Capacity Utilization 81.3% ICU Level of Service D
 Analysis Period (min) 15



Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak




Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	102	665	92	503	725	127	183	444	111
v/c Ratio	0.47	0.81	0.21	0.98	0.93	0.30	0.30	1.02	0.20
Control Delay	51.2	44.5	7.5	71.4	44.6	37.7	15.3	84.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	44.5	7.5	71.4	44.6	37.7	15.3	84.3	6.0
Queue Length 50th (ft)	62	208	0	316	397	67	45	~312	0
Queue Length 95th (ft)	#148	268	38	#529	524	124	96	#517	39
Internal Link Dist (ft)		590		82	454		221		
Turn Bay Length (ft)									
Base Capacity (vph)	219	920	480	511	901	425	618	435	569
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	0.47	0.72	0.19	0.98	0.80	0.30	0.30	1.02	0.20

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.

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	0.95	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.99	1.00	0.98	1.00	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1597	1762	1762	1762	1509	1734	1509	1734	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.81	1.00	0.76	1.00	0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1597	1762	1762	1440	1509	1342	1509	1342	1509
Volume (vph)	94	612	85	463	427	240	18	98	168	199	210	102
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)	102	665	92	503	464	261	20	107	183	216	228	111
RTOR Reduction (vph)	0	0	71	0	23	0	0	0	123	0	0	75
Lane Group Flow (vph)	102	665	21	503	702	0	0	127	60	0	444	36
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	12.4	23.3	23.3	31.9	42.8			32.8	32.8		32.8	32.8
Effective Green, g (s)	12.4	23.3	23.3	31.9	42.8			32.8	32.8		32.8	32.8
Actuated g/C Ratio	0.12	0.23	0.23	0.32	0.43			0.33	0.33		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	219	825	369	509	754			472	495		440	495
v/s Ratio Prot	0.06	c0.19		c0.31	c0.40							
v/s Ratio Perm			0.01					0.09	0.04		c0.33	0.02
v/c Ratio	0.47	0.81	0.06	0.99	0.93			0.27	0.12		1.01	0.07
Uniform Delay, d1	40.7	36.2	29.8	33.9	27.2			24.8	23.5		33.6	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.34	3.36		1.00	1.00
Incremental Delay, d2	1.6	5.8	0.1	37.1	18.1			0.3	0.1		45.2	0.1
Delay (s)	42.3	42.0	29.9	71.0	45.3			33.5	79.2		78.8	23.2
Level of Service	D	D	C	E	D			C	E		E	C
Approach Delay (s)		40.7			55.8			60.5			67.7	
Approach LOS		D			E			E			E	

Intersection Summary

HCM Average Control Delay 54.1 HCM Level of Service D

HCM Volume to Capacity ratio 0.93

Actuated Cycle Length (s) 100.0 Sum of lost time (s) 8.0

Intersection Capacity Utilization 81.3% ICU Level of Service D

Analysis Period (min) 15

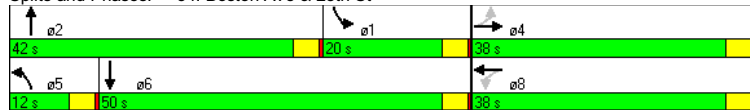
c Critical Lane Group

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	320	100	60	70	50	1050	250	1060
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases	4		8		5	2	1	6
Permitted Phases	4	4	8	8	5	2	1	6
Detector Phases	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	12.0	42.0	20.0	50.0
Total Split (%)	38.0%	38.0%	38.0%	38.0%	12.0%	42.0%	20.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag					Lead	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	32.9	32.9	32.9	32.9	7.3	39.1	16.0	49.6
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.07	0.39	0.16	0.50
v/c Ratio	0.96	0.48	0.25	0.26	0.42	0.91	0.96	0.58
Control Delay	72.5	20.9	27.0	16.4	57.5	26.4	69.4	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	74.0	1.0
Total Delay	72.5	20.9	27.0	16.4	57.5	26.6	143.4	13.6
LOS	E	C	C	B	E	C	F	B
Approach Delay	49.4		19.6		27.8		34.1	
Approach LOS	D		B		C		C	

Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	98 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	33.7
Intersection LOS:	C
Intersection Capacity Utilization:	85.1%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 34: Boston Ave & 28th St



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	348	283	65	152	54	1250	272	1445
v/c Ratio	0.96	0.48	0.25	0.26	0.42	0.91	0.96	0.58
Control Delay	72.5	20.9	27.0	16.4	57.5	26.4	69.4	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	74.0	1.0
Total Delay	72.5	20.9	27.0	16.4	57.5	26.6	143.4	13.6
Queue Length 50th (ft)	212	95	30	43	34	250	174	161
Queue Length 95th (ft)	#389	172	66	92	m58	m#503	m#291	175
Internal Link Dist (ft)	207		577		298		139	
Turn Bay Length (ft)								
Base Capacity (vph)	374	606	268	595	142	1372	283	2491
Starvation Cap Reductn	0	0	0	0	0	3	53	714
Spillback Cap Reductn	0	1	0	0	0	7	0	77
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.47	0.24	0.26	0.38	0.92	1.18	0.81

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.

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.91	1.00	0.91	1.00
Frt	1.00	0.91	1.00	0.92	1.00	0.99	1.00	0.97	1.00	0.97	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1687	1612	1687	1643	1770	3493	1770	4931	1770	4931	1770	4931
Flt Permitted	0.62	1.00	0.43	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1095	1612	771	1643	1770	3493	1770	4931	1770	4931	1770	4931
Volume (vph)	320	100	160	60	70	70	50	1050	100	250	1060	270
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)	348	109	174	65	76	76	54	1141	109	272	1152	293
RTOR Reduction (vph)	0	58	0	0	37	0	0	7	0	0	42	0
Lane Group Flow (vph)	348	225	0	65	115	0	54	1243	0	272	1403	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases		4		8		5	2			1	6	
Permitted Phases	4		8									
Actuated Green, G (s)	32.9	32.9	32.9	32.9	6.2	38.4	16.7	48.9				
Effective Green, g (s)	32.9	32.9	32.9	32.9	6.2	38.4	16.7	48.9				
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.06	0.38	0.17	0.49				
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	360	530	254	541	110	1341	296	2411				
v/s Ratio Prot		0.14		0.07	0.03	0.36	0.15	0.28				
v/s Ratio Perm	0.32		0.08									
v/c Ratio	0.97	0.42	0.26	0.21	0.49	0.93	0.92	0.58				
Uniform Delay, d1	33.0	26.2	24.6	24.2	45.4	29.5	41.0	18.2				
Progression Factor	1.00	1.00	1.00	1.00	1.11	0.54	0.77	0.67				
Incremental Delay, d2	38.2	0.5	0.5	0.2	3.0	11.0	23.3	0.7				
Delay (s)	71.2	26.7	25.1	24.4	53.2	26.9	55.0	12.9				
Level of Service	E	C	C	C	D	C	D	B				
Approach Delay (s)		51.3		24.6		28.0		19.6				
Approach LOS		D		C		C		B				

Intersection Summary			
HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

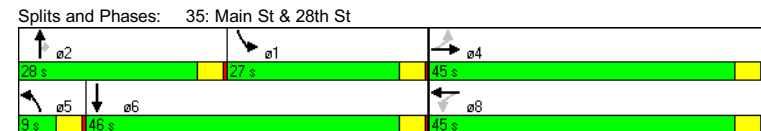
c Critical Lane Group

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	220	730	150	290	65	450	230	360	500
Turn Type	Perm	Perm	Perm	Prot	Prot	Perm	Prot	Prot	Prot
Protected Phases		4		8	5	2		1	6
Permitted Phases	4		8						
Detector Phases	4	4	8	8	5	2	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	27.0	8.0	27.0
Total Split (s)	45.0	45.0	45.0	45.0	9.0	28.0	28.0	27.0	46.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	9.0%	28.0%	28.0%	27.0%	46.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag				Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	42.4	42.4	42.4	42.4	5.0	21.5	21.5	24.0	40.6
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.05	0.22	0.22	0.24	0.41
v/c Ratio	0.95	0.56	0.97	0.40	0.82	0.65	0.69	0.94	0.96dr
Control Delay	76.0	23.7	95.4	11.1	100.4	35.8	28.3	55.9	17.9
Queue Delay	6.2	0.0	0.0	0.0	0.0	0.2	0.0	1.6	0.5
Total Delay	82.2	23.7	95.4	11.1	100.4	36.0	28.3	57.5	18.4
LOS	F	C	F	B	F	D	C	E	B
Approach Delay		36.7		28.7		39.3		28.4	
Approach LOS		D		C		D		C	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 6 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	239	836	163	619	71	489	250	391	1141
v/c Ratio	0.95	0.56	0.97	0.40	0.82	0.65	0.69	0.94	0.96dr
Control Delay	76.0	23.7	95.4	11.1	100.4	35.8	28.3	55.9	17.9
Queue Delay	6.2	0.0	0.0	0.0	0.0	0.2	0.0	1.6	0.5
Total Delay	82.2	23.7	95.4	11.1	100.4	36.0	28.3	57.5	18.4
Queue Length 50th (ft)	147	210	~103	70	42	150	94	203	49
Queue Length 95th (ft)	#309	272	#239	115	m#120	198	m170	#426	#101
Internal Link Dist (ft)		327		314		290			298
Turn Bay Length (ft)									
Base Capacity (vph)	252	1492	168	1533	87	833	396	417	1301
Starvation Cap Reductn	0	0	0	0	0	0	0	5	24
Spillback Cap Reductn	8	0	0	36	0	39	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.56	0.97	0.41	0.82	0.62	0.63	0.95	0.89

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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

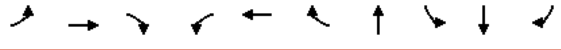


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.88	1.00	0.86	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	3507		1765	3216		1736	3471	1360	1736	2653	
Flt Permitted	0.33	1.00		0.22	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	605	3507		410	3216		1736	3471	1360	1736	2653	
Volume (vph)	220	730	40	150	290	280	65	450	230	360	500	550
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)	239	793	43	163	315	304	71	489	250	391	543	598
RTOR Reduction (vph)	0	4	0	0	169	0	0	0	71	0	191	0
Lane Group Flow (vph)	239	832	0	163	450	0	71	489	179	391	950	0
Confl. Peds. (#/hr)	27		12	12		27			88			200
Confl. Bikes (#/hr)			8			3						6
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	11%
Turn Type	Perm			Perm			Prot		Perm		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8				2				
Actuated Green, G (s)	42.4	42.4		42.4	42.4		5.0	21.5	21.5	24.1	40.6	
Effective Green, g (s)	42.4	42.4		42.4	42.4		5.0	21.5	21.5	24.1	40.6	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.05	0.22	0.22	0.24	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	257	1487		174	1364		87	746	292	418	1077	
v/s Ratio Prot		0.24			0.14		0.04	c0.14		0.23	c0.36	
v/s Ratio Perm	0.39			c0.40					0.13			
v/c Ratio	0.93	0.56		0.94	0.33		0.82	0.66	0.61	0.94	0.96dr	
Uniform Delay, d1	27.4	21.7		27.5	19.3		47.0	35.9	35.5	37.2	27.5	
Progression Factor	1.00	1.00		1.00	1.00		0.90	0.88	0.82	0.66	0.40	
Incremental Delay, d2	37.2	0.5		49.6	0.1		42.1	4.4	9.2	25.8	9.3	
Delay (s)	64.6	22.2		77.1	19.4		84.6	36.2	38.1	50.2	20.2	
Level of Service	E	C		E	B		F	D	D	D	C	
Approach Delay (s)		31.6			31.5			41.0			27.9	
Approach LOS		C			C			D			C	

Intersection Summary

- HCM Average Control Delay: 32.0, HCM Level of Service: C
- HCM Volume to Capacity ratio: 0.91
- Actuated Cycle Length (s): 100.0, Sum of lost time (s): 12.0
- Intersection Capacity Utilization: 87.4%, ICU Level of Service: E
- Analysis Period (min): 15
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.
- c Critical Lane Group

Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

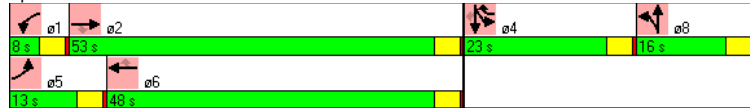


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↕	↔	↕	↔
Volume (vph)	140	1390	2	14	524	278	134	505	12	13
Turn Type	Prot		Perm	Prot		pm+ov		Split		Perm
Protected Phases	5	2		1	6	4	8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	4	8	4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	8.0	8.0	8.0	8.0
Total Split (s)	13.0	53.0	53.0	8.0	48.0	23.0	16.0	23.0	23.0	23.0
Total Split (%)	13.0%	53.0%	53.0%	8.0%	48.0%	23.0%	16.0%	23.0%	23.0%	23.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	8.6	54.8	54.8	4.3	45.5	64.0	11.4	18.5	18.5	18.5
Actuated g/C Ratio	0.09	0.55	0.55	0.04	0.46	0.64	0.11	0.18	0.18	0.18
v/c Ratio	0.54	0.81	0.00	0.20	0.36	0.30	0.75	0.88	0.04	0.05
Control Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
LOS	D	C	A	D	B	A	E	D	C	B
Approach Delay		26.5			14.2		65.7		48.7	
Approach LOS		C			B		E		D	

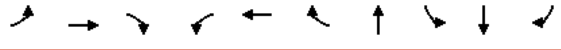
Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 28.9 Intersection LOS: C
 Intersection Capacity Utilization 77.1% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 36: Harbor Dr & 28th St



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	152	1511	2	15	570	302	157	549	13	14
v/c Ratio	0.54	0.81	0.00	0.20	0.36	0.30	0.75	0.88	0.04	0.05
Control Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	24.0	9.5	53.0	19.1	3.2	65.7	50.0	29.2	13.0
Queue Length 50th (ft)	48	367	0	10	124	22	98	166	6	1
Queue Length 95th (ft)	81	#612	4	31	167	52	#192	m#205	m12	m5
Internal Link Dist (ft)		247			310		22		214	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	297	1868	761	74	1563	1025	219	640	347	302
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	0.81	0.00	0.20	0.36	0.29	0.72	0.86	0.04	0.05

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.

Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.91	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99	1.00
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.85	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3303	3406	1393	1719	3438	1485	1821	3367	1827	1531		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00		
Satd. Flow (perm)	3303	3406	1393	1719	3438	1485	1821	3367	1827	1531		
Volume (vph)	140	1390	2	14	524	278	10	134	0	505	12	13
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)	152	1511	2	15	570	302	11	146	0	549	13	14
RTOR Reduction (vph)	0	0	1	0	0	69	0	0	0	0	0	11
Lane Group Flow (vph)	152	1511	1	15	570	233	0	157	0	549	13	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2					4				2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Perm	Prot	pm+ov	Split	Split	Perm					
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	8.6	52.5	52.5	1.6	45.5	64.0		11.4		18.5	18.5	18.5
Effective Green, g (s)	8.6	52.5	52.5	1.6	45.5	64.0		11.4		18.5	18.5	18.5
Actuated g/C Ratio	0.09	0.52	0.52	0.02	0.46	0.64		0.11		0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
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)	284	1788	731	28	1564	1010		208		623	338	283
v/s Ratio Prot	c0.05	c0.44		0.01	0.17	0.04		c0.09		c0.16	0.01	
v/s Ratio Perm			0.00			0.11						0.00
v/c Ratio	0.54	0.85	0.00	0.54	0.36	0.23		0.75		0.88	0.04	0.01
Uniform Delay, d1	43.8	20.3	11.3	48.8	17.8	7.6		42.9		39.7	33.4	33.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.90	0.87	0.79
Incremental Delay, d2	1.9	5.1	0.0	18.3	0.7	0.1		14.4		11.8	0.0	0.0
Delay (s)	45.7	25.4	11.3	67.1	18.5	7.7		57.3		47.3	29.2	26.4
Level of Service	D	C	B	E	B	A		E		D	C	C
Approach Delay (s)		27.2			15.6			57.3			46.4	
Approach LOS		C			B			E			D	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

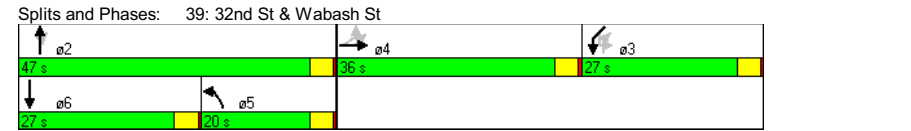
Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak



Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	115	195	140	600	620	619	140
Turn Type	Perm	Prot	Prot	custom			
Protected Phases		4	5	2		6	3
Permitted Phases	4			2 3			
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	20.0	27.0		27.0	27.0
Total Split (s)	36.0	36.0	20.0	47.0	74.0	27.0	27.0
Total Split (%)	32.7%	32.7%	18.2%	42.7%	67.3%	24.5%	24.5%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	C-Min		C-Min	None
Act Effct Green (s)	20.2	20.2	15.9	65.5	81.8	45.6	12.3
Actuated g/C Ratio	0.18	0.18	0.14	0.60	0.74	0.41	0.11
v/c Ratio	0.78	0.62	0.61	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
LOS	E	D	D	A	A	D	D
Approach Delay		54.0		8.6		35.8	53.6
Approach LOS		D		A		D	D

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 69 (63%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 26.3
Intersection LOS: C
Intersection Capacity Utilization 60.4%
ICU Level of Service B
Analysis Period (min) 15



Barrio Logan CPU
39: 32nd St & Wabash St

Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

	↖	→	↗	↑	↖	↓	↗
Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	250	212	152	652	674	759	223
v/c Ratio	0.78	0.62	0.61	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.5	8.4	2.3	35.8	53.6
Queue Length 50th (ft)	170	140	111	78	25	171	78
Queue Length 95th (ft)	237	199	m145	m212	m56	m182	113
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	510	542	258	1078	2013	2020	682
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	0.49	0.39	0.59	0.60	0.33	0.38	0.33
Intersection Summary							
m Volume for 95th percentile queue is metered by upstream signal.							

Barrio Logan CPU
39: 32nd St & Wabash St

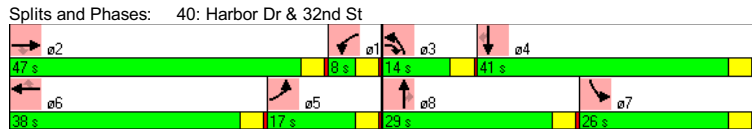
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

	↖	↗	→	↖	↑	↖	↓	↗	↖	↗
Movement	EBL2	EBL	EBT	NBL	NBT	NBR	SBT	SBR	SWL	SWR2
Lane Configurations		↖	↗	↖	↑	↖	↖	↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.88	0.91	0.97			
Flt	1.00	1.00	1.00	1.00	0.85	0.98	0.95			
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00	0.97			
Satd. Flow (prot)	1752	1863	1719	1810	2707	4872	3264			
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00	0.97			
Satd. Flow (perm)	1752	1863	1719	1810	2707	4872	3264			
Volume (vph)	115	115	195	140	600	620	619	79	140	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	125	212	152	652	674	673	86	152	60
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	212	152	652	674	759	0	223	0
Heavy Vehicles (%)	2%	4%	2%	5%	5%	5%	5%	2%	4%	4%
Turn Type	Perm	Perm		Prot		custom				
Protected Phases			4	5	2		6		3	
Permitted Phases	4	4				2 3				
Actuated Green, G (s)		20.2	20.2	15.9	65.5	81.8	45.6		12.3	
Effective Green, g (s)		20.2	20.2	15.9	65.5	81.8	45.6		12.3	
Actuated g/C Ratio		0.18	0.18	0.14	0.60	0.74	0.41		0.11	
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	
Lane Grp Cap (vph)		322	342	248	1078	2013	2020		365	
v/s Ratio Prot			0.11	0.09	c0.36		0.16		c0.07	
v/s Ratio Perm		c0.14				0.25				
v/c Ratio		0.78	0.62	0.61	0.60	0.33	0.38		0.61	
Uniform Delay, d1		42.7	41.4	44.2	14.1	4.8	22.3		46.6	
Progression Factor		1.00	1.00	0.69	0.41	0.36	1.47		1.00	
Incremental Delay, d2		11.1	3.3	2.7	1.5	0.1	0.3		3.0	
Delay (s)		53.9	44.7	33.2	7.4	1.8	33.2		49.6	
Level of Service		D	D	C	A	A	C		D	
Approach Delay (s)			49.7		7.5		33.2		49.6	
Approach LOS			D		A		C		D	
Intersection Summary										
HCM Average Control Delay			24.0				HCM Level of Service		C	
HCM Volume to Capacity ratio			0.64							
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		12.0	
Intersection Capacity Utilization			60.4%				ICU Level of Service		B	
Analysis Period (min)			15							
c Critical Lane Group										

Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Volume (vph)	140	1185	100	40	436	460	70	690	140	310	280	200
Turn Type	Prot	pm+ov		Prot	Perm		Prot	Perm		Prot	Perm	
Protected Phases	5	2	3	1	6	6	3	8	8	7	4	4
Permitted Phases	2			6			3		8		4	
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	17.0	47.0	14.0	8.0	38.0	38.0	14.0	29.0	29.0	26.0	41.0	41.0
Total Split (%)	15.5%	42.7%	12.7%	7.3%	34.5%	34.5%	12.7%	26.4%	26.4%	23.6%	37.3%	37.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	13.0	43.0	51.9	4.0	34.0	34.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.12	0.39	0.47	0.04	0.31	0.31	0.08	0.23	0.23	0.20	0.35	0.35
v/c Ratio	0.75	0.96	0.14	0.70	0.45	0.62	0.54	0.96	0.35	0.98	0.26	0.33
Control Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
LOS	E	D	A	F	C	A	E	E	B	E	A	A
Approach Delay	48.4			22.6			58.0		32.6			
Approach LOS	D			C			E		C			

Intersection Summary	
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	2 (2%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	41.5
Intersection LOS:	D
Intersection Capacity Utilization:	85.7%
ICU Level of Service:	E
Analysis Period (min):	15



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 1 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	152	1288	109	43	474	500	76	750	152	337	304	217
v/c Ratio	0.75	0.96	0.14	0.70	0.45	0.62	0.54	0.96	0.35	0.98	0.26	0.33
Control Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.0	49.7	3.5	104.7	32.3	6.4	63.0	66.5	13.5	71.8	8.9	5.1
Queue Length 50th (ft)	105	459	5	31	141	0	52	276	21	243	78	64
Queue Length 95th (ft)	#205	#613	27	#95	191	83	101	#400	77	#429	33	15
Internal Link Dist (ft)	710		294		45		613					
Turn Bay Length (ft)	230		200		200		200		200			
Base Capacity (vph)	203	1344	788	61	1043	804	156	781	429	344	1189	664
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.96	0.14	0.70	0.45	0.62	0.49	0.96	0.35	0.98	0.26	0.33

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

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
40: Harbor Dr & 32nd St Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1484	1719	3438	1502	1719	3438	1510
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1719	3438	1538	1687	3374	1484	1719	3438	1502	1719	3438	1510
Volume (vph)	140	1185	100	40	436	460	70	690	140	310	280	200
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)	152	1288	109	43	474	500	76	750	152	337	304	217
RTOR Reduction (vph)	0	0	48	0	0	345	0	0	88	0	0	142
Lane Group Flow (vph)	152	1288	61	43	474	155	76	750	64	337	304	75
Confl. Bikes (#/hr)						7			12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	pm+ov		Prot	Perm		Prot	Perm		Prot	Perm	
Protected Phases	5	2	3	1	6	3	8			7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	13.0	43.0	51.9	4.0	34.0	34.0	8.9	25.0	25.0	22.0	38.1	38.1
Effective Green, g (s)	13.0	43.0	51.9	4.0	34.0	34.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.12	0.39	0.47	0.04	0.31	0.31	0.08	0.23	0.23	0.20	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	203	1344	726	61	1043	459	139	781	341	344	1191	523
v/s Ratio Prot	c0.09	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	
v/s Ratio Perm			0.03			0.10			0.04			0.05
v/c Ratio	0.75	0.96	0.08	0.70	0.45	0.34	0.55	0.96	0.19	0.98	0.26	0.14
Uniform Delay, d1	46.9	32.6	16.0	52.4	30.5	29.3	48.6	42.0	34.3	43.8	25.8	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.61	0.32	1.05
Incremental Delay, d2	14.0	16.4	0.0	50.9	1.4	2.0	4.3	22.9	0.3	40.9	0.1	0.1
Delay (s)	60.9	49.0	16.0	103.4	32.0	31.3	53.0	64.9	34.6	67.6	8.4	26.1
Level of Service	E	D	B	F	C	C	D	E	C	E	A	C
Approach Delay (s)		47.9			34.7			59.3			36.1	
Approach LOS		D			C			E			D	
Intersection Summary												
HCM Average Control Delay	45.1			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.94											
Actuated Cycle Length (s)	110.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	85.7%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
42: I-5 SB Off-ramp & 28th St Timing Plan: PM Peak

Lane Group	EBR	NBT	SBT	ø2
Lane Configurations	↔	↔↔	↔↔↔	
Volume (vph)	822	1440	758	
Turn Type	custom			
Protected Phases	2	4	6	2
Permitted Phases	4			
Detector Phases	4	2	6	
Minimum Initial (s)	4.0		4.0	4.0
Minimum Split (s)	20.0		20.0	20.0
Total Split (s)	72.0	100.0	28.0	28.0
Total Split (%)	72.0%	100.0%	28.0%	28%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None		C-Max	C-Max
Act Effct Green (s)	67.7	100.0	24.3	
Actuated g/C Ratio	0.68	1.00	0.24	
v/c Ratio	0.82	0.44	0.67	
Control Delay	19.3	0.2	17.5	
Queue Delay	13.4	0.0	0.7	
Total Delay	32.7	0.2	18.3	
LOS	C	A	B	
Approach Delay		0.2	18.3	
Approach LOS		A	B	
Intersection Summary				
Cycle Length: 100				
Actuated Cycle Length: 100				
Offset: 18 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green				
Natural Cycle: 60				
Control Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.82				
Intersection Signal Delay: 13.6	Intersection LOS: B			
Intersection Capacity Utilization 72.2%	ICU Level of Service C			
Analysis Period (min) 15				
Splits and Phases: 42: I-5 SB Off-ramp & 28th St				
↑ ø2	↑ ø4			
28 s	72 s			
↓ ø6				
28 s				

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 42: I-5 SB Off-ramp & 28th St Timing Plan: PM Peak

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	893	1565	824
v/c Ratio	0.82	0.44	0.67
Control Delay	19.3	0.2	17.5
Queue Delay	13.4	0.0	0.7
Total Delay	32.7	0.2	18.3
Queue Length 50th (ft)	357	0	123
Queue Length 95th (ft)	568	m0	m131
Internal Link Dist (ft)		139	454
Turn Bay Length (ft)			
Base Capacity (vph)	1099	3522	1236
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	202	0	158
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.00	0.44	0.76

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

Barrio Logan CPU Horizon Year Alt 1 with Grade Separation and Coordination
 42: I-5 SB Off-ramp & 28th St Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↔					↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0					4.0			4.0	
Lane Util. Factor			1.00					0.95			0.91	
Fr't			0.86					1.00			1.00	
Flt Protected			1.00					1.00			1.00	
Satd. Flow (prot)			1611					3539			5085	
Flt Permitted			1.00					1.00			1.00	
Satd. Flow (perm)			1611					3539			5085	
Volume (vph)	0	0	822	0	0	0	0	1440	0	0	758	0
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	893	0	0	0	0	1565	0	0	824	0
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	890	0	0	0	0	1565	0	0	824	0
Turn Type	custom											
Protected Phases							2 4			6		
Permitted Phases							4					
Actuated Green, G (s)							67.7			100.0		
Effective Green, g (s)							67.7			100.0		
Actuated g/C Ratio							0.68			1.00		
Clearance Time (s)							4.0			4.0		
Vehicle Extension (s)							3.0			3.0		
Lane Grp Cap (vph)							1091			3539		
v/s Ratio Prot							0.44			c0.16		
v/s Ratio Perm							c0.55					
v/c Ratio							0.82			0.44		
Uniform Delay, d1							11.6			0.0		
Progression Factor							1.00			1.00		
Incremental Delay, d2							4.8			0.0		
Delay (s)							16.4			0.0		
Level of Service							B			A		
Approach Delay (s)	16.4				0.0		0.0				17.4	
Approach LOS	B				A		A				B	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	→	↗	↖	→	↗	↖	↗	↖	↗
Volume (vph)	190	250	190	120	350	110	100	570	60	765
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	
Protected Phases		4			8			2		6
Permitted Phases	4		4	8		8	2		6	
Detector Phases	4	4	4	8	8	8	2	2	6	6
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)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	45.0	45.0	45.0	45.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	56.3%	56.3%	56.3%	56.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	26.2	26.2	26.2	26.2	26.2	26.2	45.8	45.8	45.8	45.8
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57	0.57	0.57
v/c Ratio	0.90	0.45	0.34	0.42	0.62	0.20	0.77	0.37	0.21	0.68
Control Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.5
LOS	E	C	A	C	C	A	D	A	A	A
Approach Delay		30.8			21.9			14.1		6.5
Approach LOS		C			C			B		A

Intersection Summary	
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	79 (99%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	16.2
Intersection LOS:	B
Intersection Capacity Utilization:	78.9%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	272	207	130	380	120	109	674	65	1169
v/c Ratio	0.90	0.45	0.34	0.42	0.62	0.20	0.77	0.37	0.21	0.68
Control Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	63.5	22.5	8.8	24.0	26.7	4.3	51.9	8.0	5.0	6.5
Queue Length 50th (ft)	89	97	25	46	146	0	39	79	6	46
Queue Length 95th (ft)	#203	156	69	91	225	31 m#142	100	m11	71	
Internal Link Dist (ft)		608			780		301		299	
Turn Bay Length (ft)										
Base Capacity (vph)	274	722	692	362	722	687	142	1832	316	1726
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	143
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	0.76	0.38	0.30	0.36	0.53	0.17	0.77	0.37	0.21	0.74

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.

