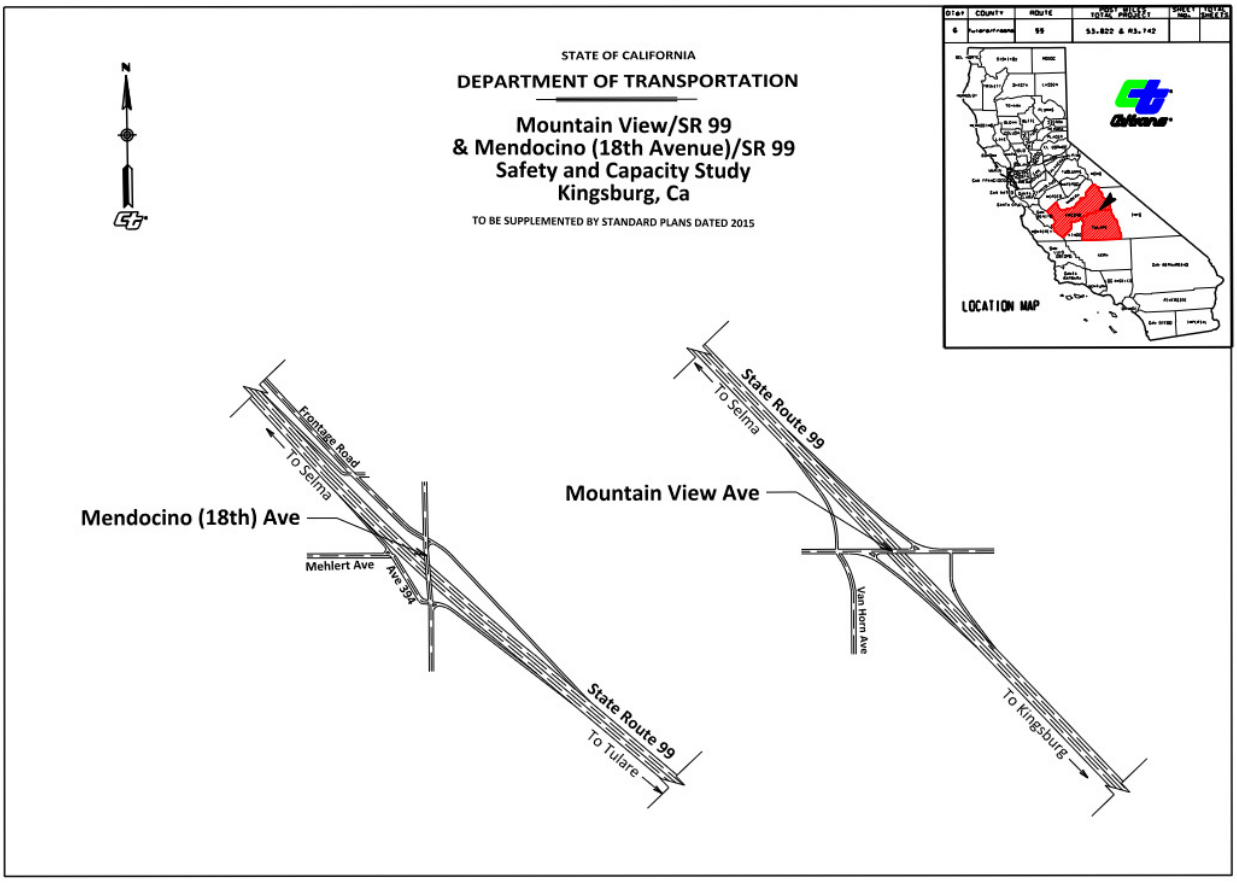
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Feasibility Study
Technical Appendices
Volume 2 of 2



IN FRESNO AND TULARE COUNTIES
WITHIN THE CITY OF KINGSBURG AND SELMA
State Route 99-Mountain View Ave (PM R3.742)
State Route 99- Mendocino (18th) Ave (PM 53.822)

May 2019

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: 18th Ave_Frontage Rd_SR99NB Off Ramp
Site Code: unit # 6
Start Date: 09/26/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Westbound Approach Southbound					Northbound Approach Westbound					Eastbound Approach Northbound					Southbound Approach Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
7:15 AM	10	87	0	0	97	21	3	4	0	28	0	58	28	0	86	4	0	1	0	5	216
7:30 AM	20	111	0	0	131	36	4	21	0	61	0	93	19	0	112	7	0	1	0	8	312
7:45 AM	24	100	0	0	124	39	4	11	0	54	0	140	13	0	153	5	0	3	0	8	339
8:00 AM	26	105	0	0	131	26	1	7	0	34	0	58	13	0	71	4	0	0	0	4	240
Total	80	403	0	0	483	122	12	43	0	177	0	349	73	0	422	20	0	5	0	25	1107
Approach %	16.6	83.4	0.0	0.0	-	68.9	6.8	24.3	0.0	-	0.0	82.7	17.3	0.0	-	80.0	0.0	20.0	0.0	-	-
Total %	7.2	36.4	0.0	0.0	43.6	11.0	1.1	3.9	0.0	16.0	0.0	31.5	6.6	0.0	38.1	1.8	0.0	0.5	0.0	2.3	-
PHF	0.769	0.908	0.000	0.000	0.922	0.782	0.750	0.512	0.000	0.725	0.000	0.623	0.652	0.000	0.690	0.714	0.000	0.417	0.000	0.781	0.816
Lights	76	394	0	0	470	110	10	32	0	152	0	334	65	0	399	20	0	4	0	24	1045
% Lights	95.0	97.8	-	-	97.3	90.2	83.3	74.4	-	85.9	-	95.7	89.0	-	94.5	100.0	-	80.0	-	96.0	94.4
Other Vehicles	4	9	0	0	13	12	2	11	0	25	0	15	8	0	23	0	0	1	0	1	62
% Other Vehicles	5.0	2.2	-	-	2.7	9.8	16.7	25.6	-	14.1	-	4.3	11.0	-	5.5	0.0	-	20.0	-	4.0	5.6

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Count Name: 18th Ave_Frontage Rd_SR99NB Off Ramp
Site Code: unit # 6
Start Date: 09/26/2018

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Westbound Approach Southbound					Northbound Approach Westbound					Eastbound Approach Northbound					Southbound Approach Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
3:00 PM	16	89	0	0	105	38	5	11	0	54	0	95	24	0	119	3	0	2	0	5	283
3:15 PM	12	58	0	0	70	44	8	7	0	59	0	90	15	0	105	1	0	0	0	1	235
3:30 PM	25	69	0	0	94	34	4	9	0	47	0	73	15	0	88	0	0	0	0	0	229
3:45 PM	7	64	0	0	71	33	3	9	0	45	0	74	16	0	90	2	0	2	0	4	210
Total	60	280	0	0	340	149	20	36	0	205	0	332	70	0	402	6	0	4	0	10	957
Approach %	17.6	82.4	0.0	0.0	-	72.7	9.8	17.6	0.0	-	0.0	82.6	17.4	0.0	-	60.0	0.0	40.0	0.0	-	-
Total %	6.3	29.3	0.0	0.0	35.5	15.6	2.1	3.8	0.0	21.4	0.0	34.7	7.3	0.0	42.0	0.6	0.0	0.4	0.0	1.0	-
PHF	0.600	0.787	0.000	0.000	0.810	0.847	0.625	0.818	0.000	0.869	0.000	0.874	0.729	0.000	0.845	0.500	0.000	0.500	0.000	0.500	0.845
Lights	56	269	0	0	325	139	19	30	0	188	0	311	62	0	373	6	0	4	0	10	896
% Lights	93.3	96.1	-	-	95.6	93.3	95.0	83.3	-	91.7	-	93.7	88.6	-	92.8	100.0	-	100.0	-	100.0	93.6
Other Vehicles	4	11	0	0	15	10	1	6	0	17	0	21	8	0	29	0	0	0	0	0	61
% Other Vehicles	6.7	3.9	-	-	4.4	6.7	5.0	16.7	-	8.3	-	6.3	11.4	-	7.2	0.0	-	0.0	-	0.0	6.4

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
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Count Name: Ave 394 and SR99SB Off Ramp
Site Code: unit # 8
Start Date: 09/26/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Southbound Approach				Westbound Approach				Eastbound Approach				
	Southbound				Westbound				Eastbound				
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
7:15 AM	2	10	0	12	0	10	0	10	38	0	0	38	60
7:30 AM	4	15	0	19	0	13	0	13	27	0	0	27	59
7:45 AM	3	33	0	36	0	22	0	22	32	0	0	32	90
8:00 AM	1	16	0	17	0	31	0	31	21	0	0	21	69
Total	10	74	0	84	0	76	0	76	118	0	0	118	278
Approach %	11.9	88.1	0.0	-	0.0	100.0	0.0	-	100.0	0.0	0.0	-	-
Total %	3.6	26.6	0.0	30.2	0.0	27.3	0.0	27.3	42.4	0.0	0.0	42.4	-
PHF	0.625	0.561	0.000	0.583	0.000	0.613	0.000	0.613	0.776	0.000	0.000	0.776	0.772
Lights	9	69	0	78	0	74	0	74	114	0	0	114	266
% Lights	90.0	93.2	-	92.9	-	97.4	-	97.4	96.6	-	-	96.6	95.7
Other Vehicles	1	5	0	6	0	2	0	2	4	0	0	4	12
% Other Vehicles	10.0	6.8	-	7.1	-	2.6	-	2.6	3.4	-	-	3.4	4.3

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: Ave394 and SR99SB OFF Ramp (PM)
Site Code: UNIT #8
Start Date: 09/26/2018

Turning Movement Peak Hour Data (3:30 PM)

Start Time	Southbound Approach Southbound				Northbound Approach Northbound				Eastbound Approach Eastbound				
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
3:30 PM	6	16	0	22	0	23	0	23	18	0	0	18	63
3:45 PM	17	12	0	29	0	11	0	11	21	0	0	21	61
4:00 PM	10	14	0	24	0	15	0	15	22	0	0	22	61
4:15 PM	6	13	0	19	0	17	0	17	25	0	0	25	61
Total	39	55	0	94	0	66	0	66	86	0	0	86	246
Approach %	41.5	58.5	0.0	-	0.0	100.0	0.0	-	100.0	0.0	0.0	-	-
Total %	15.9	22.4	0.0	38.2	0.0	26.8	0.0	26.8	35.0	0.0	0.0	35.0	-
PHF	0.574	0.859	0.000	0.810	0.000	0.717	0.000	0.717	0.860	0.000	0.000	0.860	0.976
Lights	35	43	0	78	0	65	0	65	85	0	0	85	228
% Lights	89.7	78.2	-	83.0	-	98.5	-	98.5	98.8	-	-	98.8	92.7
Other Vehicles	4	12	0	16	0	1	0	1	1	0	0	1	18
% Other Vehicles	10.3	21.8	-	17.0	-	1.5	-	1.5	1.2	-	-	1.2	7.3

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

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Phone eric.olson@dot.ca.gov

Count Name: Ave 394 and SR99SB ON Ramp (AM)
Site Code: UNIT # 5
Start Date: 09/26/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Westbound Approach Southbound					Northbound Approach Westbound					Eastbound Approach Northbound					Southbound Approach Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
7:15 AM	6	39	47	0	92	0	0	0	0	0	0	50	2	0	52	5	6	34	0	45	189
7:30 AM	12	60	59	0	131	1	0	0	0	1	0	75	1	0	76	4	2	38	0	44	252
7:45 AM	24	58	31	0	113	0	0	0	0	0	0	100	1	0	101	8	2	56	0	66	280
8:00 AM	29	69	25	0	123	0	0	0	0	0	0	45	1	0	46	4	3	30	0	37	206
Total	71	226	162	0	459	1	0	0	0	1	0	270	5	0	275	21	13	158	0	192	927
Approach %	15.5	49.2	35.3	0.0	-	100.0	0.0	0.0	0.0	-	0.0	98.2	1.8	0.0	-	10.9	6.8	82.3	0.0	-	-
Total %	7.7	24.4	17.5	0.0	49.5	0.1	0.0	0.0	0.0	0.1	0.0	29.1	0.5	0.0	29.7	2.3	1.4	17.0	0.0	20.7	-
PHF	0.612	0.819	0.686	0.000	0.876	0.250	0.000	0.000	0.000	0.250	0.000	0.675	0.625	0.000	0.681	0.656	0.542	0.705	0.000	0.727	0.828
Lights	70	213	157	0	440	1	0	0	0	1	0	250	5	0	255	20	12	151	0	183	879
% Lights	98.6	94.2	96.9	-	95.9	100.0	-	-	-	100.0	-	92.6	100.0	-	92.7	95.2	92.3	95.6	-	95.3	94.8
Other Vehicles	1	13	5	0	19	0	0	0	0	0	0	20	0	0	20	1	1	7	0	9	48
% Other Vehicles	1.4	5.8	3.1	-	4.1	0.0	-	-	-	0.0	-	7.4	0.0	-	7.3	4.8	7.7	4.4	-	4.7	5.2

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: Ave 394 and SR99SB ON Ramp (PM)
Site Code: UNIT # 5
Start Date: 09/26/2018

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Westbound Approach (Southbound)					Northbound Approach (Westbound)					Eastbound Approach (Northbound)					Southbound Approach (Eastbound)					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
3:00 PM	30	48	24	1	103	0	0	0	0	0	0	100	2	0	102	2	5	16	0	23	228
3:15 PM	9	41	20	0	70	0	0	0	0	0	0	80	0	0	80	0	2	24	0	26	176
3:30 PM	20	39	27	0	86	0	0	0	0	0	0	63	4	0	67	0	4	26	0	30	183
3:45 PM	11	35	30	0	76	0	0	0	0	0	0	66	0	0	66	0	4	20	0	24	166
Total	70	163	101	1	335	0	0	0	0	0	0	309	6	0	315	2	15	86	0	103	753
Approach %	20.9	48.7	30.1	0.3	-	0.0	0.0	0.0	0.0	-	0.0	98.1	1.9	0.0	-	1.9	14.6	83.5	0.0	-	-
Total %	9.3	21.6	13.4	0.1	44.5	0.0	0.0	0.0	0.0	0.0	0.0	41.0	0.8	0.0	41.8	0.3	2.0	11.4	0.0	13.7	-
PHF	0.583	0.849	0.842	0.250	0.813	0.000	0.000	0.000	0.000	0.000	0.000	0.773	0.375	0.000	0.772	0.250	0.750	0.827	0.000	0.858	0.826
Lights	70	147	95	1	313	0	0	0	0	0	0	292	6	0	298	2	15	75	0	92	703
% Lights	100.0	90.2	94.1	100.0	93.4	-	-	-	-	-	-	94.5	100.0	-	94.6	100.0	100.0	87.2	-	89.3	93.4
Other Vehicles	0	16	6	0	22	0	0	0	0	0	0	17	0	0	17	0	0	11	0	11	50
% Other Vehicles	0.0	9.8	5.9	0.0	6.6	-	-	-	-	-	-	5.5	0.0	-	5.4	0.0	0.0	12.8	-	10.7	6.6

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: Frontage Rd and SR99NB ON Ramp (AM)
Site Code: UNIT # 3
Start Date: 09/26/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Southbound Approach Southbound					Westbound Approach Westbound					Northbound Approach Northbound					Eastbound Approach Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
7:15 AM	0	3	1	0	4	0	1	1	0	2	2	6	30	0	38	0	0	0	0	0	44
7:30 AM	0	6	1	0	7	1	6	2	0	9	2	10	34	0	46	0	0	0	0	0	62
7:45 AM	1	6	2	0	9	0	6	2	0	8	2	13	27	0	42	0	0	0	0	0	59
8:00 AM	1	2	0	0	3	1	7	2	0	10	2	5	34	0	41	0	0	0	0	0	54
Total	2	17	4	0	23	2	20	7	0	29	8	34	125	0	167	0	0	0	0	0	219
Approach %	8.7	73.9	17.4	0.0	-	6.9	69.0	24.1	0.0	-	4.8	20.4	74.9	0.0	-	0.0	0.0	0.0	0.0	-	-
Total %	0.9	7.8	1.8	0.0	10.5	0.9	9.1	3.2	0.0	13.2	3.7	15.5	57.1	0.0	76.3	0.0	0.0	0.0	0.0	0.0	-
PHF	0.500	0.708	0.500	0.000	0.639	0.500	0.714	0.875	0.000	0.725	1.000	0.654	0.919	0.000	0.908	0.000	0.000	0.000	0.000	0.000	0.883
Lights	1	17	4	0	22	1	19	6	0	26	7	34	112	0	153	0	0	0	0	0	201
% Lights	50.0	100.0	100.0	-	95.7	50.0	95.0	85.7	-	89.7	87.5	100.0	89.6	-	91.6	-	-	-	-	-	91.8
Other Vehicles	1	0	0	0	1	1	1	1	0	3	1	0	13	0	14	0	0	0	0	0	18
% Other Vehicles	50.0	0.0	0.0	-	4.3	50.0	5.0	14.3	-	10.3	12.5	0.0	10.4	-	8.4	-	-	-	-	-	8.2

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Count Name: Frontage Rd and SR99NB ON Ramp (PM)
Site Code: UNIT # 3
Start Date: 09/26/2018

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Southbound Approach Southbound					Westbound Approach Westbound					Northbound Approach Northbound					Eastbound Approach Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
3:00 PM	1	6	0	0	7	0	3	1	0	4	0	8	36	0	44	0	0	0	0	0	55
3:15 PM	1	0	0	0	1	0	1	1	0	2	2	9	24	0	35	0	0	0	0	0	38
3:30 PM	0	6	0	0	6	1	2	4	0	7	2	5	38	0	45	0	0	0	0	0	58
3:45 PM	0	4	0	0	4	0	4	1	0	5	1	7	18	0	26	0	0	0	0	0	35
Total	2	16	0	0	18	1	10	7	0	18	5	29	116	0	150	0	0	0	0	0	186
Approach %	11.1	88.9	0.0	0.0	-	5.6	55.6	38.9	0.0	-	3.3	19.3	77.3	0.0	-	0.0	0.0	0.0	0.0	-	-
Total %	1.1	8.6	0.0	0.0	9.7	0.5	5.4	3.8	0.0	9.7	2.7	15.6	62.4	0.0	80.6	0.0	0.0	0.0	0.0	0.0	-
PHF	0.500	0.667	0.000	0.000	0.643	0.250	0.625	0.438	0.000	0.643	0.625	0.806	0.763	0.000	0.833	0.000	0.000	0.000	0.000	0.000	0.802
Lights	2	16	0	0	18	1	8	3	0	12	4	25	108	0	137	0	0	0	0	0	167
% Lights	100.0	100.0	-	-	100.0	100.0	80.0	42.9	-	66.7	80.0	86.2	93.1	-	91.3	-	-	-	-	-	89.8
Other Vehicles	0	0	0	0	0	0	2	4	0	6	1	4	8	0	13	0	0	0	0	0	19
% Other Vehicles	0.0	0.0	-	-	0.0	0.0	20.0	57.1	-	33.3	20.0	13.8	6.9	-	8.7	-	-	-	-	-	10.2

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

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Count Name: mountain view avenue and sr99sb off ramp (AM)
Site Code: UNIT # 4
Start Date: 09/13/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Westbound Approach				Northbound Approach				Eastbound Approach				
	Westbound				Northbound				Eastbound				
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
7:15 AM	161	0	0	161	7	6	0	13	0	113	0	113	287
7:30 AM	164	0	0	164	9	10	0	19	0	112	0	112	295
7:45 AM	117	0	0	117	8	9	0	17	0	107	0	107	241
8:00 AM	122	0	0	122	13	8	0	21	0	94	0	94	237
Total	564	0	0	564	37	33	0	70	0	426	0	426	1060
Approach %	100.0	0.0	0.0	-	52.9	47.1	0.0	-	0.0	100.0	0.0	-	-
Total %	53.2	0.0	0.0	53.2	3.5	3.1	0.0	6.6	0.0	40.2	0.0	40.2	-
PHF	0.860	0.000	0.000	0.860	0.712	0.825	0.000	0.833	0.000	0.942	0.000	0.942	0.898
Lights	514	0	0	514	25	32	0	57	0	372	0	372	943
% Lights	91.1	-	-	91.1	67.6	97.0	-	81.4	-	87.3	-	87.3	89.0
Other Vehicles	50	0	0	50	12	1	0	13	0	54	0	54	117
% Other Vehicles	8.9	-	-	8.9	32.4	3.0	-	18.6	-	12.7	-	12.7	11.0

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: MOUNTAIN VIEW AVENUE AND SR99SB OFF RAMP
Site Code: UNIT # 4
Start Date: 09/13/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound				
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
4:45 PM	113	0	0	113	12	7	0	19	0	134	0	134	266
5:00 PM	139	0	0	139	8	9	0	17	0	115	0	115	271
5:15 PM	130	0	0	130	7	8	0	15	0	130	0	130	275
5:30 PM	104	0	0	104	12	9	0	21	0	146	0	146	271
Total	486	0	0	486	39	33	0	72	0	525	0	525	1083
Approach %	100.0	0.0	0.0	-	54.2	45.8	0.0	-	0.0	100.0	0.0	-	-
Total %	44.9	0.0	0.0	44.9	3.6	3.0	0.0	6.6	0.0	48.5	0.0	48.5	-
PHF	0.874	0.000	0.000	0.874	0.813	0.917	0.000	0.857	0.000	0.899	0.000	0.899	0.985
Lights	433	0	0	433	29	27	0	56	0	492	0	492	981
% Lights	89.1	-	-	89.1	74.4	81.8	-	77.8	-	93.7	-	93.7	90.6
Other Vehicles	53	0	0	53	10	6	0	16	0	33	0	33	102
% Other Vehicles	10.9	-	-	10.9	25.6	18.2	-	22.2	-	6.3	-	6.3	9.4

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: mountain view avenue and SR99NB Off Ramp
Site Code: unit 3
Start Date: 09/13/2018

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Northbound St. Southbound					Eastbound St. Westbound					Southbound St. Northbound					Westbound St. Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
7:00 AM	18	3	54	0	75	0	27	2	0	29	9	1	5	0	15	0	48	0	0	48	167
7:15 AM	19	0	71	1	91	0	46	1	0	47	13	0	1	0	14	1	74	0	0	75	227
7:30 AM	12	0	87	0	99	0	39	0	0	39	6	0	0	0	6	1	42	0	0	43	187
7:45 AM	19	0	72	0	91	0	53	1	0	54	13	0	0	0	13	1	58	0	0	59	217
Total	68	3	284	1	356	0	165	4	0	169	41	1	6	0	48	3	222	0	0	225	798
Approach %	19.1	0.8	79.8	0.3	-	0.0	97.6	2.4	0.0	-	85.4	2.1	12.5	0.0	-	1.3	98.7	0.0	0.0	-	-
Total %	8.5	0.4	35.6	0.1	44.6	0.0	20.7	0.5	0.0	21.2	5.1	0.1	0.8	0.0	6.0	0.4	27.8	0.0	0.0	28.2	-
PHF	0.895	0.250	0.816	0.250	0.899	0.000	0.778	0.500	0.000	0.782	0.788	0.250	0.300	0.000	0.800	0.750	0.750	0.000	0.000	0.750	0.879
Lights	47	3	253	1	304	0	146	4	0	150	31	0	1	0	32	2	183	0	0	185	671
% Lights	69.1	100.0	89.1	100.0	85.4	-	88.5	100.0	-	88.8	75.6	0.0	16.7	-	66.7	66.7	82.4	-	-	82.2	84.1
Other Vehicles	21	0	31	0	52	0	19	0	0	19	10	1	5	0	16	1	39	0	0	40	127
% Other Vehicles	30.9	0.0	10.9	0.0	14.6	-	11.5	0.0	-	11.2	24.4	100.0	83.3	-	33.3	33.3	17.6	-	-	17.8	15.9

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: mountain view avenue and sr99nb off ramp (PM)
Site Code: UNIT # 3
Start Date: 09/13/2018

Turning Movement Peak Hour Data (3:30 PM)

Start Time	Southbound Approach					Westbound Approach					Northbound Approach					Eastbound Approach					
	Southbound					Westbound					Northbound					Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
3:30 PM	30	0	63	0	93	0	40	3	0	43	11	0	0	0	11	2	115	0	0	117	264
3:45 PM	24	1	62	0	87	0	45	1	0	46	27	0	2	0	29	1	70	0	0	71	233
4:00 PM	23	1	74	0	98	0	37	1	0	38	17	0	0	0	17	1	109	0	0	110	263
4:15 PM	28	3	86	0	117	0	46	0	0	46	15	0	0	0	15	6	76	0	0	82	260
Total	105	5	285	0	395	0	168	5	0	173	70	0	2	0	72	10	370	0	0	380	1020
Approach %	26.6	1.3	72.2	0.0	-	0.0	97.1	2.9	0.0	-	97.2	0.0	2.8	0.0	-	2.6	97.4	0.0	0.0	-	-
Total %	10.3	0.5	27.9	0.0	38.7	0.0	16.5	0.5	0.0	17.0	6.9	0.0	0.2	0.0	7.1	1.0	36.3	0.0	0.0	37.3	-
PHF	0.875	0.417	0.828	0.000	0.844	0.000	0.913	0.417	0.000	0.940	0.648	0.000	0.250	0.000	0.621	0.417	0.804	0.000	0.000	0.812	0.966
Lights	88	5	251	0	344	0	153	5	0	158	51	0	2	0	53	9	346	0	0	355	910
% Lights	83.8	100.0	88.1	-	87.1	-	91.1	100.0	-	91.3	72.9	-	100.0	-	73.6	90.0	93.5	-	-	93.4	89.2
Other Vehicles	17	0	34	0	51	0	15	0	0	15	19	0	0	0	19	1	24	0	0	25	110
% Other Vehicles	16.2	0.0	11.9	-	12.9	-	8.9	0.0	-	8.7	27.1	-	0.0	-	26.4	10.0	6.5	-	-	6.6	10.8