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	[Diagrammatic Lane Configurations]											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	1.00	0.96	1.00	0.96
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3184	1530	2927	1530	2927
Flt Permitted	0.32	1.00	1.00	0.47	1.00	1.00	0.17	1.00	0.36	1.00	1.00	1.00
Satd. Flow (perm)	602	1863	1583	868	1863	1583	287	3184	576	2927	576	2927
Volume (vph)	190	250	190	120	350	110	100	570	50	60	765	310
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)	207	272	207	130	380	120	109	620	54	65	832	337
RTOR Reduction (vph)	0	0	86	0	0	81	0	7	0	0	48	0
Lane Group Flow (vph)	207	272	121	130	380	39	109	667	0	65	1121	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	26.2	26.2	26.2	26.2	26.2	26.2	45.8	45.8		45.8	45.8	
Effective Green, g (s)	26.2	26.2	26.2	26.2	26.2	26.2	45.8	45.8		45.8	45.8	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.57	0.57		0.57	0.57	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
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)	197	610	518	284	610	518	164	1823		330	1676	
v/s Ratio Prot		0.15			0.20			0.21			0.38	
v/s Ratio Perm	c0.34		0.08	0.15		0.02	0.38			0.11		
v/c Ratio	1.05	0.45	0.23	0.46	0.62	0.08	0.66	0.37		0.20	0.67	
Uniform Delay, d1	26.9	21.2	19.6	21.3	22.7	18.6	11.8	9.2		8.2	11.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.73		0.34	0.37	
Incremental Delay, d2	78.1	0.5	0.2	1.2	2.0	0.1	19.1	0.6		1.1	1.7	
Delay (s)	105.0	21.7	19.8	22.5	24.7	18.6	28.2	7.3		3.9	6.1	
Level of Service	F	C	B	C	C	B	C	A		A	A	
Approach Delay (s)		46.3			23.1			10.2			6.0	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

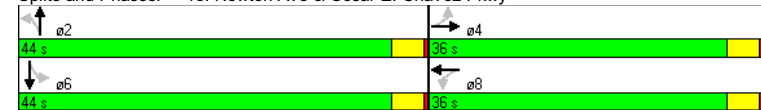
c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	[Diagrammatic Lane Configurations]							
Volume (vph)	80	40	40	50	40	420	100	825
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4			8		2	6
Permitted Phases	4		8		8	2	2	6
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	36.0	36.0	36.0	36.0	44.0	44.0	44.0	44.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	10.1	10.1	10.1	10.1	64.6	64.6	64.6	64.6
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.81	0.81	0.81	0.81
v/c Ratio	0.55	0.40	0.27	0.46	0.18	0.19	0.18	0.42
Control Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.7
LOS	D	B	C	C	A	A	A	A
Approach Delay		30.5			23.6		3.0	1.7
Approach LOS		C			C		A	A

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 32 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 6.6	Intersection LOS: A
Intersection Capacity Utilization 52.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Newton Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	108	43	130	43	490	109	1060
v/c Ratio	0.55	0.40	0.27	0.46	0.18	0.19	0.18	0.42
Control Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	44.9	18.8	34.2	20.1	5.0	2.8	1.7	1.7
Queue Length 50th (ft)	42	20	20	25	4	24	3	16
Queue Length 95th (ft)	82	61	47	70	m15	47	m11	63
Internal Link Dist (ft)		598	178		305		301	
Turn Bay Length (ft)								
Base Capacity (vph)	502	717	512	725	242	2580	604	2551
Starvation Cap Reductn	0	0	0	0	0	0	0	678
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	0.17	0.15	0.08	0.18	0.18	0.19	0.18	0.57
Intersection Summary								
m Volume for 95th percentile queue is metered by upstream signal.								

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: AM Peak

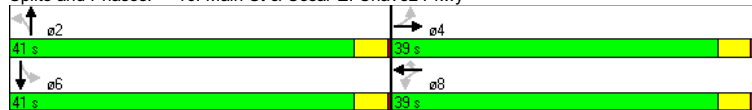
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	0.91		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1699		1612	3191		1612	3149	
Flt Permitted	0.56	1.00		0.65	1.00		0.25	1.00		0.47	1.00	
Satd. Flow (perm)	1042	1695		1205	1699		432	3191		803	3149	
Volume (vph)	80	40	60	40	50	70	40	420	30	100	825	150
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)	87	43	65	43	54	76	43	457	33	109	897	163
RTOR Reduction (vph)	0	58	0	0	67	0	0	3	0	0	8	0
Lane Group Flow (vph)	87	50	0	43	63	0	43	487	0	109	1052	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.0	9.0		9.0	9.0		63.0	63.0		63.0	63.0	
Effective Green, g (s)	9.0	9.0		9.0	9.0		63.0	63.0		63.0	63.0	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.79	0.79		0.79	0.79	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	117	191		136	191		340	2513		632	2480	
v/s Ratio Prot		0.03			0.04			0.15			c0.33	
v/s Ratio Perm	c0.08			0.04			0.10			0.14		
v/c Ratio	0.74	0.26		0.32	0.33		0.13	0.19		0.17	0.42	
Uniform Delay, d1	34.4	32.5		32.7	32.7		2.0	2.1		2.1	2.7	
Progression Factor	1.00	1.00		1.00	1.00		0.97	1.04		0.37	0.33	
Incremental Delay, d2	22.3	0.7		1.3	1.0		0.7	0.2		0.5	0.4	
Delay (s)	56.7	33.2		34.0	33.7		2.7	2.4		1.3	1.3	
Level of Service	E	C		C	C		A	A		A	A	
Approach Delay (s)		43.7			33.8			2.4			1.3	
Approach LOS		D			C			A			A	
Intersection Summary												
HCM Average Control Delay	8.3		HCM Level of Service				A					
HCM Volume to Capacity ratio	0.46											
Actuated Cycle Length (s)	80.0				Sum of lost time (s)				8.0			
Intersection Capacity Utilization	52.0%		ICU Level of Service				A					
Analysis Period (min)	15											
c Critical Lane Group												

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗	↖
Volume (vph)	150	190	70	350	190	85	340	150	580
Turn Type	Perm		Perm		Perm	Perm		Perm	
Protected Phases		4		8		8	2		6
Permitted Phases	4		8		8	2		6	
Detector Phases	4	4	8	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	23.5	23.5	23.5	23.5	23.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.61	0.61	0.61	0.61
v/c Ratio	0.73	0.41	0.24	0.69	0.35	0.38	0.25	0.37	0.46
Control Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.2	9.2	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.4	9.2	6.4
LOS	D	C	C	C	A	B	A	A	A
Approach Delay		31.4		21.5			9.9		6.9
Approach LOS		C		C			A		A

Intersection Summary	
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	18 (23%), Referenced to phase 2:NBL and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	14.8
Intersection LOS:	B
Intersection Capacity Utilization:	70.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	223	76	380	207	92	468	163	842
v/c Ratio	0.73	0.41	0.24	0.69	0.35	0.38	0.25	0.37	0.46
Control Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.2	9.2	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Total Delay	43.3	22.7	20.6	31.0	4.3	17.5	8.4	9.2	6.4
Queue Length 50th (ft)	68	80	27	156	0	24	51	29	70
Queue Length 95th (ft)	122	119	51	213	38	79	93	53	93
Internal Link Dist (ft)		588		983			201		305
Turn Bay Length (ft)									
Base Capacity (vph)	331	808	465	815	778	240	1839	442	1816
Starvation Cap Reductn	0	0	0	0	0	0	734	0	161
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	0.49	0.28	0.16	0.47	0.27	0.38	0.42	0.37	0.51

Intersection Summary

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
16: Main St & Cesar E. Chavez Pkwy Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.98	1.00		0.99	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1839		1750	1863	1511	1537	2996		1549	2945	
Flt Permitted	0.28	1.00		0.51	1.00	1.00	0.29	1.00		0.47	1.00	
Satd. Flow (perm)	518	1839		947	1863	1511	472	2996		772	2945	
Volume (vph)	150	190	15	70	350	190	85	340	90	150	580	195
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)	163	207	16	76	380	207	92	370	98	163	630	212
RTOR Reduction (vph)	0	4	0	0	0	146	0	22	0	0	30	0
Lane Group Flow (vph)	163	219	0	76	380	61	92	446	0	163	812	0
Confl. Peds. (#/hr)	38		18	18		38	26		5	5		26
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.5	23.5		23.5	23.5	23.5	48.5	48.5		48.5	48.5	
Effective Green, g (s)	23.5	23.5		23.5	23.5	23.5	48.5	48.5		48.5	48.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.61	0.61		0.61	0.61	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	152	540		278	547	444	286	1816		468	1785	
v/s Ratio Prot		0.12			0.20			0.15			c0.28	
v/s Ratio Perm	c0.31			0.08		0.04	0.19			0.21		
v/c Ratio	1.07	0.41		0.27	0.69	0.14	0.32	0.25		0.35	0.45	
Uniform Delay, d1	28.2	22.6		21.7	25.1	20.8	7.7	7.3		7.9	8.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.62	0.59	
Incremental Delay, d2	93.6	0.5		0.5	3.8	0.1	3.0	0.3		1.9	0.8	
Delay (s)	121.9	23.1		22.2	28.9	20.9	10.7	7.6		6.8	5.9	
Level of Service	F	C		C	C	C	B	A		A	A	
Approach Delay (s)		64.8			25.6			8.1			6.0	
Approach LOS		E			C			A			A	

Intersection Summary

HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
33: National Ave & 28th St Timing Plan: AM Peak

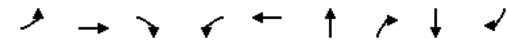
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↖	↗	↘	↖	↗	↘
Volume (vph)	106	245	18	186	599	33	102	82	118	213	307
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm	Perm	Perm
Protected Phases	7	4		3	8		2		6		6
Permitted Phases			4				2		2	6	6
Detector Phases	7	4	4	3	8	2	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	35.0	35.0	8.0	35.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	12.0	40.0	40.0	24.0	52.0	36.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	12.0%	40.0%	40.0%	24.0%	52.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	8.7	33.1	33.1	26.3	50.7		28.6	28.6		28.6	28.6
Actuated g/C Ratio	0.09	0.33	0.33	0.26	0.51		0.29	0.29		0.29	0.29
v/c Ratio	0.74	0.23	0.04	0.59	0.85		0.37	0.18		0.89	0.50
Control Delay	73.8	24.0	8.9	44.0	32.7		42.5	18.9		59.1	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	73.8	24.0	8.9	44.0	32.7		42.5	18.9		59.1	6.3
LOS	E	C	A	D	C		D	B		E	A
Approach Delay		37.5			35.0		33.6			33.7	
Approach LOS		D			D		C			C	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 97 (97%), Referenced to phase 3:WBL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 34.9	Intersection LOS: C
Intersection Capacity Utilization 83.3%	ICU Level of Service E
Analysis Period (min) 15	




Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	115	266	20	202	788	147	89	360	334
v/c Ratio	0.74	0.23	0.04	0.59	0.85	0.37	0.18	0.89	0.50
Control Delay	73.8	24.0	8.9	44.0	32.7	42.5	18.9	59.1	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	24.0	8.9	44.0	32.7	42.5	18.9	59.1	6.3
Queue Length 50th (ft)	73	61	0	123	436	75	16	208	4
Queue Length 95th (ft)	#171	91	16	#238	#690	167	82	#356	67
Internal Link Dist (ft)		590		82	359		221		
Turn Bay Length (ft)									
Base Capacity (vph)	155	1274	583	342	927	440	543	451	703
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	0.74	0.21	0.03	0.59	0.85	0.33	0.16	0.80	0.48

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

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	0.97	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.99	1.00	0.98	1.00	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1299	1814	1754	1509	1745	1509	1745	1509	1745
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.70	1.00	0.76	1.00	0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1299	1814	1239	1509	1355	1509	1355	1509	1355
Volume (vph)	106	245	18	186	599	126	33	102	82	118	213	307
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)	115	266	20	202	651	137	36	111	89	128	232	334
RTOR Reduction (vph)	0	0	13	0	7	0	0	0	64	0	0	231
Lane Group Flow (vph)	115	266	7	202	781	0	0	147	25	0	360	103
Heavy Vehicles (%)	2%	2%	2%	39%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	8.7	33.1	33.1	26.3	50.7			28.6	28.6		28.6	28.6
Effective Green, g (s)	8.7	33.1	33.1	26.3	50.7			28.6	28.6		28.6	28.6
Actuated g/C Ratio	0.09	0.33	0.33	0.26	0.51			0.29	0.29		0.29	0.29
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	154	1171	524	342	920			354	432		388	432
v/s Ratio Prot	c0.06	0.08		0.16	c0.43							
v/s Ratio Perm			0.00					0.12	0.02		c0.27	0.07
v/c Ratio	0.75	0.23	0.01	0.59	0.85			0.42	0.06		0.93	0.24
Uniform Delay, d1	44.6	24.2	22.5	32.2	21.3			28.9	25.9		34.7	27.3
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.44	3.25		1.00	1.00
Incremental Delay, d2	17.8	0.1	0.0	7.3	7.4			0.7	0.1		28.0	0.3
Delay (s)	62.3	24.3	22.5	39.5	28.7			42.4	84.3		62.6	27.6
Level of Service	E	C	C	D	C			D	F		E	C
Approach Delay (s)		35.1			30.9			58.2			45.8	
Approach LOS		D			C			E			D	