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: mountain view avenue and sr99nb on ramp (AM)
Site Code: UNIT # 1
Start Date: 09/13/2018

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Eastbound Approach Westbound				Southbound Approach Northbound				Westbound Approach Eastbound				
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
7:00 AM	89	11	0	100	0	0	0	0	98	36	0	134	234
7:15 AM	115	17	0	132	0	0	0	0	110	54	0	164	296
7:30 AM	111	12	0	123	0	0	0	0	111	59	0	170	293
7:45 AM	108	16	0	124	0	0	0	0	66	58	0	124	248
Total	423	56	0	479	0	0	0	0	385	207	0	592	1071
Approach %	88.3	11.7	0.0	-	0.0	0.0	0.0	-	65.0	35.0	0.0	-	-
Total %	39.5	5.2	0.0	44.7	0.0	0.0	0.0	0.0	35.9	19.3	0.0	55.3	-
PHF	0.920	0.824	0.000	0.907	0.000	0.000	0.000	0.000	0.867	0.877	0.000	0.871	0.905
Lights	369	38	0	407	0	0	0	0	359	178	0	537	944
% Lights	87.2	67.9	-	85.0	-	-	-	-	93.2	86.0	-	90.7	88.1
Other Vehicles	54	18	0	72	0	0	0	0	26	29	0	55	127
% Other Vehicles	12.8	32.1	-	15.0	-	-	-	-	6.8	14.0	-	9.3	11.9

California DOT / Caltrans : Caltrans District 6 - Traffic Planning
Address

City, California, United States 12345
Phone eric.olson@dot.ca.gov

Count Name: mountain view ave and sr99nb on ramp (PM)
Site Code: UNIT # 1
Start Date: 09/13/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Eastbound Approach Eastbound				
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
4:45 PM	0	0	0	0	68	47	0	115	147	20	0	167	282
5:00 PM	0	0	0	0	71	78	0	149	115	27	0	142	291
5:15 PM	0	0	0	0	74	60	0	134	130	32	0	162	296
5:30 PM	0	0	0	0	52	60	0	112	148	11	0	159	271
Total	0	0	0	0	265	245	0	510	540	90	0	630	1140
Approach %	0.0	0.0	0.0	-	52.0	48.0	0.0	-	85.7	14.3	0.0	-	-
Total %	0.0	0.0	0.0	0.0	23.2	21.5	0.0	44.7	47.4	7.9	0.0	55.3	-
PHF	0.000	0.000	0.000	0.000	0.895	0.785	0.000	0.856	0.912	0.703	0.000	0.943	0.963
Lights	0	0	0	0	239	211	0	450	510	88	0	598	1048
% Lights	-	-	-	-	90.2	86.1	-	88.2	94.4	97.8	-	94.9	91.9
Other Vehicles	0	0	0	0	26	34	0	60	30	2	0	32	92
% Other Vehicles	-	-	-	-	9.8	13.9	-	11.8	5.6	2.2	-	5.1	8.1

Mountain View Avenue Intersections

2018 Existing TWSC Level of Service Reports

HCS 2010 Two-Way Stop-Control Report

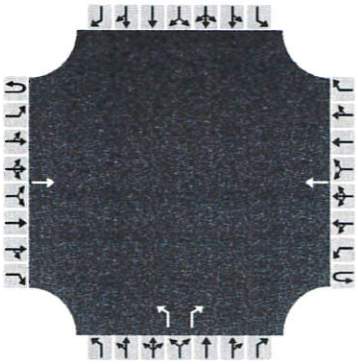
General Information

ıalyst	Hien
. ıgency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2018
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	SR99 NB Off and Mountain View AM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
ıority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		1	0	1		0	0	0
Configuration			T				T			L		R				
Volume, V (veh/h)			426				564			32		37				
Percent Heavy Vehicles (%)										3		32				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)										7.1		6.2				
Critical Headway (sec)										6.43		6.52				
Base Follow-Up Headway (sec)										3.5		3.3				
Follow-Up Headway (sec)										3.53		3.59				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)										36		41				
Capacity, c (veh/h)										234		534				
v/c Ratio										0.15		0.08				
95% Queue Length, Q_{95} (veh)										0.5		0.2				
Control Delay (s/veh)										23.2		12.3				
٧el of Service, LOS										C		B				
∧pproach Delay (s/veh)										17.4						
Approach LOS										C						

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HCS 2010 Two-Way Stop-Control Report

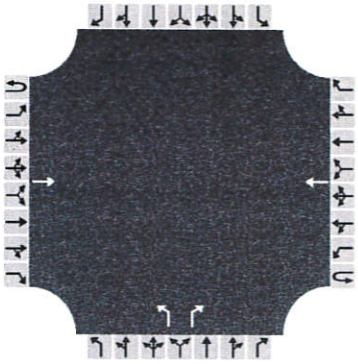
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2018
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	SR99 NB Off and Mountain View PM Peak

Site Information

Intersection	SR99 NB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		1	0	1		0	0	0
Configuration			T				T			L		R				
Volume, V (veh/h)			540				486			33		39				
Percent Heavy Vehicles (%)										18		26				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)										7.1		6.2				
Critical Headway (sec)										6.58		6.46				
Base Follow-Up Headway (sec)										3.5		3.3				
Follow-Up Headway (sec)										3.66		3.53				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)										33		39				
Capacity, c (veh/h)										239		495				
v/c Ratio										0.14		0.08				
95% Queue Length, Q_{95} (veh)										0.5		0.3				
Control Delay (s/veh)										22.4		12.9				
Level of Service, LOS										C		B				
Approach Delay (s/veh)										17.3						
Approach LOS										C						

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HCS 2010 Two-Way Stop-Control Report

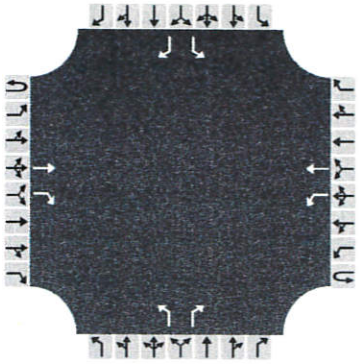
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2018
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	SR99 SB Off and Mountain View AM Peak

Site Information

Intersection	SR99 SB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		1	0	1
Configuration			T	R		L	T			L		R		L		R
Volume, V (veh/h)			222	3		4	165			6		41		284		68
Percent Heavy Vehicles (%)						0				83		24		11		31
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2		7.1		6.2
Critical Headway (sec)						4.10				7.93		6.44		7.21		6.51
Base Follow-Up Headway (sec)						2.2				3.5		3.3		3.5		3.3
Follow-Up Headway (sec)						2.20				4.25		3.52		3.60		3.58

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5				7		47		323		77
Capacity, c (veh/h)						1322				365		736		471		785
v/c Ratio						0.00				0.02		0.06		0.69		0.10
95% Queue Length, Q_{95} (veh)						0.0				0.1		0.2		5.1		0.3
Control Delay (s/veh)						7.7				15.1		10.2		27.7		10.1
Level of Service, LOS						A				C		B		D		B
Approach Delay (s/veh)						0.2				10.9				24.3		
Approach LOS										B				C		

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HCS 2010 Two-Way Stop-Control Report

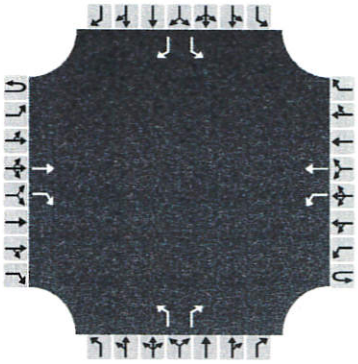
General Information

alyst	Hien
.gency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2018
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	SR99 SB Off and Mountain View PM Peak

Site Information

Intersection	SR99 SB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
ority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		1	0	1
Configuration			T	R		L	T			L		R		L		R
Volume, V (veh/h)			370	10		5	201			2		70		295		110
Percent Heavy Vehicles (%)						0				0		27		12		16
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2		7.1		6.2
Critical Headway (sec)						4.10				7.10		6.47		7.22		6.36
Base Follow-Up Headway (sec)						2.2				3.5		3.3		3.5		3.3
Follow-Up Headway (sec)						2.20				3.50		3.54		3.61		3.44

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5				2		72		304		113
Capacity, c (veh/h)						1179				357		614		352		799
v/c Ratio						0.00				0.01		0.12		0.86		0.14
95% Queue Length, Q_{95} (veh)						0.0				0.0		0.4		8.1		0.5
Control Delay (s/veh)						8.1				15.1		11.6		54.7		10.2
el of Service, LOS						A				C		B		F		B
Approach Delay (s/veh)						0.2				11.7				42.7		
Approach LOS										B				E		

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Mountain View Avenue Intersections

2025 No-Build TWSC Level of Service Reports

HCS 2010 Two-Way Stop-Control Report

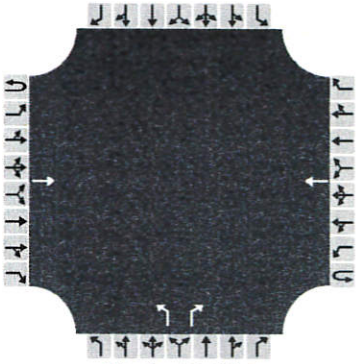
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2025
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	SR99 NB Off and Mountain View AM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		1	0	1		0	0	0
Configuration			T				T			L		R				
Volume, V (veh/h)			520				648			46		48				
Percent Heavy Vehicles (%)										3		32				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)										7.1		6.2				
Critical Headway (sec)										6.43		6.52				
Base Follow-Up Headway (sec)										3.5		3.3				
Follow-Up Headway (sec)										3.53		3.59				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)										51		53				
Capacity, c (veh/h)										178		463				
v/c Ratio										0.29		0.11				
95% Queue Length, Q_{95} (veh)										1.1		0.4				
Control Delay (s/veh)										33.2		13.8				
Level of Service, LOS										D		B				
Approach Delay (s/veh)										23.3						
Approach LOS										C						

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HCS 2010 Two-Way Stop-Control Report

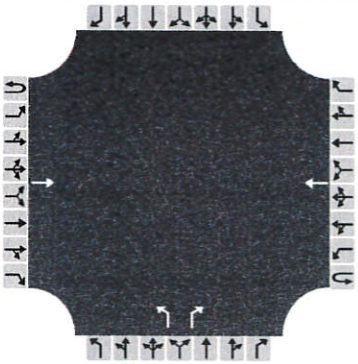
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2025
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	SR99 NB Off and Mountain View PM Peak

Site Information

Intersection	SR99 NB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		1	0	1		0	0	0
Configuration			T				T			L		R				
Volume, V (veh/h)			650				598			52		53				
Percent Heavy Vehicles (%)										18		26				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)										7.1		6.2				
Critical Headway (sec)										6.58		6.46				
Base Follow-Up Headway (sec)										3.5		3.3				
Follow-Up Headway (sec)										3.66		3.53				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)										53		54				
Capacity, c (veh/h)										174		425				
v/c Ratio										0.30		0.13				
95% Queue Length, Q_{95} (veh)										1.2		0.4				
Control Delay (s/veh)										34.5		14.7				
Level of Service, LOS										D		B				
Approach Delay (s/veh)										24.5						
Approach LOS										C						

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HCS 2010 Two-Way Stop-Control Report

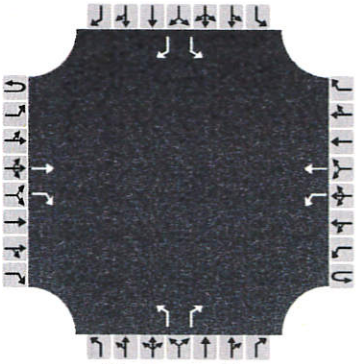
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2025
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	SR99 SB Off and Mountain View AM Peak

Site Information

Intersection	SR99 SB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		1	0	1
Configuration			T	R		L	T			L		R		L		R
Volume, V (veh/h)			291	4		5	192			8		47		326		105
Percent Heavy Vehicles (%)						0				83		24		11		31
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2		7.1		6.2
Critical Headway (sec)						4.10				7.93		6.44		7.21		6.51
Base Follow-Up Headway (sec)						2.2				3.5		3.3		3.5		3.3
Follow-Up Headway (sec)						2.20				4.25		3.52		3.60		3.58

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						6				9		53		370		119
Capacity, c (veh/h)						1235				283		663		390		754
v/c Ratio						0.00				0.03		0.08		0.95		0.16
95% Queue Length, Q_{95} (veh)						0.0				0.1		0.3		10.6		0.6
Control Delay (s/veh)						7.9				18.2		10.9		66.8		10.7
Level of Service, LOS						A				C		B		F		B
Approach Delay (s/veh)						0.2				12.0				53.1		
Approach LOS										B				F		

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HCS 2010 Two-Way Stop-Control Report