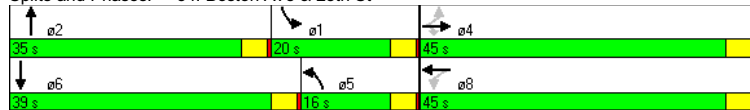
Intersection Summary
HCM Average Control Delay 38.8 HCM Level of Service D
HCM Volume to Capacity ratio 0.86
Actuated Cycle Length (s) 100.0 Sum of lost time (s) 12.0
Intersection Capacity Utilization 83.3% ICU Level of Service E
Analysis Period (min) 15
c Critical Lane Group

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	↖	→	↗	↖	→	↖	↗	↖	↗	
Volume (vph)	250	200	150	50	80	90	720	170	880	
Turn Type	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	
Protected Phases	4		4		8		5		2	
Permitted Phases	4		4		8		5		2	
Detector Phases	4		4		8		5		2	
Minimum Initial (s)	4.0		4.0		4.0		4.0		4.0	
Minimum Split (s)	35.0		35.0		35.0		8.0		27.0	
Total Split (s)	45.0		45.0		45.0		16.0		35.0	
Total Split (%)	45.0%		45.0%		45.0%		16.0%		35.0%	
Yellow Time (s)	3.5		3.5		3.5		3.5		3.5	
All-Red Time (s)	0.5		0.5		0.5		0.5		0.5	
Lead/Lag					Lag		Lead		Lag	
Lead-Lag Optimize?					Yes		Yes		Yes	
Recall Mode	None		None		None		C-Max		None	
Act Effct Green (s)	31.0		31.0		31.0		10.4		42.8	
Actuated g/C Ratio	0.31		0.31		0.31		0.10		0.43	
v/c Ratio	0.90		0.39		0.28		0.18		0.53	
Control Delay	63.8		27.6		4.5		23.2		15.3	
Queue Delay	0.0		0.0		0.0		0.0		0.5	
Total Delay	63.8		27.6		4.5		23.2		15.3	
LOS	E		C		A		C		B	
Approach Delay	36.9				16.8		26.5		20.0	
Approach LOS	D				B		C		C	

Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	99 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	24.9
Intersection LOS:	C
Intersection Capacity Utilization:	70.0%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 34: Boston Ave & 28th St



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	272	217	163	54	228	98	826	185	1283	
v/c Ratio	0.90	0.39	0.28	0.18	0.40	0.54	0.56	0.74	0.53	
Control Delay	63.8	27.6	4.5	23.2	15.3	59.0	22.2	55.2	14.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.3	
Total Delay	63.8	27.6	4.5	23.2	15.3	59.0	22.7	55.2	15.0	
Queue Length 50th (ft)	162	106	0	24	60	64	215	118	175	
Queue Length 95th (ft)	242	147	38	47	107	m106	m316	#193	254	
Internal Link Dist (ft)	207				577		298		234	
Turn Bay Length (ft)										
Base Capacity (vph)	399	728	715	408	719	212	1480	283	2418	
Starvation Cap Reductn	0	0	0	0	0	0	262	0	490	
Spillback Cap Reductn	0	0	5	0	0	0	0	0	164	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.68	0.30	0.23	0.13	0.32	0.46	0.68	0.65	0.67	

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.

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.91	1.00	0.96
Frt	1.00	1.00	0.85	1.00	0.91	1.00	0.99	1.00	0.96	1.00	0.96	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1776	1509	1687	1611	1770	3447	1770	4856	1770	4856	1770
Flt Permitted	0.50	1.00	1.00	0.51	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	882	1776	1509	911	1611	1770	3447	1770	4856	1770	4856	1770
Volume (vph)	250	200	150	50	80	130	90	720	40	170	880	300
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)	272	217	163	54	87	141	98	783	43	185	957	326
RTOR Reduction (vph)	0	0	112	0	68	0	0	3	0	0	49	0
Lane Group Flow (vph)	272	217	51	54	160	0	98	823	0	185	1234	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	4%	2%	2%	3%	2%
Turn Type	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	4	8	5	2	1	6				
Permitted Phases	4	4	4	8								
Actuated Green, G (s)	31.0	31.0	31.0	31.0	31.0	9.0	42.0	15.0	48.0			
Effective Green, g (s)	31.0	31.0	31.0	31.0	31.0	9.0	42.0	15.0	48.0			
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31	0.09	0.42	0.15	0.48			
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	273	551	468	282	499	159	1448	266	2331			
v/s Ratio Prot		0.12		0.10		0.06	0.24	0.10	0.25			
v/s Ratio Perm	c0.31		0.03	0.06								
v/c Ratio	1.00	0.39	0.11	0.19	0.32	0.62	0.57	0.70	0.53			
Uniform Delay, d1	34.4	27.1	24.6	25.3	26.4	43.8	22.1	40.3	18.1			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.16	0.86	0.95	0.73			
Incremental Delay, d2	53.1	0.5	0.1	0.3	0.4	6.5	1.5	6.9	0.8			
Delay (s)	87.6	27.6	24.7	25.6	26.8	57.3	20.6	45.4	14.0			
Level of Service	F	C	C	C	C	E	C	D	B			
Approach Delay (s)		51.9			26.6		24.5		17.9			
Approach LOS		D			C		C		B			

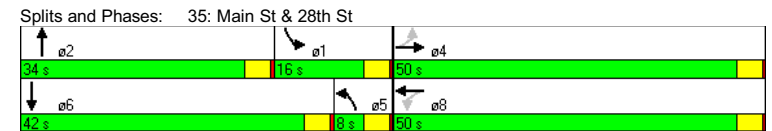
Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

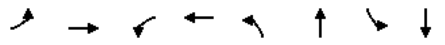
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗
Volume (vph)	190	400	90	500	40	170	190	750
Turn Type	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	8	5	2	1	6	
Permitted Phases	4	4	8	5	2	1	6	
Detector Phases	4	4	8	5	2	1	6	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	34.0	8.0	35.0
Total Split (s)	50.0	50.0	50.0	50.0	8.0	34.0	16.0	42.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	8.0%	34.0%	16.0%	42.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag				Lag	Lead	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	C-Min	None	C-Min	
Act Effct Green (s)	47.2	47.2	47.2	47.2	4.4	21.3	19.4	38.4
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.04	0.21	0.19	0.38
v/c Ratio	0.98	0.32	0.27	0.46	0.57	0.41	0.61	0.90
Control Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
LOS	F	B	B	B	E	B	C	C
Approach Delay		37.3		17.5		24.4		26.8
Approach LOS		D		B		C		C

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			



Barrio Logan CPU
35: Main St & 28th St

Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

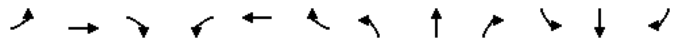


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	489	98	750	43	315	207	1098
v/c Ratio	0.98	0.32	0.27	0.46	0.57	0.41	0.61	0.90
Control Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	85.7	16.8	19.0	17.3	75.8	17.3	34.3	25.4
Queue Length 50th (ft)	128	96	37	150	27	54	128	296
Queue Length 95th (ft)	#281	134	76	201	#83	63	209	#461
Internal Link Dist (ft)		327		314		279		298
Turn Bay Length (ft)								
Base Capacity (vph)	212	1529	369	1631	75	1024	338	1220
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	3	0	80	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.32	0.27	0.46	0.57	0.33	0.61	0.90

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

Barrio Logan CPU
35: Main St & 28th St

Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak



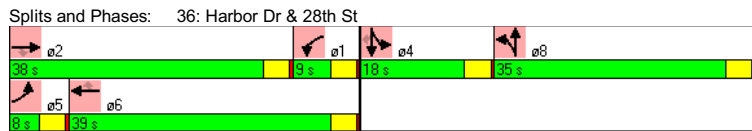
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.95		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1538	3219		1760	3371		1736	3109		1736	3090	
Flt Permitted	0.28	1.00		0.43	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	458	3219		788	3371		1736	3109		1736	3090	
Volume (vph)	190	400		50	90		500	190		40	170	
Peak-hour factor, PHF	0.92	0.92		0.92	0.92		0.92	0.92		0.92	0.92	
Adj. Flow (vph)	207	435		54	98		543	207		43	185	
RTOR Reduction (vph)	0	10		0	0		39	0		103	0	
Lane Group Flow (vph)	207	479		0	98		711	0		43	212	
Confl. Peds. (#/hr)	10			12	12			10			72	
Confl. Bikes (#/hr)				2				4			6	
Heavy Vehicles (%)	17%	11%		2%	2%		2%	2%		4%	4%	
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases			4			8			5	2		1
Permitted Phases	4					8						6
Actuated Green, G (s)	47.2	47.2		47.2	47.2		3.2	20.5		20.3	37.6	
Effective Green, g (s)	47.2	47.2		47.2	47.2		3.2	20.5		20.3	37.6	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.03	0.20		0.20	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	216	1519		372	1591		56	637		352	1162	
v/s Ratio Prot		0.15			0.21		0.02	0.07		c0.12	c0.34	
v/s Ratio Perm	c0.45			0.12								
v/c Ratio	0.96	0.32		0.26	0.45		0.77	0.33		0.59	0.91	
Uniform Delay, d1	25.5	16.4		15.9	17.7		48.0	33.9		36.1	29.7	
Progression Factor	1.00	1.00		1.00	1.00		0.98	0.82		0.71	0.52	
Incremental Delay, d2	48.9	0.1		0.4	0.2		46.0	1.4		2.3	11.7	
Delay (s)	74.3	16.5		16.3	17.9		93.1	29.2		27.9	27.1	
Level of Service	E	B		B	B		F	C		C	C	
Approach Delay (s)		33.7			17.7			36.9			27.2	
Approach LOS		C			B			D			C	

Intersection Summary
HCM Average Control Delay 27.2 HCM Level of Service C
HCM Volume to Capacity ratio 0.90
Actuated Cycle Length (s) 100.0 Sum of lost time (s) 8.0
Intersection Capacity Utilization 78.7% ICU Level of Service D
Analysis Period (min) 15
c Critical Lane Group

Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	70	670	4	18	943	115	6	339	15	22
Turn Type	Prot		Perm	Prot		Perm		Split		Perm
Protected Phases	5	2		1	6		8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	6	8	4	4	4
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)	8.0	20.0	20.0	8.0	20.0	20.0	35.0	8.0	8.0	8.0
Total Split (s)	8.0	38.0	38.0	9.0	39.0	39.0	35.0	18.0	18.0	18.0
Total Split (%)	8.0%	38.0%	38.0%	9.0%	39.0%	39.0%	35.0%	18.0%	18.0%	18.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	5.7	60.8	60.8	5.0	56.6	56.6	15.7	13.6	13.6	13.6
Actuated g/C Ratio	0.06	0.61	0.61	0.05	0.57	0.57	0.16	0.14	0.14	0.14
v/c Ratio	0.40	0.35	0.00	0.23	0.53	0.15	0.03	0.80	0.06	0.11
Control Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
LOS	D	B	B	D	B	A	C	C	B	A
Approach Delay		19.5			18.7		24.4		30.3	
Approach LOS		B			B		C		C	

Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	2 (2%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	21.0
Intersection LOS:	C
Intersection Capacity Utilization:	53.0%
ICU Level of Service:	A
Analysis Period (min):	15



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	76	728	4	20	1025	125	9	368	16	24
v/c Ratio	0.40	0.35	0.00	0.23	0.53	0.15	0.03	0.80	0.06	0.11
Control Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	16.1	14.0	52.4	19.7	4.7	24.4	32.4	18.1	5.9
Queue Length 50th (ft)	24	54	0	13	148	0	4	108	7	4
Queue Length 95th (ft)	#55	266	8	37	#403	38	15	m118	m9	m6
Internal Link Dist (ft)		247			310		22		224	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	189	2070	817	86	1945	854	549	471	256	233
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	0.40	0.35	0.00	0.23	0.53	0.15	0.02	0.78	0.06	0.10

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.