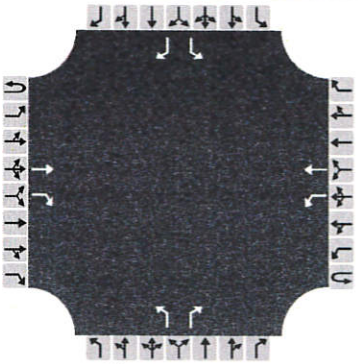
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2025
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	SR99 SB Off and Mountain View PM Peak

Site Information

Intersection	SR99 SB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		1	0	1
Configuration			T	R		L	T			L		R		L		R
Volume, V (veh/h)			463	14		11	242			3		80		339		157
Percent Heavy Vehicles (%)						0				0		27		12		16
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2		7.1		6.2
Critical Headway (sec)						4.10				7.10		6.47		7.22		6.36
Base Follow-Up Headway (sec)						2.2				3.5		3.3		3.5		3.3
Follow-Up Headway (sec)						2.20				3.50		3.54		3.61		3.44

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						11				3		82		349		162
Capacity, c (veh/h)						1083				258		540		266		757
v/c Ratio						0.01				0.01		0.15		1.31		0.21
95% Queue Length, Q_{95} (veh)						0.0				0.0		0.5		17.7		0.8
Control Delay (s/veh)						8.4				19.1		12.9		201.7		11.0
Level of Service, LOS						A				C		B		F		B
Approach Delay (s/veh)						0.4				13.1				141.3		
Approach LOS										B				F		

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Mountain View Avenue Intersections

2035 No-Build TWSC Level of Service Reports

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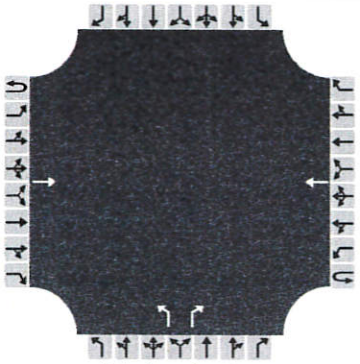
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2035
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	SR99 NB Off and Mountain View AM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		1	0	1		0	0	0
Configuration			T				T			L		R				
Volume, V (veh/h)			693				790			75		69				
Percent Heavy Vehicles (%)										3		32				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)										83		77				
Capacity, c (veh/h)										108		356				
v/c Ratio										0.77		0.22				
95% Queue Length, Q_{95} (veh)										4.2		0.8				
Control Delay (s/veh)										104.7		17.9				
Level of Service, LOS										F		C				
Approach Delay (s/veh)										62.9						
Approach LOS										F						

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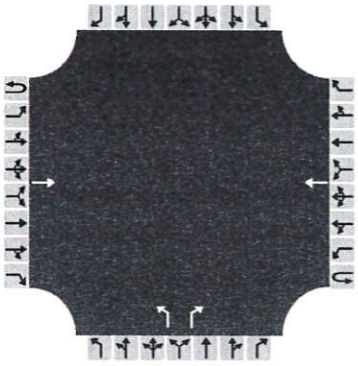
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2035
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	SR99 NB Off and Mountain View PM Peak

Site Information

Intersection	SR99 NB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		1	0	1		0	0	0
Configuration			T				T			L		R				
Volume, V (veh/h)			848				803			101		82				
Percent Heavy Vehicles (%)										18		26				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)										102		83				
Capacity, c (veh/h)										97		324				
v/c Ratio										1.05		0.26				
95% Queue Length, Q_{95} (veh)										6.5		1.0				
Control Delay (s/veh)										187.3		19.9				
Level of Service, LOS										F		C				
Approach Delay (s/veh)										112.2						
Approach LOS										F						

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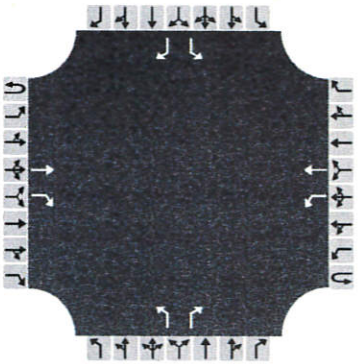
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2035
Time Analyzed	AM Peak
Intersection Orientation	East-West
Project Description	SR99 SB Off and Mountain View AM Peak

Site Information

Intersection	SR99 SB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		1	0	1
Configuration			T	R		L	T			L		R		L		R
Volume, V (veh/h)			428	7		7	240			13		57		398		196
Percent Heavy Vehicles (%)						0				83		24		11		31
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8				15		65		452		223
Capacity, c (veh/h)						1080				159		539		266		701
v/c Ratio						0.01				0.09		0.12		1.70		0.32
95% Queue Length, Q_{95} (veh)						0.0				0.3		0.4		29.1		1.4
Control Delay (s/veh)						8.4				30.0		12.6		362.4		12.5
Level of Service, LOS						A				D		B		F		B
Approach Delay (s/veh)						0.2				15.8				246.8		
Approach LOS										C				F		

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HCS 2010 Two-Way Stop-Control Report

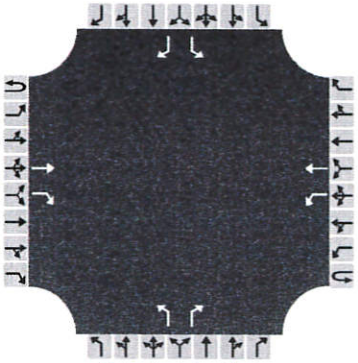
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	11/21/2018
Analysis Year	2035
Time Analyzed	PM Peak
Intersection Orientation	East-West
Project Description	SR99 SB Off and Mountain View PM Peak

Site Information

Intersection	SR99 SB OFF/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		1	0	1
Configuration			T	R		L	T			L		R		L		R
Volume, V (veh/h)			639	22		32	315			6		98		413		263
Percent Heavy Vehicles (%)						0				0		27		12		16
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				Yes				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33				6		101		426		271
Capacity, c (veh/h)						920				122		423		145		685
v/c Ratio						0.04				0.05		0.24		2.93		0.40
95% Queue Length, Q_{95} (veh)						0.1				0.2		0.9		39.2		1.9
Control Delay (s/veh)						9.1				36.1		16.2		934.2		13.7
Level of Service, LOS						A				E		C		F		B
Approach Delay (s/veh)						0.8				17.3				576.3		
Approach LOS										C				F		

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Mountain View Avenue Intersections

Alternative 1

Realign On-Ramps with All Way Stop Control

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

HCS 2010 All-Way Stop-Control Summary Report

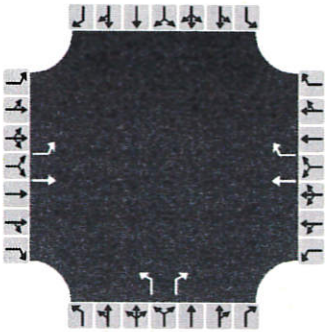
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1 - SR99 NB Off & Mountain View AM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	79	520			197	450	46		48			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T		T	R		L	R				
Flow Rate, v (veh/h)	88	578		219	500		51	53				
Percent Heavy Vehicles	2	0		0	2		3	0				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20				
Initial Degree of Utilization, x	0.078	0.514		0.195	0.444		0.045	0.047				
Final Departure Headway, hd (s)	6.17	5.64		5.62	4.95		7.93	6.66				
Final Degree of Utilization, x	0.151	0.905		0.342	0.687		0.113	0.099				
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3				
Service Time, ts (s)	3.87	3.34		3.32	2.65		5.63	4.36				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	88	578		219	500		51	53				
Capacity	583	639		641	728		454	540				
95% Queue Length, Q_{95} (veh)	0.5	11.4		1.5	5.5		0.4	0.3				
Control Delay (s/veh)	10.0	39.4		11.2	17.8		11.6	10.1				
Level of Service, LOS	A	E		B	C		B	B				
Approach Delay (s/veh)	35.5			15.8			10.8					
Approach LOS	E			C			B					
Intersection Delay, s/veh | LOS	24.3						C					

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HCS 2010 All-Way Stop-Control Summary Report

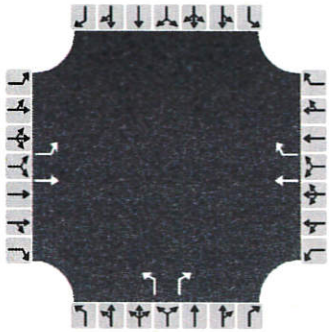
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1 - SR99 NB Off & Mountain View PM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	163	650			262	335	52		53			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T		T	R		L	R				
Flow Rate, v (veh/h)	181	722		291	372		58	59				
Percent Heavy Vehicles	2	0		0	2		3	0				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20				
Initial Degree of Utilization, x	0.161	0.642		0.259	0.331		0.051	0.052				
Final Departure Headway, hd (s)	6.22	5.68		5.85	5.19		8.00	6.76				
Final Degree of Utilization, x	0.313	1.139		0.473	0.537		0.128	0.111				
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3				
Service Time, ts (s)	3.92	3.38		3.55	2.89		5.70	4.46				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	181	722		291	372		58	59				
Capacity	579	634		615	693		450	532				
95% Queue Length, Q_{95} (veh)	1.3	22.9		2.5	3.2		0.4	0.4				
Control Delay (s/veh)	11.7	102.1		13.7	13.7		11.9	10.3				
Level of Service, LOS	B	F		B	B		B	B				
Approach Delay (s/veh)	84.0			13.7			11.1					
Approach LOS	F			B			B					
Intersection Delay, s/veh | LOS	51.2						F					

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HCS 2010 All-Way Stop-Control Summary Report

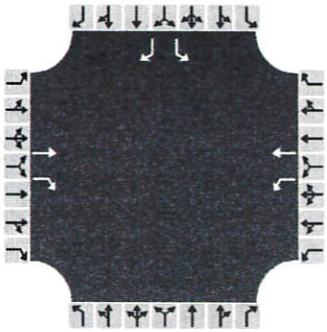
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1 - SR99 SB Off & Mountain View AM Peak

Site Information

Intersection	SR99 SB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		323	68	49	199					326		105
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	R		L	T					L	R	
Flow Rate, v (veh/h)	359	76		54	221					362	117	
Percent Heavy Vehicles	0	2		2	0					2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20					3.20	3.20	
Initial Degree of Utilization, x	0.319	0.067		0.048	0.197					0.322	0.104	
Final Departure Headway, hd (s)	6.59	5.91		7.37	6.82					7.05	5.85	
Final Degree of Utilization, x	0.657	0.124		0.111	0.419					0.709	0.190	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3					2.3	2.3	
Service Time, ts (s)	4.29	3.61		5.07	4.52					4.75	3.55	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	359	76		54	221					362	117	
Capacity	546	609		488	528					511	616	
95% Queue Length, Q_{95} (veh)	4.8	0.4		0.4	2.1					5.6	0.7	
Control Delay (s/veh)	21.0	9.4		11.0	14.4					25.1	9.9	
Level of Service, LOS	C	A		B	B					D	A	
Approach Delay (s/veh)	19.0			13.7						21.4		
Approach LOS	C			B						C		
Intersection Delay, s/veh | LOS	18.7						C					

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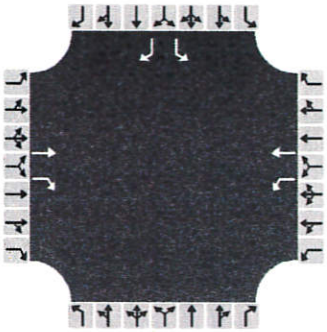
General Information

Analyst	Hien
,ency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1 - SR99 SB Off & Mountain View PM Peak

Site Information

Intersection	SR99 SB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
'ume		530	72	57	260					339		157
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	R		L	T					L	R	
Flow Rate, v (veh/h)	589	80		63	289					377	174	
Percent Heavy Vehicles	0	2		2	0					2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20					3.20	3.20	
Initial Degree of Utilization, x	0.523	0.071		0.056	0.257					0.335	0.155	
Final Departure Headway, hd (s)	7.09	6.41		7.89	7.35					7.71	6.52	
Final Degree of Utilization, x	1.160	0.142		0.139	0.590					0.807	0.316	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3					2.3	2.3	
Service Time, ts (s)	4.79	4.11		5.59	5.05					5.41	4.22	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	589	80		63	289					377	174	
Capacity	508	562		456	490					467	552	
95% Queue Length, Q_{95} (veh)	20.8	0.5		0.5	3.8					7.5	1.3	
Control Delay (s/veh)	116.3	10.2		11.9	20.1					35.4	12.2	
Level of Service, LOS	F	B		B	C					E	B	
›roach Delay (s/veh)	103.6			18.6						28.1		
Approach LOS	F			C						D		
Intersection Delay, s/veh | LOS	58.1						F					