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 36: Harbor Dr & 28th St Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00	0.94	0.99	1.00	1.00	1.00	0.98	0.98
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	0.97	1.00	1.00	1.00	0.85	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3303	3406	1401	1719	3438	1450	1763	3367	1827	1516		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3303	3406	1401	1719	3438	1450	1763	3367	1827	1516		
Volume (vph)	70	670	4	18	943	115	0	6	2	339	15	22
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)	76	728	4	20	1025	125	0	7	2	368	16	24
RTOR Reduction (vph)	0	0	2	0	0	58	0	2	0	0	0	21
Lane Group Flow (vph)	76	728	2	20	1025	67	0	7	0	368	16	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)						3			6			7
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Perm	Perm	Prot	Perm	Split	Split	Split	Split	Perm	Perm	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	4.6	56.0	56.0	2.0	53.4	53.4	12.4			13.6	13.6	13.6
Effective Green, g (s)	4.6	56.0	56.0	2.0	53.4	53.4	12.4			13.6	13.6	13.6
Actuated g/C Ratio	0.05	0.56	0.56	0.02	0.53	0.53	0.12			0.14	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0	4.0
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)	152	1907	785	34	1836	774	219			458	248	206
v/s Ratio Prot	0.02	c0.21		0.01	c0.30		c0.00			c0.11	0.01	
v/s Ratio Perm			0.00			0.05						0.00
v/c Ratio	0.50	0.38	0.00	0.59	0.56	0.09	0.03			0.80	0.06	0.02
Uniform Delay, d1	46.6	12.3	9.7	48.6	15.5	11.4	38.5			41.9	37.7	37.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00			0.55	0.47	0.36
Incremental Delay, d2	2.6	0.6	0.0	23.4	1.2	0.2	0.1			5.9	0.1	0.0
Delay (s)	49.2	12.9	9.7	72.0	16.7	11.6	38.6			29.0	17.8	13.3
Level of Service	D	B	A	E	B	B	D			C	B	B
Approach Delay (s)		16.3			17.1		38.6				27.7	
Approach LOS		B			B		D				C	

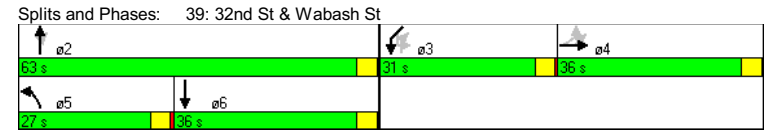
Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 39: 32nd St & Wabash St Timing Plan: AM Peak

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	25	235	70	505	55	694	735
Turn Type	Perm	Prot	Prot	custom			
Protected Phases		4	5	2		6	3
Permitted Phases	4			2 3			
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	27.0	27.0		36.0	27.0
Total Split (s)	36.0	36.0	27.0	63.0	94.0	36.0	31.0
Total Split (%)	27.7%	27.7%	20.8%	48.5%	72.3%	27.7%	23.8%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lag	Lag	Lead			Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	Min		Min	None
Act Effct Green (s)	17.9	17.9	9.5	36.8	68.7	23.2	27.8
Actuated g/C Ratio	0.19	0.19	0.10	0.39	0.72	0.24	0.29
v/c Ratio	0.30	0.72	0.44	0.78	0.03	0.73	0.90
Control Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
LOS	D	D	D	C	A	D	D
Approach Delay		46.2		33.9		37.6	48.2
Approach LOS		D		C		D	D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 94.8	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 41.1	Intersection LOS: D
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	



Barrio Logan CPU
39: 32nd St & Wabash St

Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	98	255	76	549	60	871	881
v/c Ratio	0.30	0.72	0.44	0.78	0.03	0.73	0.90
Control Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	49.7	52.0	34.6	4.7	37.6	48.2
Queue Length 50th (ft)	50	144	43	279	4	173	260
Queue Length 95th (ft)	110	263	105	470	14	265	#544
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	524	554	371	920	2098	1527	979
Starvation Cap Reductn	0	0	0	13	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	0.19	0.46	0.20	0.61	0.03	0.57	0.90

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

Barrio Logan CPU
39: 32nd St & Wabash St

Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Movement	EBL2	EBL	EBT	NBL	NBT	NBR	SBT	SBR	SWL	SWR	SWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	0.91		0.97		
Flt	1.00	1.00	1.00	1.00	0.85	0.98		0.99			
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00		1.00			
Satd. Flow (prot)	1760	1863	1719	1810	2707	4859		3343			
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00		0.96			
Satd. Flow (perm)	1760	1863	1719	1810	2707	4859		3343			
Volume (vph)	65	25	235	70	505	55	694	108	735	65	10
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
Adj. Flow (vph)	71	27	255	76	549	60	754	117	799	71	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	98	255	76	549	60	871	0	881	0	0
Heavy Vehicles (%)	2%	4%	2%	5%	5%	5%	5%	2%	4%	4%	4%
Turn Type	Perm	Perm		Prot		custom					
Protected Phases			4	5	2		6		3		
Permitted Phases	4	4				2 3					
Actuated Green, G (s)	17.9	17.9	9.5	36.8	68.6	23.3		27.8			
Effective Green, g (s)	17.9	17.9	9.5	36.8	68.6	23.3		27.8			
Actuated g/C Ratio	0.19	0.19	0.10	0.39	0.73	0.25		0.29			
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	333	353	173	705	1965	1198		983			
v/s Ratio Prot			c0.14	0.04	c0.30		0.18		c0.26		
v/s Ratio Perm	0.06					0.02					
v/c Ratio	0.29	0.72	0.44	0.78	0.03	0.73		0.90			
Uniform Delay, d1	32.9	36.0	40.0	25.3	3.6	32.7		32.0			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.5	7.1	1.8	5.4	0.0	2.2		10.6			
Delay (s)	33.4	43.1	41.8	30.7	3.6	34.9		42.6			
Level of Service	C	D	D	C	A	C		D			
Approach Delay (s)			40.4		29.6		34.9		42.6		
Approach LOS			D		C		C		D		

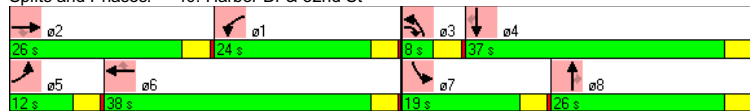
Intersection Summary
HCM Average Control Delay 36.7 HCM Level of Service D
HCM Volume to Capacity ratio 0.81
Actuated Cycle Length (s) 94.5 Sum of lost time (s) 12.0
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15
c Critical Lane Group

Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Volume (vph)	90	641	140	300	756	390	30	160	30	130	1040	60
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	8.0	20.0	20.0	8.0	20.0	20.0	8.0	8.0	8.0
Total Split (s)	12.0	26.0	8.0	24.0	38.0	38.0	8.0	26.0	26.0	19.0	37.0	37.0
Total Split (%)	12.6%	27.4%	8.4%	25.3%	40.0%	40.0%	8.4%	27.4%	27.4%	20.0%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	Max	None	None	None	None	None	Max	Max	Max
Act Effct Green (s)	7.8	21.4	25.4	20.0	35.8	35.8	4.0	22.0	22.0	15.0	33.0	33.0
Actuated g/C Ratio	0.08	0.23	0.27	0.21	0.38	0.38	0.04	0.23	0.23	0.16	0.35	0.35
v/c Ratio	0.71	0.90	0.33	0.91	0.64	0.51	0.45	0.22	0.09	0.52	0.94	0.11
Control Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
LOS	E	D	B	E	C	A	E	C	B	D	D	A
Approach Delay		46.5			29.8			32.4			43.7	
Approach LOS		D			C			C			D	

Intersection Summary	
Cycle Length:	95
Actuated Cycle Length:	94.4
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	38.4
Intersection LOS:	D
Intersection Capacity Utilization:	79.8%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 40: Harbor Dr & 32nd St



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	697	152	326	822	424	33	174	33	141	1130	65
v/c Ratio	0.71	0.90	0.33	0.91	0.64	0.51	0.45	0.22	0.09	0.52	0.94	0.11
Control Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	51.1	10.4	68.0	27.6	4.6	64.6	30.3	10.9	44.1	45.8	6.2
Queue Length 50th (ft)	58	214	22	194	218	0	20	44	0	79	344	0
Queue Length 95th (ft)	#134	#312	51	#355	286	62	#58	73	24	140	#483	27
Internal Link Dist (ft)		710			294		151				613	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	142	796	456	357	1281	836	73	801	374	273	1202	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.88	0.33	0.91	0.64	0.51	0.45	0.22	0.09	0.52	0.94	0.11

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

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
40: Harbor Dr & 32nd St Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1519	1687	3374	1509	1719	3438	1496	1719	3438	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1719	3438	1519	1687	3374	1509	1719	3438	1496	1719	3438	1538
Volume (vph)	90	641	140	300	756	390	30	160	30	130	1040	60
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)	98	697	152	326	822	424	33	174	33	141	1130	65
RTOR Reduction (vph)	0	0	48	0	0	265	0	0	25	0	0	42
Lane Group Flow (vph)	98	697	104	326	822	159	33	174	8	141	1130	23
Confl. Bikes (#/hr)			3					16				
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	pm+ov	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.4	21.4	25.4	20.8	35.8	35.8	4.0	22.0	22.0	15.0	33.0	33.0
Effective Green, g (s)	6.4	21.4	25.4	20.8	35.8	35.8	4.0	22.0	22.0	15.0	33.0	33.0
Actuated g/C Ratio	0.07	0.22	0.27	0.22	0.38	0.38	0.04	0.23	0.23	0.16	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	116	773	405	369	1269	567	72	794	346	271	1192	533
v/s Ratio Prot	0.06	c0.20	0.01	c0.19	0.24		0.02	0.05		c0.08	c0.33	
v/s Ratio Perm			0.06			0.11			0.01			0.01
v/c Ratio	0.84	0.90	0.26	0.88	0.65	0.28	0.46	0.22	0.02	0.52	0.95	0.04
Uniform Delay, d1	43.9	35.9	27.5	36.0	24.5	20.7	44.5	29.6	28.3	36.8	30.3	20.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.0	13.7	0.3	25.0	1.1	0.3	4.6	0.1	0.0	7.0	16.2	0.1
Delay (s)	83.9	49.6	27.8	61.1	25.6	21.0	49.1	29.8	28.3	43.8	46.5	20.8
Level of Service	F	D	C	E	C	C	D	C	C	D	D	C
Approach Delay (s)		49.6			31.7			32.2			45.0	
Approach LOS		D			C			C			D	
Intersection Summary												
HCM Average Control Delay	40.2			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.91											
Actuated Cycle Length (s)	95.2			Sum of lost time (s)			16.0					
Intersection Capacity Utilization	79.8%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
42: I-5 SB off-ramp & 28th St Timing Plan: AM Peak

Lane Group	EBR	NBT	SBT	ø4
Lane Configurations	↔	↔↔	↔↔	↔
Volume (vph)	933	1100	417	
Turn Type	custom			
Protected Phases		2	6	4
Permitted Phases	4 6			
Detector Phases	4 6	2	6	
Minimum Initial (s)		4.0	4.0	4.0
Minimum Split (s)		20.0	20.0	20.0
Total Split (s)	100.0	50.0	50.0	50.0
Total Split (%)	100.0%	50.0%	50.0%	50%
Yellow Time (s)		3.5	3.5	3.5
All-Red Time (s)		0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode		C-Max	C-Max	None
Act Effct Green (s)	100.0	72.9	72.9	
Actuated g/C Ratio	1.00	0.73	0.73	
v/c Ratio	0.63	0.46	0.12	
Control Delay	1.9	1.8	0.9	
Queue Delay	0.1	0.1	0.0	
Total Delay	1.9	1.9	0.9	
LOS	A	A	A	
Approach Delay		1.9	0.9	
Approach LOS		A	A	
Intersection Summary				
Cycle Length: 100				
Actuated Cycle Length: 100				
Offset: 91 (91%), Referenced to phase 2:NBT and 6:SBT, Start of Green				
Natural Cycle: 50				
Control Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.63				
Intersection Signal Delay: 1.7	Intersection LOS: A			
Intersection Capacity Utilization 72.5%	ICU Level of Service C			
Analysis Period (min) 15				
Splits and Phases: 42: I-5 SB off-ramp & 28th St				
↑ ø2	50 s		→ ø4	50 s
↓ ø6	50 s			

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 42: I-5 SB off-ramp & 28th St Timing Plan: AM Peak

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	1014	1196	453
v/c Ratio	0.63	0.46	0.12
Control Delay	1.9	1.8	0.9
Queue Delay	0.1	0.1	0.0
Total Delay	1.9	1.9	0.9
Queue Length 50th (ft)	0	4	1
Queue Length 95th (ft)	0	m125	m26
Internal Link Dist (ft)		234	359
Turn Bay Length (ft)			
Base Capacity (vph)	1611	2578	3705
Starvation Cap Reductn	0	402	0
Spillback Cap Reductn	47	0	148
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.65	0.55	0.13
Intersection Summary			
m Volume for 95th percentile queue is metered by upstream signal.			

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 42: I-5 SB off-ramp & 28th St Timing Plan: AM Peak

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.91	
Fr't		0.86		1.00	1.00	
Flt Protected		1.00		1.00	1.00	
Satd. Flow (prot)		1611		3539	5085	
Flt Permitted		1.00		1.00	1.00	
Satd. Flow (perm)		1611		3539	5085	
Volume (vph)	0	933	0	1100	417	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1014	0	1196	453	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1014	0	1196	453	0
Turn Type	custom					
Protected Phases				2	6	
Permitted Phases	4 6					
Actuated Green, G (s)	100.0			72.9	72.9	
Effective Green, g (s)	100.0			72.9	72.9	
Actuated g/C Ratio	1.00			0.73	0.73	
Clearance Time (s)				4.0	4.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)	1611			2580	3707	
v/s Ratio Prot				0.34	0.09	
v/s Ratio Perm	c0.63					
v/c Ratio	0.63			0.46	0.12	
Uniform Delay, d1	0.0			5.5	4.0	
Progression Factor	1.00			0.17	0.14	
Incremental Delay, d2	0.8			0.5	0.0	
Delay (s)	0.8			1.4	0.6	
Level of Service	A			A	A	
Approach Delay (s)	0.8			1.4	0.6	
Approach LOS	A			A	A	
Intersection Summary						
HCM Average Control Delay	1.0			HCM Level of Service	A	
HCM Volume to Capacity ratio	0.63					
Actuated Cycle Length (s)	100.0			Sum of lost time (s)	0.0	
Intersection Capacity Utilization	72.5%			ICU Level of Service	C	
Analysis Period (min)	15					
c Critical Lane Group						

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	300	400	290	110	270	275	120	1000	120	550
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases		4			8			2		6
Permitted Phases	4		4	8		8	2		2	6
Detector Phases	4	4	4	8	8	8	2	2	6	6
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)	31.0	31.0	31.0	34.0	34.0	34.0	27.0	27.0	27.0	27.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	37.0	48.0	48.0	48.0	48.0
Total Split (%)	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	56.5%	56.5%	56.5%	56.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	32.3	32.3	32.3	32.3	32.3	32.3	44.7	44.7	44.7	44.7
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.53	0.53	0.53	0.53
v/c Ratio	0.97	0.62	0.42	0.54	0.41	0.47	0.78	0.71	1.10	0.63
Control Delay	71.8	25.7	6.8	30.8	21.4	17.8	46.1	14.4	120.2	4.0
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.7
Total Delay	74.9	25.7	6.8	30.8	21.4	17.8	46.1	14.8	120.2	4.7
LOS	E	C	A	C	C	B	D	B	F	A
Approach Delay		35.1			21.4			17.9		17.4
Approach LOS		D			C			B		B

Intersection Summary

Cycle Length: 85
 Actuated Cycle Length: 85
 Offset: 82 (96%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.10
 Intersection Signal Delay: 22.7 Intersection LOS: C
 Intersection Capacity Utilization 81.6% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: National Ave & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	435	315	120	293	299	130	1196	130	1044
v/c Ratio	0.97	0.62	0.42	0.54	0.41	0.47	0.78	0.71	1.10	0.63
Control Delay	71.8	25.7	6.8	30.8	21.4	17.8	46.1	14.4	120.2	4.0
Queue Delay	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.7
Total Delay	74.9	25.7	6.8	30.8	21.4	17.8	46.1	14.8	120.2	4.7
Queue Length 50th (ft)	165	181	25	48	111	88	48	224	~84	21
Queue Length 95th (ft)	#333	277	82	107	178	160 m#158	203 m#132	m46		
Internal Link Dist (ft)		608			780			301		299
Turn Bay Length (ft)										
Base Capacity (vph)	342	723	763	229	723	655	167	1681	118	1663
Starvation Cap Reductn	0	0	0	0	0	0	0	140	0	282
Spillback Cap Reductn	6	0	0	0	0	11	0	10	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.60	0.41	0.52	0.41	0.46	0.78	0.78	1.10	0.76

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.