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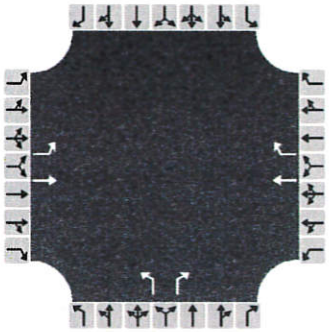
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1 - SR99 NB Off & Mountain View AM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	106	693			227	562	75		69			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T		T	R		L	R				
Flow Rate, v (veh/h)	118	770		252	624		83	77				
Percent Heavy Vehicles	2	0		0	2		3	0				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20				
Initial Degree of Utilization, x	0.105	0.684		0.224	0.555		0.074	0.068				
Final Departure Headway, hd (s)	6.70	6.16		5.98	5.31		8.22	6.98				
Final Degree of Utilization, x	0.219	1.318		0.419	0.922		0.190	0.149				
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3				
Service Time, ts (s)	4.40	3.86		3.68	3.01		5.92	4.68				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	118	770		252	624		83	77				
Capacity	537	584		602	678		438	516				
95% Queue Length, Q_{95} (veh)	0.8	32.2		2.1	12.3		0.7	0.5				
Control Delay (s/veh)	11.3	174.2		12.9	40.5		12.8	10.9				
Level of Service, LOS	B	F		B	E		B	B				
Approach Delay (s/veh)	152.6			32.6			11.9					
Approach LOS	F			D			B					
Intersection Delay, s/veh | LOS	86.2						F					

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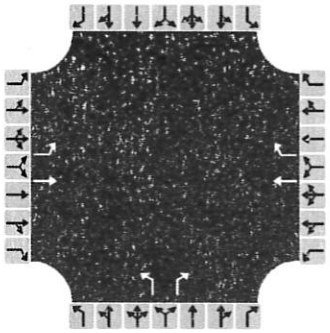
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1 - SR99 NB Off & Mountain View PM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	212	848			335	467	101		82			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T		T	R		L	R				
Flow Rate, v (veh/h)	236	942		372	519		112	91				
Percent Heavy Vehicles	2	0		0	2		3	0				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20				
Initial Degree of Utilization, x	0.209	0.838		0.331	0.461		0.100	0.081				
Final Departure Headway, hd (s)	7.04	6.50		6.40	5.73		8.45	7.22				
Final Degree of Utilization, x	0.460	1.700		0.661	0.826		0.264	0.183				
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3				
Service Time, ts (s)	4.74	4.20		4.10	3.43		6.15	4.92				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	236	942		372	519		112	91				
Capacity	512	554		563	628		426	499				
95% Queue Length, Q_{95} (veh)	2.4	54.9		4.9	8.7		1.0	0.7				
Control Delay (s/veh)	15.6	339.4		20.7	29.8		14.2	11.5				
Level of Service, LOS	C	F		C	D		B	B				
Approach Delay (s/veh)	274.6			26.0			13.0					
Approach LOS	F			D			B					
Intersection Delay, s/veh | LOS	153.7						F					

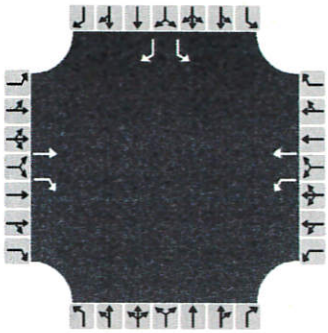
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HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Hien	Intersection	SR99 SB Off/Mountain View
Agency/Co.	Caltrans	Jurisdiction	
Date Performed	12/19/2018	East/West Street	Mountain View
Analysis Year	2035	North/South Street	SR99 SB Off Ramp
Time Analyzed	0.25	Peak Hour Factor	0.90
Anaylysis Time Period (hrs)	AM Peak		
Project Description	Alt 1 - SR99 SB Off & Mountain View AM Peak		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		432	91	61	252					398		196
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	R		L	T					L	R	
Flow Rate, v (veh/h)	480	101		68	280					442	218	
Percent Heavy Vehicles	0	2		2	0					2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20					3.20	3.20	
Initial Degree of Utilization, x	0.427	0.090		0.060	0.249					0.393	0.194	
Final Departure Headway, hd (s)	7.44	6.76		8.38	7.83					7.83	6.62	
Final Degree of Utilization, x	0.992	0.190		0.158	0.609					0.962	0.400	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3					2.3	2.3	
Service Time, ts (s)	5.14	4.46		6.08	5.53					5.53	4.32	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	480	101		68	280					442	218	
Capacity	484	533		430	460					460	544	
95% Queue Length, Q_{95} (veh)	13.2	0.7		0.6	4.0					11.8	1.9	
Control Delay (s/veh)	66.1	11.0		12.6	22.0					60.8	13.7	
Level of Service, LOS	F	B		B	C					F	B	
Approach Delay (s/veh)	56.5			20.2						45.2		
Approach LOS	F			C						E		
Intersection Delay, s/veh | LOS	43.9						E					

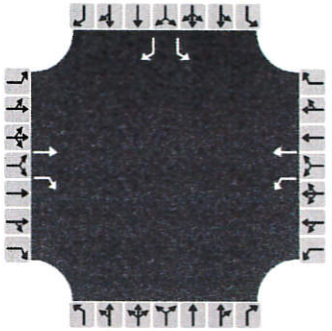
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HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Moe	Intersection	SR99 SB Off/Mountain View
Agency/Co.	Caltrans	Jurisdiction	
Date Performed	12/19/2018	East/West Street	Mountain View
Analysis Year	2035	North/South Street	SR99 SB Off Ramp
Time Analyzed	0.25	Peak Hour Factor	0.90
Anaylysis Time Period (hrs)	PM Peak		
Project Description	Alt 1 - SR99 SB Off & Mountain View PM Peak		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		680	94	85	363					413		263
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	R		L	T					L	R	
Flow Rate, v (veh/h)	756	104		94	403					459	292	
Percent Heavy Vehicles	0	2		2	0					2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20					3.20	3.20	
Initial Degree of Utilization, x	0.672	0.093		0.084	0.359					0.408	0.260	
Final Departure Headway, hd (s)	7.69	7.03		8.32	7.79					8.06	6.87	
Final Degree of Utilization, x	1.613	0.204		0.218	0.873					1.027	0.558	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3					2.3	2.3	
Service Time, ts (s)	5.39	4.73		6.02	5.49					5.76	4.57	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	756	104		94	403					459	292	
Capacity	468	512		433	462					447	524	
95% Queue Length, Q_{95} (veh)	42.6	0.8		0.8	9.2					13.9	3.4	
Control Delay (s/veh)	305.3	11.5		13.3	44.2					78.1	17.9	
Level of Service, LOS	F	B		B	E					F	C	
Approach Delay (s/veh)	269.6			38.3						54.7		
Approach LOS	F			E						F		
Intersection Delay, s/veh | LOS	138.5						F					

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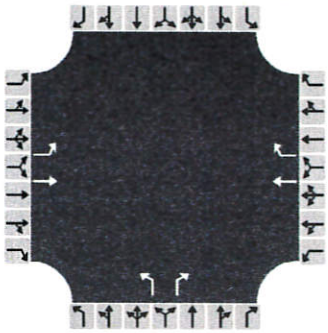
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1 - SR99 NB Off & Mountain View AM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	141	922			260	703	125		99			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T		T	R		L	R				
Flow Rate, v (veh/h)	157	1024		289	781		139	110				
Percent Heavy Vehicles	2	0		0	2		3	0				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20				
Initial Degree of Utilization, x	0.139	0.911		0.257	0.694		0.123	0.098				
Final Departure Headway, hd (s)	7.14	6.61		6.45	5.78		8.40	7.16				
Final Degree of Utilization, x	0.311	1.880		0.517	1.255		0.324	0.219				
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3				
Service Time, ts (s)	4.84	4.31		4.15	3.48		6.10	4.86				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	157	1024		289	781		139	110				
Capacity	504	545		558	622		429	503				
95% Queue Length, Q_{95} (veh)	1.3	65.8		3.0	29.7		1.4	0.8				
Control Delay (s/veh)	13.0	419.0		15.9	146.8		15.1	11.8				
Level of Service, LOS	B	F		C	F		C	B				
Approach Delay (s/veh)	365.2			111.5			13.6					
Approach LOS	F			F			B					
Intersection Delay, s/veh | LOS	221.6						F					

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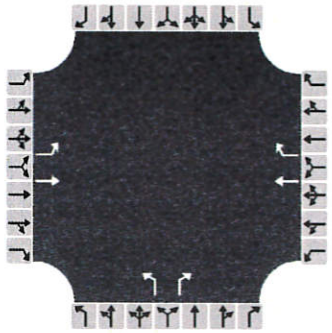
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1 - SR99 NB Off & Mountain View PM Peak

Site Information

Intersection	SR99 NB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 NB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	276	1106			428	652	196		127			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T		T	R		L	R				
Flow Rate, v (veh/h)	307	1229		476	724		218	141				
Percent Heavy Vehicles	2	0		0	2		3	0				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20				
Initial Degree of Utilization, x	0.273	1.000		0.423	0.644		0.194	0.125				
Final Departure Headway, hd (s)	7.96	7.42		7.24	6.57		9.04	7.80				
Final Degree of Utilization, x	0.678	2.534		0.956	1.322		0.547	0.306				
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3				
Service Time, ts (s)	5.66	5.12		4.94	4.27		6.74	5.50				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	307	1229		476	724		218	141				
Capacity	452	485		498	548		398	462				
95% Queue Length, Q_{95} (veh)	5.0	97.7		12.0	30.9		3.2	1.3				
Control Delay (s/veh)	25.8	712.6		56.6	177.5		22.1	13.9				
Level of Service, LOS	D	F		F	F		C	B				
Approach Delay (s/veh)	575.4			129.6			18.9					
Approach LOS	F			F			C					
Intersection Delay, s/veh | LOS	338.0						F					

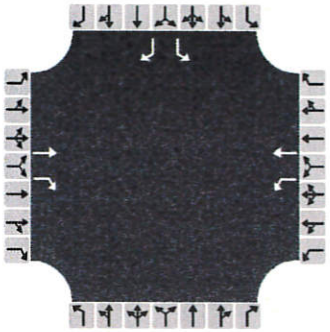
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HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Hien	Intersection	SR99 SB Off/Mountain View
Agency/Co.	Caltrans	Jurisdiction	
Date Performed	12/19/2018	East/West Street	Mountain View
Analysis Year	2045	North/South Street	SR99 SB Off Ramp
Time Analyzed	0.25	Peak Hour Factor	0.90
Anaylysis Time Period (hrs)	AM Peak		
Project Description	Alt 1 - SR99 SB Off & Mountain View AM Peak		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		578	121	77	319					485		366
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	R		L	T					L	R	
Flow Rate, v (veh/h)	642	134		86	354					539	407	
Percent Heavy Vehicles	0	2		2	0					2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20					3.20	3.20	
Initial Degree of Utilization, x	0.571	0.120		0.076	0.315					0.479	0.361	
Final Departure Headway, hd (s)	7.70	7.04		8.46	7.94					7.99	6.80	
Final Degree of Utilization, x	1.373	0.263		0.201	0.781					1.196	0.768	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3					2.3	2.3	
Service Time, ts (s)	5.40	4.74		6.16	5.64					5.69	4.50	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	642	134		86	354					539	407	
Capacity	468	512		425	454					451	529	
95% Queue Length, Q_{95} (veh)	29.9	1.0		0.7	6.9					20.8	6.9	
Control Delay (s/veh)	202.9	12.2		13.3	33.6					133.9	28.6	
Level of Service, LOS	F	B		B	D					F	D	
Approach Delay (s/veh)	169.9			29.7						88.6		
Approach LOS	F			D						F		
Intersection Delay, s/veh | LOS	105.8						F					

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HCS 2010 All-Way Stop-Control Summary Report

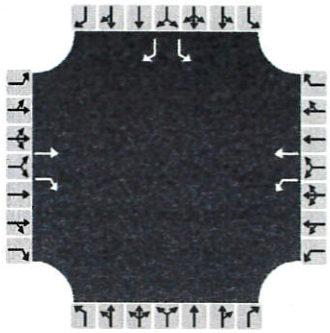
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	12/19/2018
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1 - SR99 SB Off & Mountain View PM Peak

Site Information

Intersection	SR99 SB Off/Mountain View
Jurisdiction	
East/West Street	Mountain View
North/South Street	SR99 SB Off Ramp
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume		878	123	118	506					504		438
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	T	R		L	T					L	R	
Flow Rate, v (veh/h)	976	137		131	562					560	487	
Percent Heavy Vehicles	0	2		2	0					2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20					3.20	3.20	
Initial Degree of Utilization, x	0.867	0.121		0.117	0.500					0.498	0.433	
Final Departure Headway, hd (s)	8.08	7.42		8.57	8.04					8.26	7.07	
Final Degree of Utilization, x	2.189	0.282		0.312	1.255					1.285	0.956	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3					2.3	2.3	
Service Time, ts (s)	5.78	5.12		6.27	5.74					5.96	4.77	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	976	137		131	562					560	487	
Capacity	446	485		420	448					436	509	
95% Queue Length, Q_{95} (veh)	71.4	1.1		1.3	23.3					24.2	12.2	
Control Delay (s/veh)	560.3	13.0		15.1	156.8					169.5	56.0	
Level of Service, LOS	F	B		C	F					F	F	
Approach Delay (s/veh)	493.0			130.0						116.7		
Approach LOS	F			F						F		
Intersection Delay, s/veh | LOS	266.7						F					

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Mountain View Avenue Intersections

Alternative 2

Realign On-Ramps with Signalized

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

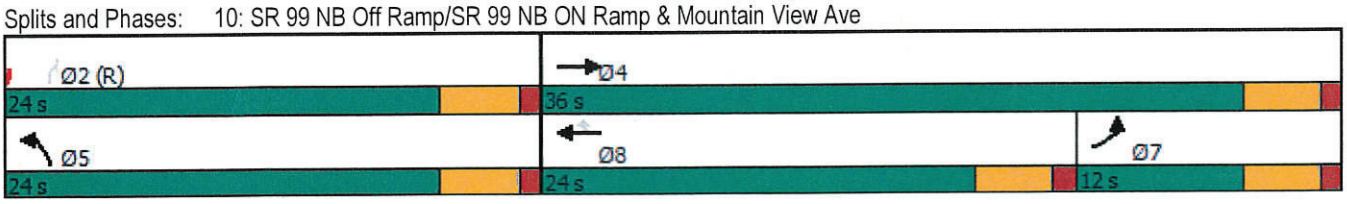
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	570	0	0	202	450	46	0	48	0	0	0
Future Volume (vph)	79	570	0	0	202	450	46	0	48	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	0		350	0		250	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						489			109			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1148			1005			1107			1543	
Travel Time (s)		26.1			22.8			25.2			35.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	32%	13%	0%	0%	14%	7%	11%	0%	31%	0%	0%	0%
Adj. Flow (vph)	86	620	0	0	220	489	50	0	52	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	620	0	0	220	489	50	0	52	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1			
Detector Template	Left	Thru			Thru	Right	Left		Right			
Leading Detector (ft)	20	100			100	20	20		20			
Trailing Detector (ft)	0	0			0	0	0		0			
Detector 1 Position(ft)	0	0			0	0	0		0			
Detector 1 Size(ft)	20	6			6	20	20		20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA			NA	Perm	Prot		Perm			
Protected Phases	7	4			8		5					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			
Detector Phase	7	4			8	8	5		2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0			
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5			
Total Split (s)	12.0	36.0			24.0	24.0	24.0		24.0			
Total Split (%)	20.0%	60.0%			40.0%	40.0%	40.0%		40.0%			
Maximum Green (s)	7.5	31.5			19.5	19.5	19.5		19.5			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5			
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	None	None			None	None	None		C-Max			
Walk Time (s)		7.0			7.0	7.0			7.0			
Flash Dont Walk (s)		11.0			11.0	11.0			11.0			
Pedestrian Calls (#/hr)		0			0	0			0			
Act Effct Green (s)	7.8	26.9			16.6	16.6	24.1		24.1			
Actuated g/C Ratio	0.13	0.45			0.28	0.28	0.40		0.40			
v/c Ratio	0.48	0.82			0.48	0.63	0.08		0.09			
Control Delay	26.5	17.5			17.0	8.6	13.9		1.1			
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0			
Total Delay	26.5	17.5			17.0	8.6	13.9		1.1			
LOS	C	B			B	A	B		A			
Approach Delay		18.6			11.2			7.4				
Approach LOS		B			B			A				

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 32 (53%), Referenced to phase 2:NBR and 6:, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 14.4 Intersection LOS: B
Intersection Capacity Utilization 50.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 10: SR 99 NB Off Ramp/SR 99 NB ON Ramp & Mountain View Ave



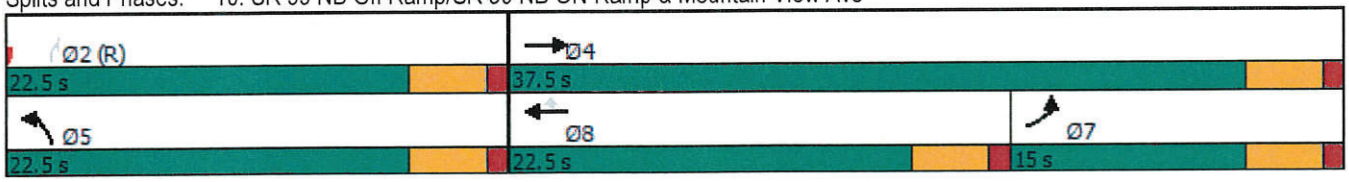
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	706	0	0	265	335	52	0	53	0	0	0
Future Volume (vph)	163	706	0	0	265	335	52	0	53	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	0		350	0		250	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						364			109			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1148			1005			1107			1543	
Travel Time (s)		26.1			22.8			25.2			35.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	32%	13%	0%	0%	14%	7%	11%	0%	31%	0%	0%	0%
Adj. Flow (vph)	177	767	0	0	288	364	57	0	58	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	177	767	0	0	288	364	57	0	58	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1			
Detector Template	Left	Thru			Thru	Right	Left		Right			
Leading Detector (ft)	20	100			100	20	20		20			
Trailing Detector (ft)	0	0			0	0	0		0			
Detector 1 Position(ft)	0	0			0	0	0		0			
Detector 1 Size(ft)	20	6			6	20	20		20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA			NA	Perm	Prot		Perm			
Protected Phases	7	4			8		5					

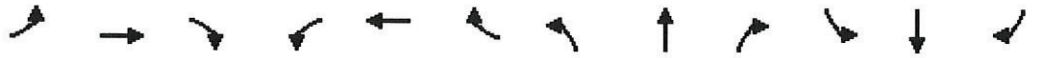
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			
Detector Phase	7	4			8	8	5		2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0			
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5			
Total Split (s)	15.0	37.5			22.5	22.5	22.5		22.5			
Total Split (%)	25.0%	62.5%			37.5%	37.5%	37.5%		37.5%			
Maximum Green (s)	10.5	33.0			18.0	18.0	18.0		18.0			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5			
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	None	None			None	None	None		C-Max			
Walk Time (s)		7.0			7.0	7.0			7.0			
Flash Dont Walk (s)		11.0			11.0	11.0			11.0			
Pedestrian Calls (#/hr)		0			0	0			0			
Act Effct Green (s)	11.0	30.8			15.3	15.3	20.2		20.2			
Actuated g/C Ratio	0.18	0.51			0.26	0.26	0.34		0.34			
v/c Ratio	0.71	0.89			0.68	0.55	0.10		0.12			
Control Delay	28.4	15.9			23.3	7.6	15.8		1.7			
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0			
Total Delay	28.4	15.9			23.3	7.6	15.8		1.7			
LOS	C	B			C	A	B		A			
Approach Delay		18.2			14.5			8.7				
Approach LOS		B			B			A				

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 53 (88%), Referenced to phase 2:NBR and 6:, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 16.2 Intersection LOS: B
Intersection Capacity Utilization 62.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 10: SR 99 NB Off Ramp/SR 99 NB ON Ramp & Mountain View Ave





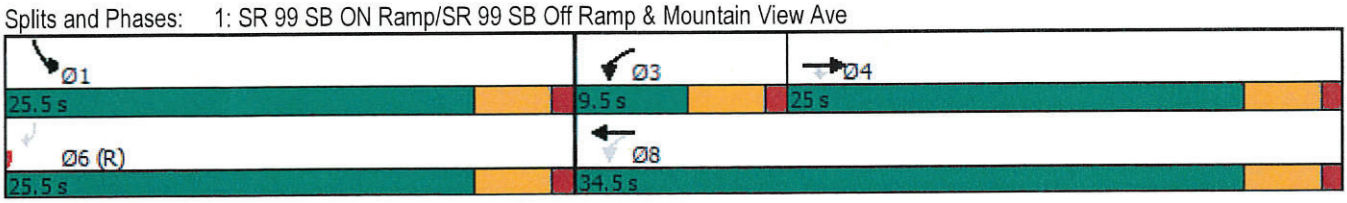
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	323	68	49	199	0	0	0	0	326	0	105
Future Volume (vph)	0	323	68	49	199	0	0	0	0	326	0	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		400	300		0	0		0	0		500
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1367	1599	1805	1597	0	0	0	0	1378	0	1335
Flt Permitted				0.310						0.950		
Satd. Flow (perm)	0	1367	1599	589	1597	0	0	0	0	1378	0	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109									114
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1057			1148			2070			1130	
Travel Time (s)		24.0			26.1			47.0			25.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	39%	1%	0%	19%	0%	0%	0%	0%	31%	0%	21%
Adj. Flow (vph)	0	351	74	53	216	0	0	0	0	354	0	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	351	74	53	216	0	0	0	0	354	0	114
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	pm+pt	NA					Prot		Perm
Protected Phases		4		3	8					1		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4	8						1		6
Detector Phase		4	4	3	8					1		6
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		22.5	22.5	9.5	22.5					9.5		22.5
Total Split (s)		25.0	25.0	9.5	34.5					25.5		25.5
Total Split (%)		41.7%	41.7%	15.8%	57.5%					42.5%		42.5%
Maximum Green (s)		20.5	20.5	5.0	30.0					21.0		21.0
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		None	None	None	None					None		C-Max
Walk Time (s)		7.0	7.0		7.0							7.0
Flash Dont Walk (s)		11.0	11.0		11.0							11.0
Pedestrian Calls (#/hr)		0	0		0							0
Act Effct Green (s)		18.5	18.5	24.2	24.2					26.8		26.8
Actuated g/C Ratio		0.31	0.31	0.40	0.40					0.45		0.45
v/c Ratio		0.83	0.13	0.16	0.34					0.58		0.17
Control Delay		37.8	2.2	4.6	8.8					20.7		4.1
Queue Delay		0.0	0.0	0.0	0.0					0.0		0.0
Total Delay		37.8	2.2	4.6	8.8					20.7		4.1
LOS		D	A	A	A					C		A
Approach Delay		31.6			8.0						16.7	
Approach LOS		C			A						B	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 41 (68%), Referenced to phase 2: and 6:SBR, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 20.1 Intersection LOS: C
Intersection Capacity Utilization 50.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: SR 99 SB ON Ramp/SR 99 SB Off Ramp & Mountain View Ave



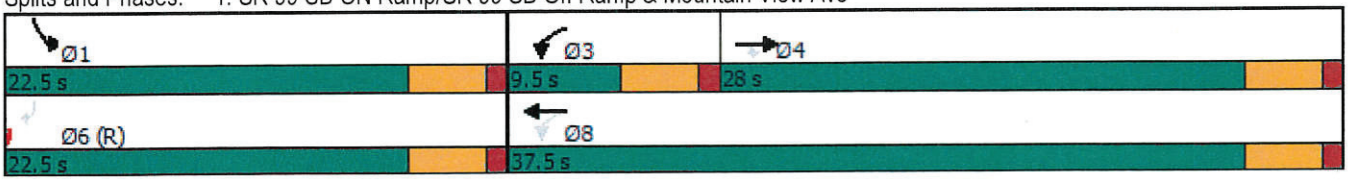
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰		↱
Traffic Volume (vph)	0	530	72	57	260	0	0	0	0	339	0	157
Future Volume (vph)	0	530	72	57	260	0	0	0	0	339	0	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		400	300		0	0		0	0		500
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1367	1599	1805	1597	0	0	0	0	1378	0	1335
Flt Permitted				0.231						0.950		
Satd. Flow (perm)	0	1367	1599	439	1597	0	0	0	0	1378	0	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109									171
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1057			1148			2070			1130	
Travel Time (s)		24.0			26.1			47.0			25.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	39%	1%	0%	19%	0%	0%	0%	0%	31%	0%	21%
Adj. Flow (vph)	0	576	78	62	283	0	0	0	0	368	0	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	576	78	62	283	0	0	0	0	368	0	171
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	pm+pt	NA					Prot		Perm
Protected Phases		4		3	8					1		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4	8						1		6
Detector Phase		4	4	3	8					1		6
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		22.5	22.5	9.5	22.5					9.5		22.5
Total Split (s)		28.0	28.0	9.5	37.5					22.5		22.5
Total Split (%)		46.7%	46.7%	15.8%	62.5%					37.5%		37.5%
Maximum Green (s)		23.5	23.5	5.0	33.0					18.0		18.0
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		None	None	None	None					None		C-Max
Walk Time (s)		7.0	7.0		7.0							7.0
Flash Dont Walk (s)		11.0	11.0		11.0							11.0
Pedestrian Calls (#/hr)		0	0		0							0
Act Effct Green (s)		27.3	27.3	33.0	33.0					18.0		18.0
Actuated g/C Ratio		0.46	0.46	0.55	0.55					0.30		0.30
v/c Ratio		0.93	0.10	0.17	0.32					0.89		0.33
Control Delay		44.2	2.0	2.1	2.1					47.7		5.2
Queue Delay		0.0	0.0	0.0	0.0					0.0		0.0
Total Delay		44.2	2.0	2.1	2.1					47.7		5.2
LOS		D	A	A	A					D		A
Approach Delay		39.2			2.1						34.2	
Approach LOS		D			A						C	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 6 (10%), Referenced to phase 2: and 6:SBR, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 29.1 Intersection LOS: C
Intersection Capacity Utilization 62.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: SR 99 SB ON Ramp/SR 99 SB Off Ramp & Mountain View Ave