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 14: National Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	1.00	0.94	1.00	0.94
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1612	3179	1530	2863		
Flt Permitted	0.47	1.00	1.00	0.31	1.00	1.00	0.19	1.00	0.14	1.00		
Satd. Flow (perm)	873	1863	1583	573	1863	1583	323	3179	229	2863		
Volume (vph)	300	400	290	110	270	275	120	1000	100	120	550	410
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)	326	435	315	120	293	299	130	1087	109	130	598	446
RTOR Reduction (vph)	0	0	150	0	0	41	0	9	0	0	156	0
Lane Group Flow (vph)	326	435	165	120	293	258	130	1187	0	130	888	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	18%	18%	18%
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	32.3	32.3	32.3	32.3	32.3	32.3	44.7	44.7		44.7	44.7	
Effective Green, g (s)	32.3	32.3	32.3	32.3	32.3	32.3	44.7	44.7		44.7	44.7	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.53	0.53		0.53	0.53	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
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)	332	708	602	218	708	602	170	1672		120	1506	
v/s Ratio Prot		0.23			0.16			0.37			0.31	
v/s Ratio Perm	c0.37		0.10	0.21		0.16	0.40			c0.57		
v/c Ratio	0.98	0.61	0.27	0.55	0.41	0.43	0.76	0.71		1.08	0.59	
Uniform Delay, d1	26.1	21.3	18.2	20.7	19.4	19.5	16.0	15.2		20.2	13.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.77		0.48	0.29	
Incremental Delay, d2	44.3	1.6	0.2	3.0	0.4	0.5	26.0	2.4		92.4	1.2	
Delay (s)	70.3	22.9	18.5	23.6	19.8	20.0	37.9	14.1		102.1	5.1	
Level of Service	E	C	B	C	B	C	D	B		F	A	
Approach Delay (s)		36.0			20.5			16.5			15.9	
Approach LOS		D			C			B			B	

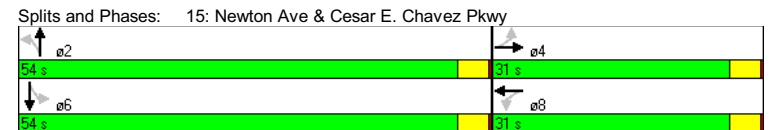
Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Volume (vph)	120	130	90	70	40	790	170	910
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	54.0	54.0	54.0	54.0
Total Split (%)	36.5%	36.5%	36.5%	36.5%	63.5%	63.5%	63.5%	63.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	15.6	15.6	15.6	15.6	61.4	61.4	61.4	61.4
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.72	0.72	0.72	0.72
v/c Ratio	0.71	0.62	0.54	0.54	0.17	0.40	0.59	0.46
Control Delay	52.7	33.6	40.9	18.9	5.0	3.9	16.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3
Total Delay	52.7	33.6	40.9	18.9	5.0	4.1	16.1	5.4
LOS	D	C	D	B	A	A	B	A
Approach Delay		40.8		25.7		4.1		7.0
Approach LOS		D		C		A		A

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 11 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 12.2	Intersection LOS: B
Intersection Capacity Utilization 64.8%	ICU Level of Service C
Analysis Period (min) 15	



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	217	98	217	43	924	185	1054
v/c Ratio	0.71	0.62	0.54	0.54	0.17	0.40	0.59	0.46
Control Delay	52.7	33.6	40.9	18.9	5.0	3.9	16.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3
Total Delay	52.7	33.6	40.9	18.9	5.0	4.1	16.1	5.4
Queue Length 50th (ft)	66	91	48	48	5	65	31	82
Queue Length 95th (ft)	114	144	87	102	m9	56 m#178	151	
Internal Link Dist (ft)		598	178		305		301	
Turn Bay Length (ft)								
Base Capacity (vph)	314	583	314	613	256	2307	311	2310
Starvation Cap Reductn	0	0	0	0	0	537	0	599
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	0.41	0.37	0.31	0.35	0.17	0.52	0.59	0.62

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.

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 15: Newton Ave & Cesar E. Chavez Pkwy Timing Plan: PM Peak

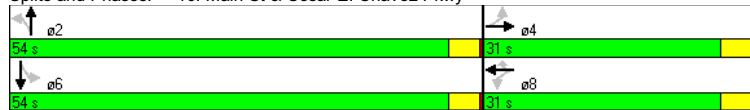
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	0.95		1.00	0.90		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1765		1770	1681		1612	3189		1612	3193	
Flt Permitted	0.40	1.00		0.40	1.00		0.24	1.00		0.29	1.00	
Satd. Flow (perm)	750	1765		750	1681		412	3189		484	3193	
Volume (vph)	120	130	70	90	70	130	40	790	60	170	910	60
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)	130	141	76	98	76	141	43	859	65	185	989	65
RTOR Reduction (vph)	0	27	0	0	94	0	0	4	0	0	4	0
Lane Group Flow (vph)	130	190	0	98	123	0	43	920	0	185	1050	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	12%	12%	12%	12%	12%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6		61.4	61.4		61.4	61.4	
Effective Green, g (s)	15.6	15.6		15.6	15.6		61.4	61.4		61.4	61.4	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.72	0.72		0.72	0.72	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	324		138	309		298	2304		350	2306	
v/s Ratio Prot		0.11			0.07			0.29			0.33	
v/s Ratio Perm	c0.17			0.13			0.10			c0.38		
v/c Ratio	0.94	0.59		0.71	0.40		0.14	0.40		0.53	0.46	
Uniform Delay, d1	34.3	31.7		32.6	30.6		3.7	4.6		5.3	4.9	
Progression Factor	1.00	1.00		1.00	1.00		0.62	0.63		0.81	0.79	
Incremental Delay, d2	58.8	2.7		15.8	0.8		1.0	0.5		5.1	0.6	
Delay (s)	93.1	34.5		48.4	31.4		3.2	3.4		9.4	4.4	
Level of Service	F	C		D	C		A	A		A	A	
Approach Delay (s)		56.4			36.7			3.4			5.2	
Approach LOS		E			D			A			A	
Intersection Summary												
HCM Average Control Delay		14.2					HCM Level of Service			B		
HCM Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		85.0					Sum of lost time (s)			8.0		
Intersection Capacity Utilization		64.8%					ICU Level of Service			C		
Analysis Period (min)		15										
c Critical Lane Group												

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	120	290	70	250	85	640	250	540
Turn Type	Perm		Perm		Perm		Perm	
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phases	4	4	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	31.0	31.0	31.0	31.0	27.0	27.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	54.0	54.0	54.0	54.0
Total Split (%)	36.5%	36.5%	36.5%	36.5%	63.5%	63.5%	63.5%	63.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	20.8	20.8	20.8	20.8	56.2	56.2	56.2	56.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.66	0.66	0.66	0.66
v/c Ratio	0.64	0.75	0.47	0.60	0.32	0.45	0.95	0.45
Control Delay	41.8	39.5	35.5	33.0	12.0	8.0	56.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.1
Total Delay	41.8	39.5	35.5	33.0	12.0	9.3	56.7	4.1
LOS	D	D	D	C	B	A	E	A
Approach Delay		40.2		33.5		9.6		16.4
Approach LOS		D		C		A		B

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 3 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 16: Main St & Cesar E. Chavez Pkwy



Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	342	76	272	92	892	272	891
v/c Ratio	0.64	0.75	0.47	0.60	0.32	0.45	0.95	0.45
Control Delay	41.8	39.5	35.5	33.0	12.0	8.0	56.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.1
Total Delay	41.8	39.5	35.5	33.0	12.0	9.3	56.7	4.1
Queue Length 50th (ft)	63	169	35	131	18	91	93	28
Queue Length 95th (ft)	113	236	71	186	60	168	#315	69
Internal Link Dist (ft)		588		983		201		305
Turn Bay Length (ft)								
Base Capacity (vph)	265	586	209	592	286	1989	285	1984
Starvation Cap Reductn	0	0	0	0	0	833	0	224
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	0.49	0.58	0.36	0.46	0.32	0.77	0.95	0.51

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

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
16: Main St & Cesar E. Chavez Pkwy Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.98	1.00
Flpb, ped/bikes	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.99	1.00	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.95	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1751	1836	1750	1863	1544	2972	1542	2903	1542	2903	1542	2903
Flt Permitted	0.38	1.00	0.26	1.00	0.28	1.00	0.28	1.00	0.28	1.00	0.28	1.00
Satd. Flow (perm)	701	1836	479	1863	462	2972	461	2903	461	2903	461	2903
Volume (vph)	120	290	25	70	250	270	85	640	180	250	540	280
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)	130	315	27	76	272	293	92	696	196	272	587	304
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	64	0
Lane Group Flow (vph)	130	338	0	76	272	0	92	867	0	272	827	0
Confl. Peds. (#/hr)	19		24	24		19	16		20	20		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	16%	16%	16%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	20.8	20.8	20.8	20.8	56.2	56.2	56.2	56.2	56.2	56.2	56.2	56.2
Effective Green, g (s)	20.8	20.8	20.8	20.8	56.2	56.2	56.2	56.2	56.2	56.2	56.2	56.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	449		117	456		305	1965		305	1919	
v/s Ratio Prot		0.18			0.15			0.29			0.28	
v/s Ratio Perm	c0.19			0.16		0.20		c0.59				
v/c Ratio	0.76	0.75		0.65	0.60	0.30	0.44	0.89	0.43			
Uniform Delay, d1	29.7	29.7		28.8	28.4	6.1	6.9	11.9	6.8			
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.65	0.55			
Incremental Delay, d2	17.1	7.0		11.8	2.1	2.5	0.7	27.7	0.6			
Delay (s)	46.8	36.7		40.6	30.5	8.6	7.6	35.4	4.4			
Level of Service	D	D		D	C	A	A	D	A			
Approach Delay (s)		39.5			32.7		7.7		11.6			
Approach LOS		D			C		A		B			

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

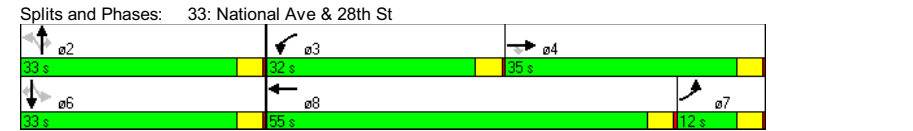
c Critical Lane Group

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
33: National Ave & 28th St Timing Plan: PM Peak

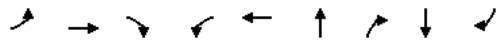
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	94	588	85	448	406	18	98	163	195	210	102
Turn Type	Prot		Perm	Prot		Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8		2		6		6
Permitted Phases			4				2		2	6	6
Detector Phases	7	4	4	3	8	2	2	2	6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	35.0	35.0	8.0	35.0	27.0	33.0	27.0	33.0	27.0	27.0
Total Split (s)	12.0	35.0	35.0	32.0	55.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	12.0%	35.0%	35.0%	32.0%	55.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	C-Max	None	Min	Min	Min	Min	Min	Min
Act Effct Green (s)	11.7	25.2	25.2	28.0	41.5		34.8	34.8		34.8	34.8
Actuated g/C Ratio	0.12	0.25	0.25	0.28	0.42		0.35	0.35		0.35	0.35
v/c Ratio	0.49	0.72	0.20	1.09	0.93		0.29	0.28		0.95	0.19
Control Delay	52.0	38.4	6.6	104.6	45.2		19.5	6.2		67.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	52.0	38.4	6.6	104.6	45.2		19.5	6.2		67.1	6.1
LOS	D	D	A	F	D		B	A		E	A
Approach Delay		36.5			69.5		11.8			54.9	
Approach LOS		D			E		B			D	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 70 (70%), Referenced to phase 3:WBL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 51.1 Intersection LOS: D
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15



Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak



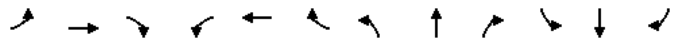
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	102	639	92	487	703	127	177	440	111
v/c Ratio	0.49	0.72	0.20	1.09	0.93	0.29	0.28	0.95	0.19
Control Delay	52.0	38.4	6.6	104.6	45.2	19.5	6.2	67.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	38.4	6.6	104.6	45.2	19.5	6.2	67.1	6.1
Queue Length 50th (ft)	62	193	0	~351	390	58	28	276	0
Queue Length 95th (ft)	#148	237	35	#549	484	124	75	#520	40
Internal Link Dist (ft)		590		82	302		221		
Turn Bay Length (ft)									
Base Capacity (vph)	208	1097	554	447	918	437	640	461	597
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	0.49	0.58	0.17	1.09	0.77	0.29	0.28	0.95	0.19

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.