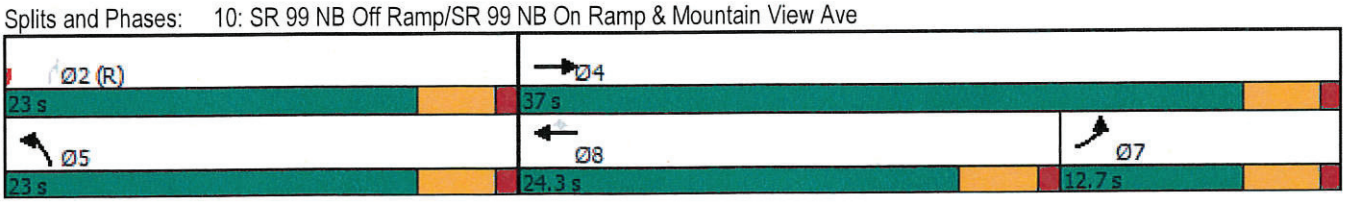
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	693	0	0	238	562	75	0	69	0	0	0
Future Volume (vph)	106	693	0	0	238	562	75	0	69	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	0		350	0		250	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						611			109			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1148			1005			1107			1543	
Travel Time (s)		26.1			22.8			25.2			35.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	32%	13%	0%	0%	14%	7%	11%	0%	31%	0%	0%	0%
Adj. Flow (vph)	115	753	0	0	259	611	82	0	75	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	753	0	0	259	611	82	0	75	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1			
Detector Template	Left	Thru			Thru	Right	Left		Right			
Leading Detector (ft)	20	100			100	20	20		20			
Trailing Detector (ft)	0	0			0	0	0		0			
Detector 1 Position(ft)	0	0			0	0	0		0			
Detector 1 Size(ft)	20	6			6	20	20		20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA			NA	Perm	Prot		Perm			
Protected Phases	7	4			8		5					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			
Detector Phase	7	4			8	8	5		2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0			
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5			
Total Split (s)	12.7	37.0			24.3	24.3	23.0		23.0			
Total Split (%)	21.2%	61.7%			40.5%	40.5%	38.3%		38.3%			
Maximum Green (s)	8.2	32.5			19.8	19.8	18.5		18.5			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5			
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	None	None			None	None	None		C-Max			
Walk Time (s)		7.0			7.0	7.0			7.0			
Flash Dont Walk (s)		11.0			11.0	11.0			11.0			
Pedestrian Calls (#/hr)		0			0	0			0			
Act Effct Green (s)	9.2	30.6			19.1	19.1	20.4		20.4			
Actuated g/C Ratio	0.15	0.51			0.32	0.32	0.34		0.34			
v/c Ratio	0.55	0.88			0.49	0.68	0.15		0.15			
Control Delay	26.6	17.2			17.1	9.1	16.0		2.7			
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0			
Total Delay	26.6	17.2			17.1	9.1	16.0		2.7			
LOS	C	B			B	A	B		A			
Approach Delay		18.4			11.5			9.7				
Approach LOS		B			B			A				

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 32 (53%), Referenced to phase 2:NBR and 6:, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 58.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 10: SR 99 NB Off Ramp/SR 99 NB On Ramp & Mountain View Ave



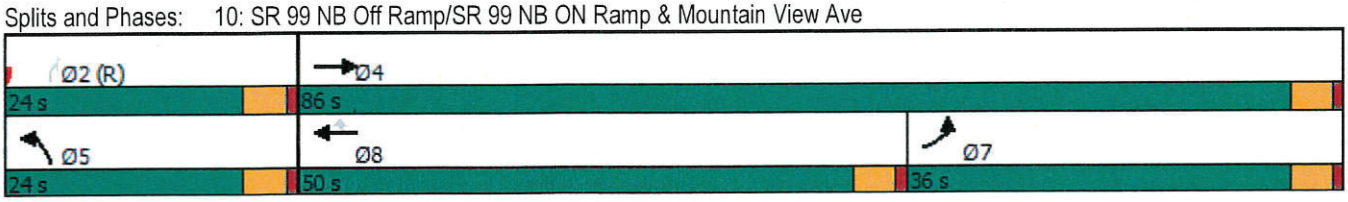
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	848	0	0	347	467	101	0	82	0	0	0
Future Volume (vph)	212	848	0	0	347	467	101	0	82	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	0		350	0		250	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						508			89			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1148			1005			1107			1543	
Travel Time (s)		26.1			22.8			25.2			35.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	32%	13%	0%	0%	14%	7%	11%	0%	31%	0%	0%	0%
Adj. Flow (vph)	230	922	0	0	377	508	110	0	89	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	922	0	0	377	508	110	0	89	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1			
Detector Template	Left	Thru			Thru	Right	Left		Right			
Leading Detector (ft)	20	100			100	20	20		20			
Trailing Detector (ft)	0	0			0	0	0		0			
Detector 1 Position(ft)	0	0			0	0	0		0			
Detector 1 Size(ft)	20	6			6	20	20		20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA			NA	Perm	Prot		Perm			
Protected Phases	7	4			8		5					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			
Detector Phase	7	4			8	8	5		2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0			
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5			
Total Split (s)	36.0	86.0			50.0	50.0	24.0		24.0			
Total Split (%)	32.7%	78.2%			45.5%	45.5%	21.8%		21.8%			
Maximum Green (s)	31.5	81.5			45.5	45.5	19.5		19.5			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5			
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	None	None			None	None	None		C-Max			
Walk Time (s)		7.0			7.0	7.0			7.0			
Flash Dont Walk (s)		11.0			11.0	11.0			11.0			
Pedestrian Calls (#/hr)		0			0	0			0			
Act Effct Green (s)	38.2	75.9			33.2	33.2	25.1		25.1			
Actuated g/C Ratio	0.35	0.69			0.30	0.30	0.23		0.23			
v/c Ratio	0.49	0.80			0.75	0.63	0.30		0.25			
Control Delay	23.3	7.3			42.9	11.1	40.6		10.3			
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0			
Total Delay	23.3	7.3			42.9	11.1	40.6		10.3			
LOS	C	A			D	B	D		B			
Approach Delay		10.5			24.6			27.1				
Approach LOS		B			C			C				

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBR and 6:, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 17.6 Intersection LOS: B
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 10: SR 99 NB Off Ramp/SR 99 NB ON Ramp & Mountain View Ave



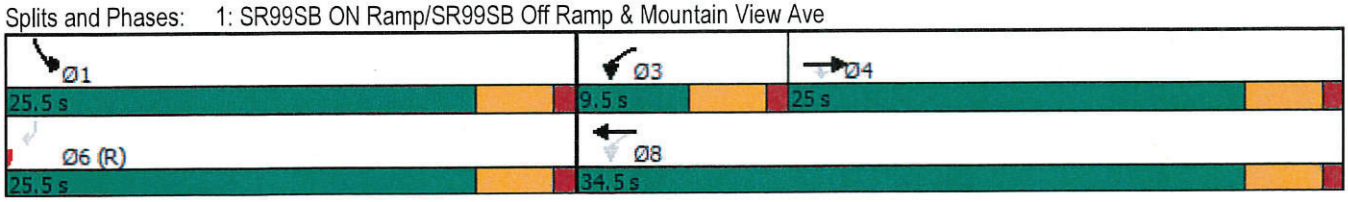
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰		↱
Traffic Volume (vph)	0	401	91	61	252	0	0	0	0	398	0	196
Future Volume (vph)	0	401	91	61	252	0	0	0	0	398	0	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		400	300		0	0		0	0		500
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1367	1599	1805	1597	0	0	0	0	1378	0	1335
Flt Permitted				0.260						0.950		
Satd. Flow (perm)	0	1367	1599	494	1597	0	0	0	0	1378	0	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109									213
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1057			1148			2070			1130	
Travel Time (s)		24.0			26.1			47.0			25.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	39%	1%	0%	19%	0%	0%	0%	0%	31%	0%	21%
Adj. Flow (vph)	0	436	99	66	274	0	0	0	0	433	0	213
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	436	99	66	274	0	0	0	0	433	0	213
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	pm+pt	NA					Prot		Perm
Protected Phases		4		3	8					1		

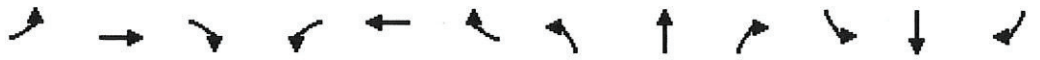
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4	8						1		6
Detector Phase		4	4	3	8					1		6
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		22.5	22.5	9.5	22.5					9.5		22.5
Total Split (s)		25.0	25.0	9.5	34.5					25.5		25.5
Total Split (%)		41.7%	41.7%	15.8%	57.5%					42.5%		42.5%
Maximum Green (s)		20.5	20.5	5.0	30.0					21.0		21.0
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		None	None	None	None					None		C-Max
Walk Time (s)		7.0	7.0		7.0							7.0
Flash Dont Walk (s)		11.0	11.0		11.0							11.0
Pedestrian Calls (#/hr)		0	0		0							0
Act Effct Green (s)		21.0	21.0	26.7	26.7					24.3		24.3
Actuated g/C Ratio		0.35	0.35	0.44	0.44					0.40		0.40
v/c Ratio		0.91	0.16	0.20	0.39					0.78		0.32
Control Delay		47.0	3.8	3.4	4.6					30.7		4.0
Queue Delay		0.0	0.0	0.0	0.0					0.0		0.0
Total Delay		47.0	3.8	3.4	4.6					30.7		4.0
LOS		D	A	A	A					C		A
Approach Delay		39.0			4.4						21.9	
Approach LOS		D			A						C	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 42 (70%), Referenced to phase 2: and 6:SBR, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 24.0 Intersection LOS: C
Intersection Capacity Utilization 58.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: SR99SB ON Ramp/SR99SB Off Ramp & Mountain View Ave



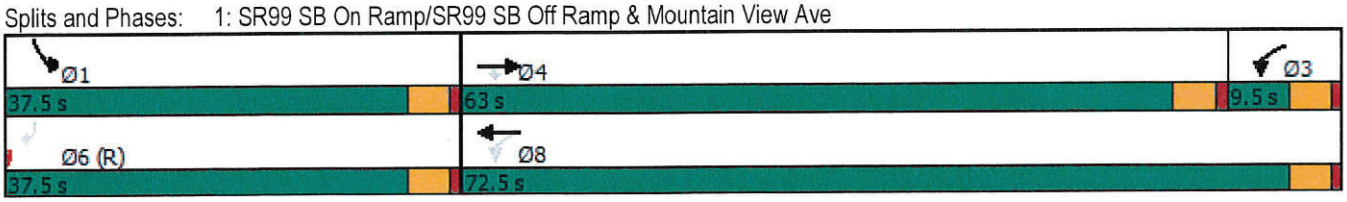


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	680	94	85	363	0	0	0	0	380	0	263
Future Volume (vph)	0	680	94	85	363	0	0	0	0	380	0	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		400	300		0	0		0	0		500
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1367	1599	1805	1597	0	0	0	0	1378	0	1335
Flt Permitted				0.193						0.950		
Satd. Flow (perm)	0	1367	1599	367	1597	0	0	0	0	1378	0	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102									286
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1057			1148			2070			1130	
Travel Time (s)		24.0			26.1			47.0			25.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	39%	1%	0%	19%	0%	0%	0%	0%	31%	0%	21%
Adj. Flow (vph)	0	739	102	92	395	0	0	0	0	413	0	286
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	739	102	92	395	0	0	0	0	413	0	286
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	pm+pt	NA					Prot		Perm
Protected Phases		4		3	8					1		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4	8						1		6
Detector Phase		4	4	3	8					1		6
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		22.5	22.5	9.5	22.5					9.5		22.5
Total Split (s)		63.0	63.0	9.5	72.5					37.5		37.5
Total Split (%)		57.3%	57.3%	8.6%	65.9%					34.1%		34.1%
Maximum Green (s)		58.5	58.5	5.0	68.0					33.0		33.0
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		None	None	None	None					None		C-Max
Walk Time (s)		7.0	7.0		7.0							7.0
Flash Dont Walk (s)		11.0	11.0		11.0							11.0
Pedestrian Calls (#/hr)		0	0		0							0
Act Effct Green (s)		58.5	58.5	67.1	66.1					34.9		34.9
Actuated g/C Ratio		0.53	0.53	0.61	0.60					0.32		0.32
v/c Ratio		1.02	0.11	0.32	0.41					0.95		0.46
Control Delay		64.9	2.8	3.4	1.8					70.0		6.1
Queue Delay		0.0	0.0	0.0	0.0					0.0		0.0
Total Delay		64.9	2.8	3.4	1.8					70.0		6.1
LOS		E	A	A	A					E		A
Approach Delay		57.3			2.1						43.9	
Approach LOS		E			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 94 (85%), Referenced to phase 2: and 6:SBR, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 39.4		Intersection LOS: D	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: SR99 SB On Ramp/SR99 SB Off Ramp & Mountain View Ave