Barrio Logan CPU
33: National Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	0.94	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.99	1.00	0.98	1.00	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1597	1759	1759	1762	1509	1734	1509	1734	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.87	1.00	0.76	1.00	0.76	1.00
Satd. Flow (perm)	1770	3539	1583	1597	1759	1759	1539	1509	1353	1509	1353	1509
Volume (vph)	94	588	85	448	406	241	18	98	163	195	210	102
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)	102	639	92	487	441	262	20	107	177	212	228	111
RTOR Reduction (vph)	0	0	69	0	26	0	0	115	0	0	0	72
Lane Group Flow (vph)	102	639	23	487	677	0	0	127	62	0	440	39
Heavy Vehicles (%)	2%	2%	2%	13%	2%	2%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		6
Actuated Green, G (s)	11.7	25.2	25.2	28.0	41.5			34.8	34.8		34.8	34.8
Effective Green, g (s)	11.7	25.2	25.2	28.0	41.5			34.8	34.8		34.8	34.8
Actuated g/C Ratio	0.12	0.25	0.25	0.28	0.42			0.35	0.35		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	207	892	399	447	730			536	525		471	525
v/s Ratio Prot	0.06	c0.18		c0.30	c0.39							
v/s Ratio Perm			0.01					0.08	0.04		c0.33	0.03
v/c Ratio	0.49	0.72	0.06	1.09	0.93			0.24	0.12		0.93	0.07
Uniform Delay, d1	41.4	34.1	28.4	36.0	27.8			23.2	22.2		31.5	21.8
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.68	1.22		1.00	1.00
Incremental Delay, d2	1.8	2.8	0.1	68.9	17.8			0.2	0.1		25.8	0.1
Delay (s)	43.2	36.9	28.5	104.9	45.7			16.1	27.1		57.3	21.9
Level of Service	D	D	C	F	D			B	C		E	C
Approach Delay (s)		36.7			69.9			22.5			50.1	
Approach LOS		D			E			C			D	

Intersection Summary

HCM Average Control Delay 51.5 HCM Level of Service D

HCM Volume to Capacity ratio 0.92

Actuated Cycle Length (s) 100.0 Sum of lost time (s) 8.0

Intersection Capacity Utilization 79.8% ICU Level of Service D

Analysis Period (min) 15

c Critical Lane Group

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	→	↗	↖	→	↖	↗	↖	↗
Volume (vph)	350	420	170	70	70	50	1100	270	580
Turn Type	Perm		Perm	Perm		Prot		Prot	
Protected Phases		4			8		5	2	1
Permitted Phases	4		4		8		5	2	1
Detector Phases	4	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0	12.0	42.0	20.0	50.0
Total Split (%)	38.0%	38.0%	38.0%	38.0%	38.0%	12.0%	42.0%	20.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	34.0	34.0	34.0	34.0	34.0	7.3	38.0	16.0	48.6
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.07	0.38	0.16	0.49
v/c Ratio	1.04	0.76	0.29	0.55	0.27	0.42	0.98	1.04	0.41
Control Delay	92.5	38.8	4.9	44.7	16.0	46.5	48.0	110.7	7.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	47.1	0.0	0.2
Total Delay	92.5	38.8	4.9	44.9	16.0	46.5	95.2	110.7	7.7
LOS	F	D	A	D	B	D	F	F	A
Approach Delay		52.6			25.2		93.2		30.9
Approach LOS		D			C		F		C

Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	88 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	57.8
Intersection LOS:	E
Intersection Capacity Utilization:	89.9%
ICU Level of Service:	E
Analysis Period (min):	15



Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	380	457	185	76	163	54	1305	293	1010
v/c Ratio	1.04	0.76	0.29	0.55	0.27	0.42	0.98	1.04	0.41
Control Delay	92.5	38.8	4.9	44.7	16.0	46.5	48.0	110.7	7.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	47.1	0.0	0.2
Total Delay	92.5	38.8	4.9	44.9	16.0	46.5	95.2	110.7	7.7
Queue Length 50th (ft)	~264	256	0	39	45	34	314	~206	78
Queue Length 95th (ft)	#444	379	46	#103	95	m53	m#517	#374	95
Internal Link Dist (ft)		207			577		298		291
Turn Bay Length (ft)									
Base Capacity (vph)	365	604	635	138	596	142	1334	283	2436
Starvation Cap Reductn	0	0	0	0	0	0	165	0	548
Spillback Cap Reductn	0	0	14	2	0	0	0	0	92
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.76	0.30	0.56	0.27	0.38	1.12	1.04	0.53

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.

Barrio Logan CPU
34: Boston Ave & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.91	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.92	1.00	0.99	1.00	0.94	1.00	0.94	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1776	1509	1687	1634	1770	3495	1770	4798	1770	4798	1770
Flt Permitted	0.60	1.00	1.00	0.23	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1073	1776	1509	405	1634	1770	3495	1770	4798	1770	4798	1770
Volume (vph)	350	420	170	70	70	80	50	1100	100	270	580	350
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)	380	457	185	76	76	87	54	1196	109	293	630	380
RTOR Reduction (vph)	0	0	122	0	41	0	0	7	0	0	105	0
Lane Group Flow (vph)	380	457	63	76	122	0	54	1298	0	293	905	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	4	8	5	2	1	6	1	6	1	6
Permitted Phases	4	4	4	8	5	2	1	6	1	6	1	6
Actuated Green, G (s)	34.0	34.0	34.0	34.0	34.0	6.2	38.0	16.0	47.8	16.0	47.8	16.0
Effective Green, g (s)	34.0	34.0	34.0	34.0	34.0	6.2	38.0	16.0	47.8	16.0	47.8	16.0
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.06	0.38	0.16	0.48	0.16	0.48	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	365	604	513	138	556	110	1328	283	2293	283	2293	283
v/s Ratio Prot		0.26		0.07		0.03	0.37		0.17		0.19	
v/s Ratio Perm	c0.35		0.04	0.19								
v/c Ratio	1.04	0.76	0.12	0.55	0.22	0.49	0.98	1.04	0.39	1.04	0.39	1.04
Uniform Delay, d1	33.0	29.3	22.7	26.8	23.5	45.4	30.6	42.0	16.8	42.0	16.8	42.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.88	0.98	1.16	0.52	1.16	0.52	1.16
Incremental Delay, d2	58.2	5.4	0.1	4.7	0.2	2.7	17.3	62.5	0.5	62.5	0.5	62.5
Delay (s)	91.2	34.7	22.8	31.5	23.7	42.5	47.3	111.4	9.2	111.4	9.2	111.4
Level of Service	F	C	C	C	C	D	D	F	A	F	A	F
Approach Delay (s)		53.6		26.2		47.1		32.2		32.2		32.2
Approach LOS		D		C		D		C		C		C

Intersection Summary			
HCM Average Control Delay	42.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

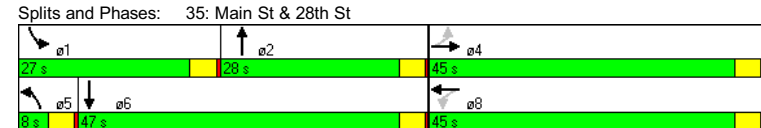
c Critical Lane Group

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

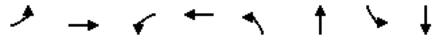
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Volume (vph)	220	730	150	300	60	450	370	510
Turn Type	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	8	8	5	2	1	6
Permitted Phases	4	4	8	8	5	2	1	6
Detector Phases	4	4	8	8	5	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	35.0	35.0	35.0	35.0	8.0	27.0	8.0	27.0
Total Split (s)	45.0	45.0	45.0	45.0	8.0	28.0	27.0	47.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	8.0%	28.0%	27.0%	47.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag				Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Min	None	C-Min	None
Act Effct Green (s)	42.1	42.1	42.1	42.1	4.0	22.9	23.0	41.9
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.04	0.23	0.23	0.42
v/c Ratio	0.99	0.56	0.98	0.42	0.94	0.94	1.01	0.96dr
Control Delay	88.3	23.9	97.7	11.6	142.7	50.7	87.5	22.5
Queue Delay	14.7	0.0	0.0	0.0	0.0	6.2	0.7	0.3
Total Delay	103.0	23.9	97.7	11.6	142.7	56.9	88.2	22.8
LOS	F	C	F	B	F	E	F	C
Approach Delay		41.5		29.1		63.9		39.7
Approach LOS		D		C		E		D

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 42.7		Intersection LOS: D	
Intersection Capacity Utilization 90.7%		ICU Level of Service E	
Analysis Period (min) 15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	239	836	163	641	65	739	402	1152
v/c Ratio	0.99	0.56	0.98	0.42	0.94	0.94	1.01	0.96dr
Control Delay	88.3	23.9	97.7	11.6	142.7	50.7	87.5	22.5
Queue Delay	14.7	0.0	0.0	0.0	0.0	6.2	0.7	0.3
Total Delay	103.0	23.9	97.7	11.6	142.7	56.9	88.2	22.8
Queue Length 50th (ft)	~156	210	~103	75	43	188	~226	205
Queue Length 95th (ft)	#314	272	#239	122	m#122	m#319	#441	#290
Internal Link Dist (ft)		327		314		290		298
Turn Bay Length (ft)								
Base Capacity (vph)	241	1480	166	1524	69	822	399	1321
Starvation Cap Reductn	0	0	0	0	0	0	1	17
Spillback Cap Reductn	12	0	0	85	0	57	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.56	0.98	0.45	0.94	0.97	1.01	0.88

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.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Barrio Logan CPU
35: Main St & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.96		1.00	0.86	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.95		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	3507		1765	3215		1736	3156		1736	2660	
Flt Permitted	0.32	1.00		0.22	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	581	3507		407	3215		1736	3156		1736	2660	
Volume (vph)	220	730	40	150	300	290	60	450	230	370	510	550
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)	239	793	43	163	326	315	65	489	250	402	554	598
RTOR Reduction (vph)	0	4	0	0	171	0	0	66	0	0	180	0
Lane Group Flow (vph)	239	832	0	163	470	0	65	673	0	402	972	0
Confl. Peds. (#/hr)	27			12	12		27			88		200
Confl. Bikes (#/hr)				8			3					6
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	11%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	42.1	42.1		42.1	42.1		4.0	22.9		23.0	41.9	
Effective Green, g (s)	42.1	42.1		42.1	42.1		4.0	22.9		23.0	41.9	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.04	0.23		0.23	0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	1476		171	1354		69	723		399	1115	
v/s Ratio Prot		0.24			0.15		0.04	0.21		c0.23	c0.37	
v/s Ratio Perm	c0.41			0.40								
v/c Ratio	0.98	0.56		0.95	0.35		0.94	0.93		1.01	0.96dr	
Uniform Delay, d1	28.4	22.0		28.0	19.6		47.9	37.8		38.5	26.6	
Progression Factor	1.00	1.00		1.00	1.00		0.98	0.91		1.03	0.65	
Incremental Delay, d2	50.2	0.5		54.8	0.2		87.4	20.3		46.6	9.3	
Delay (s)	78.6	22.5		82.8	19.8		134.5	54.6		86.4	26.7	
Level of Service	E	C		F	B		F	D		F	C	
Approach Delay (s)		35.0			32.6			61.0			42.1	
Approach LOS		C			C			E			D	

Intersection Summary

HCM Average Control Delay 42.1 HCM Level of Service D

HCM Volume to Capacity ratio 0.94

Actuated Cycle Length (s) 100.0 Sum of lost time (s) 8.0

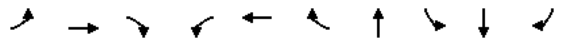
Intersection Capacity Utilization 90.7% ICU Level of Service E

Analysis Period (min) 15

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

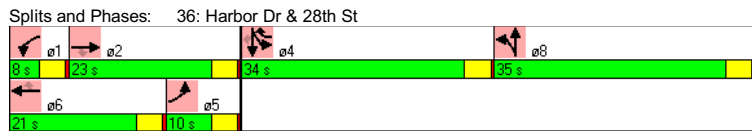
Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak



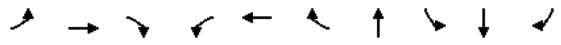
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↕	↔	↕	↔
Volume (vph)	170	1350	2	18	531	255	133	480	12	13
Turn Type	Prot		Perm	Prot		pm+ov		Split		Perm
Protected Phases	5	2		1	6	4	8	4	4	
Permitted Phases			2			6				4
Detector Phases	5	2	2	1	6	4	8	4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	34.0	35.0	34.0	34.0	34.0
Total Split (s)	10.0	23.0	23.0	8.0	21.0	34.0	35.0	34.0	34.0	34.0
Total Split (%)	10.0%	23.0%	23.0%	8.0%	21.0%	34.0%	35.0%	34.0%	34.0%	34.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	6.0	43.0	43.0	5.1	36.2	59.1	18.9	22.9	22.9	22.9
Actuated g/C Ratio	0.06	0.43	0.43	0.05	0.36	0.59	0.19	0.23	0.23	0.23
v/c Ratio	0.93	1.00	0.00	0.23	0.46	0.28	0.45	0.68	0.03	0.04
Control Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
LOS	F	E	C	D	C	A	D	C	C	A
Approach Delay		60.4			22.5		37.8		32.5	
Approach LOS		E			C		D		C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 86 (86%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 44.3 Intersection LOS: D
 Intersection Capacity Utilization 75.2% ICU Level of Service D
 Analysis Period (min) 15



Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	185	1467	2	20	577	277	156	522	13	14
v/c Ratio	0.93	1.00	0.00	0.23	0.46	0.28	0.45	0.68	0.03	0.04
Control Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.2	55.8	27.5	52.7	31.3	2.0	37.8	33.5	22.1	8.4
Queue Length 50th (ft)	61	381	0	12	127	0	96	150	6	1
Queue Length 95th (ft)	#129	#938	7	38	#309	30	128	m151	m9	m0
Internal Link Dist (ft)		247			310		22		214	
Turn Bay Length (ft)	150			75						210
Base Capacity (vph)	198	1464	524	88	1244	1061	564	1010	548	469
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	0.93	1.00	0.00	0.23	0.46	0.26	0.28	0.52	0.02	0.03

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.

Barrio Logan CPU
36: Harbor Dr & 28th St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.90	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3303	3406	1364	1719	3438	1455	1821	3367	1827	1531		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3303	3406	1364	1719	3438	1455	1821	3367	1827	1531		
Volume (vph)	170	1350	2	18	531	255	10	133	0	480	12	13
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)	185	1467	2	20	577	277	11	145	0	522	13	14
RTOR Reduction (vph)	0	0	1	0	0	120	0	0	0	0	0	11
Lane Group Flow (vph)	185	1467	1	20	577	157	0	156	0	522	13	3
Confl. Peds. (#/hr)			69			80						
Confl. Bikes (#/hr)			2					4				2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Perm	Prot	pm+ov	Split	Split	Perm					
Protected Phases	5	2		1	6	4	8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	8.4	40.6	40.6	1.6	33.8	56.7	18.9	22.9	22.9	22.9	22.9	22.9
Effective Green, g (s)	8.4	40.6	40.6	1.6	33.8	56.7	18.9	22.9	22.9	22.9	22.9	22.9
Actuated g/C Ratio	0.08	0.41	0.41	0.02	0.34	0.57	0.19	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	277	1383	554	28	1162	825	344	771	418	351		
v/s Ratio Prot	0.06	c0.43		0.01	c0.17	0.04	c0.09	c0.16	0.01			
v/s Ratio Perm			0.00			0.06						0.00
v/c Ratio	0.67	1.06	0.00	0.71	0.50	0.19	0.45	0.68	0.03	0.01		
Uniform Delay, d1	44.4	29.7	17.7	49.0	26.3	10.5	36.0	35.2	29.9	29.8		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.84	0.69		
Incremental Delay, d2	6.0	42.1	0.0	60.5	1.5	0.1	1.0	1.9	0.0	0.0		
Delay (s)	50.4	71.8	17.7	109.5	27.8	10.6	36.9	32.3	25.1	20.5		
Level of Service	D	E	B	F	C	B	D	C	C	C		
Approach Delay (s)		69.3			24.3		36.9		31.8			
Approach LOS		E			C		D		C			

Intersection Summary

HCM Average Control Delay	49.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

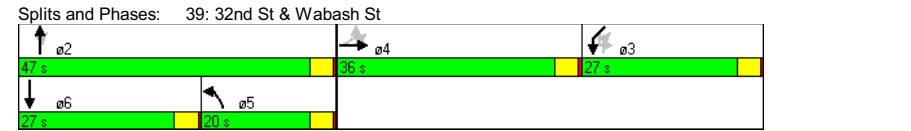
c Critical Lane Group

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	115	195	140	600	620	619	140
Turn Type	Perm	Prot	Prot	custom			
Protected Phases		4	5	2		6	3
Permitted Phases	4			2 3			
Detector Phases	4	4	5	2	2 3	6	3
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	36.0	36.0	20.0	27.0		27.0	27.0
Total Split (s)	36.0	36.0	20.0	47.0	74.0	27.0	27.0
Total Split (%)	32.7%	32.7%	18.2%	42.7%	67.3%	24.5%	24.5%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	None	Min	C-Min		C-Min	None
Act Effct Green (s)	20.2	20.2	16.1	65.5	81.8	45.4	12.3
Actuated g/C Ratio	0.18	0.18	0.15	0.60	0.74	0.41	0.11
v/c Ratio	0.78	0.62	0.60	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
LOS	E	D	D	A	A	C	D
Approach Delay		54.0		8.5		24.7	53.6
Approach LOS		D		A		C	D

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 67 (61%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 23.3
Intersection LOS: C
Intersection Capacity Utilization 60.4%
ICU Level of Service B
Analysis Period (min) 15



Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

	↖	→	↗	↑	↖	↓	↗
Lane Group	EBL	EBT	NBL	NBT	NBR	SBT	SWL
Lane Group Flow (vph)	250	212	152	652	674	759	223
v/c Ratio	0.78	0.62	0.60	0.60	0.33	0.38	0.61
Control Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	48.5	37.0	8.3	2.2	24.7	53.6
Queue Length 50th (ft)	170	140	112	76	25	132	78
Queue Length 95th (ft)	237	199	m143	m217	m56	203	113
Internal Link Dist (ft)		174		613		1629	472
Turn Bay Length (ft)							
Base Capacity (vph)	510	542	257	1078	2013	2012	682
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	0.49	0.39	0.59	0.60	0.33	0.38	0.33
Intersection Summary							
m Volume for 95th percentile queue is metered by upstream signal.							

Barrio Logan CPU
39: 32nd St & Wabash St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

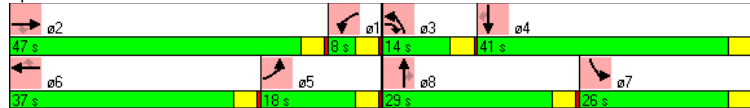
	↖	↗	→	↖	↑	↖	↓	↗	↖	↗	
Movement	EBL2	EBL	EBT	NBL	NBT	NBR	SBT	SBR	SWL	SWR	SWR2
Lane Configurations		↖	↗	↖	↑	↖	↖	↖	↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	0.91	0.97	0.97	0.97	0.97
Fr't	1.00	1.00	1.00	1.00	0.85	0.98	0.95	0.95	0.95	0.95	0.95
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.97	0.97	0.97
Satd. Flow (prot)	1752	1863	1719	1810	2707	4872	3264	3264	3264	3264	3264
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.97	0.97	0.97
Satd. Flow (perm)	1752	1863	1719	1810	2707	4872	3264	3264	3264	3264	3264
Volume (vph)	115	115	195	140	600	620	619	79	140	55	10
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
Adj. Flow (vph)	125	125	212	152	652	674	673	86	152	60	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	250	212	152	652	674	759	0	223	0	0
Heavy Vehicles (%)	2%	4%	2%	5%	5%	5%	5%	2%	4%	4%	4%
Turn Type	Perm	Perm		Prot		custom					
Protected Phases			4	5	2		6		3		
Permitted Phases	4	4				2 3					
Actuated Green, G (s)		20.2	20.2	16.1	65.5	81.8	45.4		12.3		
Effective Green, g (s)		20.2	20.2	16.1	65.5	81.8	45.4		12.3		
Actuated g/C Ratio		0.18	0.18	0.15	0.60	0.74	0.41		0.11		
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0		4.0		
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0		
Lane Grp Cap (vph)		322	342	252	1078	2013	2011		365		
v/s Ratio Prot			0.11	0.09	c0.36		0.16		c0.07		
v/s Ratio Perm		c0.14				0.25					
v/c Ratio		0.78	0.62	0.60	0.60	0.33	0.38		0.61		
Uniform Delay, d1		42.7	41.4	44.0	14.1	4.8	22.5		46.6		
Progression Factor		1.00	1.00	0.69	0.41	0.35	1.00		1.00		
Incremental Delay, d2		11.1	3.3	2.4	1.5	0.1	0.5		3.0		
Delay (s)		53.9	44.7	32.7	7.3	1.7	23.0		49.6		
Level of Service		D	D	C	A	A	C		D		
Approach Delay (s)			49.7		7.4		23.0		49.6		
Approach LOS			D		A		C		D		
Intersection Summary											
HCM Average Control Delay			21.3				HCM Level of Service		C		
HCM Volume to Capacity ratio			0.64								
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		12.0		
Intersection Capacity Utilization			60.4%				ICU Level of Service		B		
Analysis Period (min)			15								
c Critical Lane Group											

Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Volume (vph)	160	1160	100	40	434	460	70	690	140	310	280	210
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phases	5	2	3	1	6	6	3	8	8	7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	8.0	20.0	20.0	8.0	8.0	8.0	8.0	8.0	8.0
Total Split (s)	18.0	47.0	14.0	8.0	37.0	37.0	14.0	29.0	29.0	26.0	41.0	41.0
Total Split (%)	16.4%	42.7%	12.7%	7.3%	33.6%	33.6%	12.7%	26.4%	26.4%	23.6%	37.3%	37.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	14.0	43.0	51.9	4.0	33.0	33.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.13	0.39	0.47	0.04	0.30	0.30	0.08	0.23	0.23	0.20	0.35	0.35
v/c Ratio	0.79	0.94	0.14	0.70	0.47	0.63	0.54	0.96	0.35	0.98	0.26	0.34
Control Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
LOS	E	D	A	F	C	A	E	E	B	E	A	A
Approach Delay		46.4			23.3			57.9			32.1	
Approach LOS		D			C			E			C	

Intersection Summary	
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	40.8
Intersection LOS:	D
Intersection Capacity Utilization:	85.0%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 40: Harbor Dr & 32nd St



Barrio Logan CPU
40: Harbor Dr & 32nd St
Horizon Year Alt 2 with Grade Separation and Coordination
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	174	1261	109	43	472	500	76	750	152	337	304	228
v/c Ratio	0.79	0.94	0.14	0.70	0.47	0.63	0.54	0.96	0.35	0.98	0.26	0.34
Control Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	46.5	3.3	104.7	33.2	7.1	63.0	66.5	13.3	71.6	8.8	4.8
Queue Length 50th (ft)	121	444	4	31	142	4	52	276	21	243	78	77
Queue Length 95th (ft)	#234	#592	27	#95	192	92	101	#400	77	#427	34	15
Internal Link Dist (ft)		710			294			45			613	
Turn Bay Length (ft)	230		200	200		200				200		
Base Capacity (vph)	219	1344	789	61	1012	789	156	781	430	344	1189	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.94	0.14	0.70	0.47	0.63	0.49	0.96	0.35	0.98	0.26	0.34

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

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
40: Harbor Dr & 32nd St Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	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	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1687	3374	1483	1719	3438	1502	1719	3438	1510
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1719	3438	1538	1687	3374	1483	1719	3438	1502	1719	3438	1510
Volume (vph)	160	1160	100	40	434	460	70	690	140	310	280	210
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)	174	1261	109	43	472	500	76	750	152	337	304	228
RTOR Reduction (vph)	0	0	49	0	0	344	0	0	89	0	0	149
Lane Group Flow (vph)	174	1261	60	43	472	156	76	750	63	337	304	79
Confl. Bikes (#/hr)					7				12			10
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	pm+ov		Prot	Perm		Prot	Perm		Prot	Perm	
Protected Phases	5	2	3	1	6	3	8			7	4	
Permitted Phases			2		6		8					4
Actuated Green, G (s)	14.0	43.0	51.9	4.0	33.0	33.0	8.9	25.0	25.0	22.0	38.1	38.1
Effective Green, g (s)	14.0	43.0	51.9	4.0	33.0	33.0	8.9	25.0	25.0	22.0	38.1	38.1
Actuated g/C Ratio	0.13	0.39	0.47	0.04	0.30	0.30	0.08	0.23	0.23	0.20	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	219	1344	726	61	1012	445	139	781	341	344	1191	523
v/s Ratio Prot	c0.10	c0.37	0.01	0.03	0.14		0.04	c0.22		c0.20	0.09	
v/s Ratio Perm			0.03			0.10			0.04			0.05
v/c Ratio	0.79	0.94	0.08	0.70	0.47	0.35	0.55	0.96	0.19	0.98	0.26	0.15
Uniform Delay, d1	46.6	32.2	16.0	52.4	31.3	30.1	48.6	42.0	34.3	43.8	25.8	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.32	0.99
Incremental Delay, d2	17.8	13.6	0.0	50.9	1.5	2.2	4.3	22.9	0.3	40.9	0.1	0.1
Delay (s)	64.4	45.9	16.0	103.4	32.9	32.3	53.0	64.9	34.5	67.3	8.3	24.7
Level of Service	E	D	B	F	C	C	D	E	C	E	A	C
Approach Delay (s)		45.8			35.6			59.2			35.5	
Approach LOS		D			D			E			D	
Intersection Summary												
HCM Average Control Delay	44.4			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.93											
Actuated Cycle Length (s)	110.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	85.0%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
42: I-5 SB off-ramp & 28th St Timing Plan: PM Peak

Lane Group	EBR	NBT	SBT	ø4
Lane Configurations	↔	↔↔	↔↔	
Volume (vph)	457	1530	743	
Turn Type	custom			
Protected Phases		2	6	4
Permitted Phases	4 6			
Detector Phases	4 6	2	6	
Minimum Initial (s)		4.0	4.0	4.0
Minimum Split (s)		20.0	20.0	20.0
Total Split (s)	100.0	70.0	70.0	30.0
Total Split (%)	100.0%	70.0%	70.0%	30%
Yellow Time (s)		3.5	3.5	3.5
All-Red Time (s)		0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode		C-Max	C-Max	None
Act Effct Green (s)	100.0	84.5	84.5	
Actuated g/C Ratio	1.00	0.84	0.84	
v/c Ratio	0.31	0.56	0.19	
Control Delay	0.5	0.5	2.4	
Queue Delay	0.0	0.9	0.0	
Total Delay	0.5	1.4	2.4	
LOS	A	A	A	
Approach Delay		1.4	2.4	
Approach LOS		A	A	
Intersection Summary				
Cycle Length: 100				
Actuated Cycle Length: 100				
Offset: 7 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green				
Natural Cycle: 60				
Control Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.56				
Intersection Signal Delay: 1.5	Intersection LOS: A			
Intersection Capacity Utilization 49.3%	ICU Level of Service A			
Analysis Period (min) 15				
Splits and Phases: 42: I-5 SB off-ramp & 28th St				
↑ ø2	70 s		30 s	
↓ ø6	70 s			

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 42: I-5 SB off-ramp & 28th St Timing Plan: PM Peak

Lane Group	EBR	NBT	SBT
Lane Group Flow (vph)	497	1663	808
v/c Ratio	0.31	0.56	0.19
Control Delay	0.5	0.5	2.4
Queue Delay	0.0	0.9	0.0
Total Delay	0.5	1.4	2.4
Queue Length 50th (ft)	0	1	31
Queue Length 95th (ft)	0	m1	m44
Internal Link Dist (ft)		291	302
Turn Bay Length (ft)			
Base Capacity (vph)	1611	2991	4297
Starvation Cap Reductn	0	945	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.81	0.19

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

Barrio Logan CPU Horizon Year Alt 2 with Grade Separation and Coordination
 42: I-5 SB off-ramp & 28th St Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↔					↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0					4.0			4.0	
Lane Util. Factor			1.00					0.95			0.91	
Frnt			0.86					1.00			1.00	
Flt Protected			1.00					1.00			1.00	
Satd. Flow (prot)			1611					3539			5085	
Flt Permitted			1.00					1.00			1.00	
Satd. Flow (perm)			1611					3539			5085	
Volume (vph)	0	0	457	0	0	0	0	1530	0	0	743	0
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	497	0	0	0	0	1663	0	0	808	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	497	0	0	0	0	1663	0	0	808	0
Turn Type	custom											
Protected Phases	2											
Permitted Phases	4 6											
Actuated Green, G (s)	100.0											
Effective Green, g (s)	84.5											
Actuated g/C Ratio	1.00											
Clearance Time (s)	4.0											
Vehicle Extension (s)	3.0											
Lane Grp Cap (vph)	1611											
v/s Ratio Prot	c0.47											
v/s Ratio Perm	c0.31											
v/c Ratio	0.31											
Uniform Delay, d1	0.0											
Progression Factor	1.00											
Incremental Delay, d2	0.1											
Delay (s)	0.1											
Level of Service	A											
Approach Delay (s)	0.1											
Approach LOS	A											

Intersection Summary

HCM Average Control Delay	0.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group