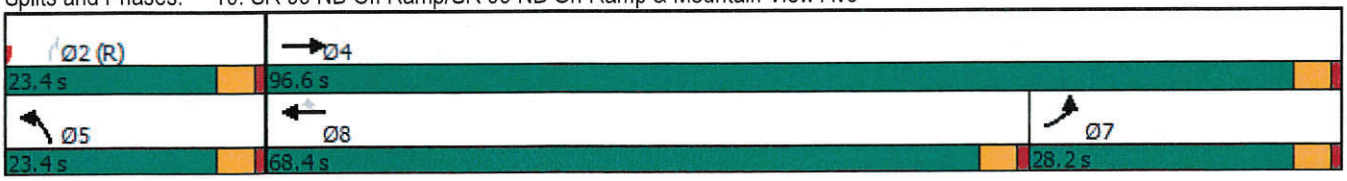


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	922	0	0	271	703	125	0	99	0	0	0
Future Volume (vph)	141	922	0	0	271	703	125	0	99	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	0		350	0		250	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						706			108			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1148			1005			1107			1543	
Travel Time (s)		26.1			22.8			25.2			35.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	32%	13%	0%	0%	14%	7%	11%	0%	31%	0%	0%	0%
Adj. Flow (vph)	153	1002	0	0	295	764	136	0	108	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	1002	0	0	295	764	136	0	108	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1			
Detector Template	Left	Thru			Thru	Right	Left		Right			
Leading Detector (ft)	20	100			100	20	20		20			
Trailing Detector (ft)	0	0			0	0	0		0			
Detector 1 Position(ft)	0	0			0	0	0		0			
Detector 1 Size(ft)	20	6			6	20	20		20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA			NA	Perm	Prot		Perm			
Protected Phases	7	4			8		5					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			
Detector Phase	7	4			8	8	5		2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0			
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5			
Total Split (s)	28.2	96.6			68.4	68.4	23.4		23.4			
Total Split (%)	23.5%	80.5%			57.0%	57.0%	19.5%		19.5%			
Maximum Green (s)	23.7	92.1			63.9	63.9	18.9		18.9			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5			
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	None	None			None	None	None		C-Max			
Walk Time (s)		7.0			7.0	7.0			7.0			
Flash Dont Walk (s)		11.0			11.0	11.0			11.0			
Pedestrian Calls (#/hr)		0			0	0			0			
Act Effct Green (s)	52.4	90.6			33.7	33.7	20.4		20.4			
Actuated g/C Ratio	0.44	0.76			0.28	0.28	0.17		0.17			
v/c Ratio	0.26	0.79			0.63	0.82	0.49		0.36			
Control Delay	19.7	6.4			43.1	17.9	52.9		11.9			
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0			
Total Delay	19.7	6.4			43.1	17.9	52.9		11.9			
LOS	B	A			D	B	D		B			
Approach Delay		8.1			25.0			34.7				
Approach LOS		A			C			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBR and 6:, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Off Ramp/SR 99 NB On Ramp & Mountain View Ave

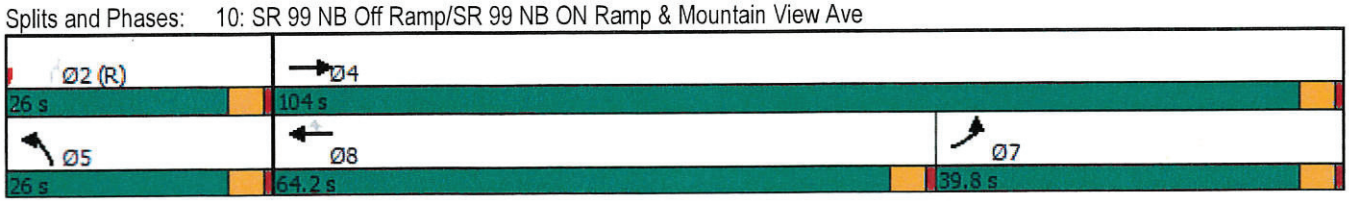


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	1106	0	0	428	652	196	0	127	0	0	0
Future Volume (vph)	276	1106	0	0	428	652	196	0	127	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	0		350	0		250	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1367	1681	0	0	1667	1509	1626	0	1233	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						574			138			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1148			1005			1107			1543	
Travel Time (s)		26.1			22.8			25.2			35.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	32%	13%	0%	0%	14%	7%	11%	0%	31%	0%	0%	0%
Adj. Flow (vph)	300	1202	0	0	465	709	213	0	138	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	300	1202	0	0	465	709	213	0	138	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1			
Detector Template	Left	Thru			Thru	Right	Left		Right			
Leading Detector (ft)	20	100			100	20	20		20			
Trailing Detector (ft)	0	0			0	0	0		0			
Detector 1 Position(ft)	0	0			0	0	0		0			
Detector 1 Size(ft)	20	6			6	20	20		20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Prot	NA			NA	Perm	Prot		Perm			
Protected Phases	7	4			8		5					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			
Detector Phase	7	4			8	8	5		2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0			
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5			
Total Split (s)	39.8	104.0			64.2	64.2	26.0		26.0			
Total Split (%)	30.6%	80.0%			49.4%	49.4%	20.0%		20.0%			
Maximum Green (s)	35.3	99.5			59.7	59.7	21.5		21.5			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5			
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	None	None			None	None	None		C-Max			
Walk Time (s)		7.0			7.0	7.0			7.0			
Flash Dont Walk (s)		11.0			11.0	11.0			11.0			
Pedestrian Calls (#/hr)		0			0	0			0			
Act Effct Green (s)	47.7	99.5			47.3	47.3	21.5		21.5			
Actuated g/C Ratio	0.37	0.77			0.36	0.36	0.17		0.17			
v/c Ratio	0.60	0.93			0.77	0.78	0.79		0.43			
Control Delay	30.0	8.8			42.1	14.2	73.9		12.0			
Queue Delay	0.0	3.2			0.0	0.0	0.0		0.0			
Total Delay	30.0	12.0			42.1	14.2	73.9		12.0			
LOS	C	B			D	B	E		B			
Approach Delay		15.6			25.3			49.5				
Approach LOS		B			C			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBR and 6:, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 23.3		Intersection LOS: C	
Intersection Capacity Utilization 91.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Off Ramp/SR 99 NB ON Ramp & Mountain View Ave



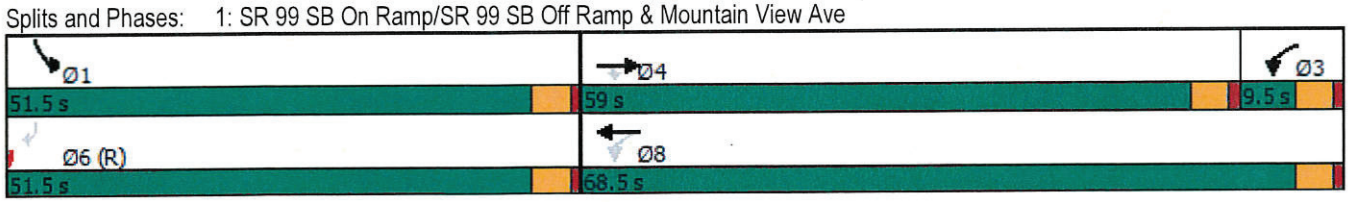
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰		↱
Traffic Volume (vph)	0	578	121	77	319	0	0	0	0	485	0	366
Future Volume (vph)	0	578	121	77	319	0	0	0	0	485	0	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		400	300		0	0		0	0		500
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1367	1599	1805	1597	0	0	0	0	1378	0	1335
Flt Permitted				0.205						0.950		
Satd. Flow (perm)	0	1367	1599	390	1597	0	0	0	0	1378	0	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132									398
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1057			1148			2070			1130	
Travel Time (s)		24.0			26.1			47.0			25.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	39%	1%	0%	19%	0%	0%	0%	0%	31%	0%	21%
Adj. Flow (vph)	0	628	132	84	347	0	0	0	0	527	0	398
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	628	132	84	347	0	0	0	0	527	0	398
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	pm+pt	NA					Prot		Perm
Protected Phases		4		3	8					1		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4	8						1		6
Detector Phase		4	4	3	8					1		6
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		22.5	22.5	9.5	22.5					9.5		22.5
Total Split (s)		59.0	59.0	9.5	68.5					51.5		51.5
Total Split (%)		49.2%	49.2%	7.9%	57.1%					42.9%		42.9%
Maximum Green (s)		54.5	54.5	5.0	64.0					47.0		47.0
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		None	None	None	None					None		C-Max
Walk Time (s)		7.0	7.0		7.0							7.0
Flash Dont Walk (s)		11.0	11.0		11.0							11.0
Pedestrian Calls (#/hr)		0	0		0							0
Act Effct Green (s)		54.5	54.5	63.1	62.1					48.9		48.9
Actuated g/C Ratio		0.45	0.45	0.53	0.52					0.41		0.41
v/c Ratio		1.01	0.17	0.32	0.42					0.94		0.51
Control Delay		72.7	3.7	6.9	4.8					61.4		4.9
Queue Delay		0.0	0.0	0.0	0.0					0.0		0.0
Total Delay		72.7	3.7	6.9	4.8					61.4		4.9
LOS		E	A	A	A					E		A
Approach Delay		60.7			5.2						37.1	
Approach LOS		E			A						D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 104 (87%), Referenced to phase 2: and 6:SBR, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 39.1 Intersection LOS: D
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: SR 99 SB On Ramp/SR 99 SB Off Ramp & Mountain View Ave



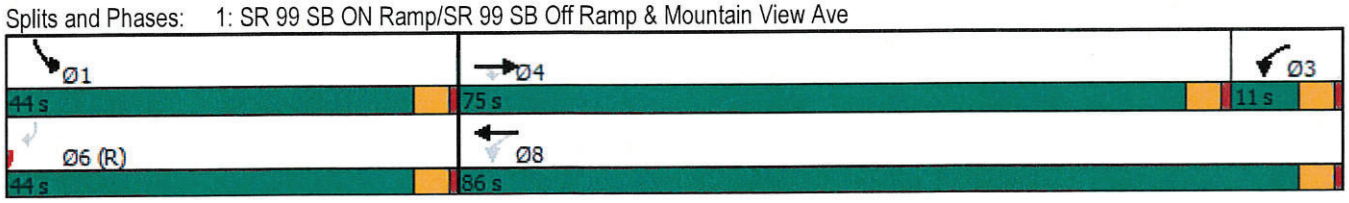
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	878	123	118	506	0	0	0	0	504	0	438
Future Volume (vph)	0	878	123	118	506	0	0	0	0	504	0	438
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		400	300		0	0		0	0		500
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1367	1599	1805	1597	0	0	0	0	1378	0	1335
Flt Permitted				0.053						0.950		
Satd. Flow (perm)	0	1367	1599	101	1597	0	0	0	0	1378	0	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134									351
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1123			1148			2070			1130	
Travel Time (s)		25.5			26.1			47.0			25.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	39%	1%	0%	19%	0%	0%	0%	0%	31%	0%	21%
Adj. Flow (vph)	0	954	134	128	550	0	0	0	0	548	0	476
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	954	134	128	550	0	0	0	0	548	0	476
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	pm+pt	NA					Prot		Perm
Protected Phases		4		3	8					1		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4	8						1		6
Detector Phase		4	4	3	8					1		6
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		22.5	22.5	9.5	22.5					9.5		22.5
Total Split (s)		75.0	75.0	11.0	86.0					44.0		44.0
Total Split (%)		57.7%	57.7%	8.5%	66.2%					33.8%		33.8%
Maximum Green (s)		70.5	70.5	6.5	81.5					39.5		39.5
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		None	None	None	None					None		C-Max
Walk Time (s)		7.0	7.0		7.0							7.0
Flash Dont Walk (s)		11.0	11.0		11.0							11.0
Pedestrian Calls (#/hr)		0	0		0							0
Act Effct Green (s)		70.5	70.5	81.5	81.5					39.5		39.5
Actuated g/C Ratio		0.54	0.54	0.63	0.63					0.30		0.30
v/c Ratio		1.29	0.14	0.86	0.55					1.31		0.73
Control Delay		167.8	2.7	65.3	2.2					193.4		18.0
Queue Delay		0.3	0.0	0.0	0.0					0.0		0.0
Total Delay		168.1	2.7	65.3	2.2					193.4		18.0
LOS		F	A	E	A					F		B
Approach Delay		147.8			14.1						111.8	
Approach LOS		F			B						F	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 115 (88%), Referenced to phase 2: and 6:SBR, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.31
Intersection Signal Delay: 102.1 Intersection LOS: F
Intersection Capacity Utilization 91.9% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: SR 99 SB ON Ramp/SR 99 SB Off Ramp & Mountain View Ave



Mountain View Avenue Intersections

Alternative 3

Realign On-Ramps with Roundabout

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

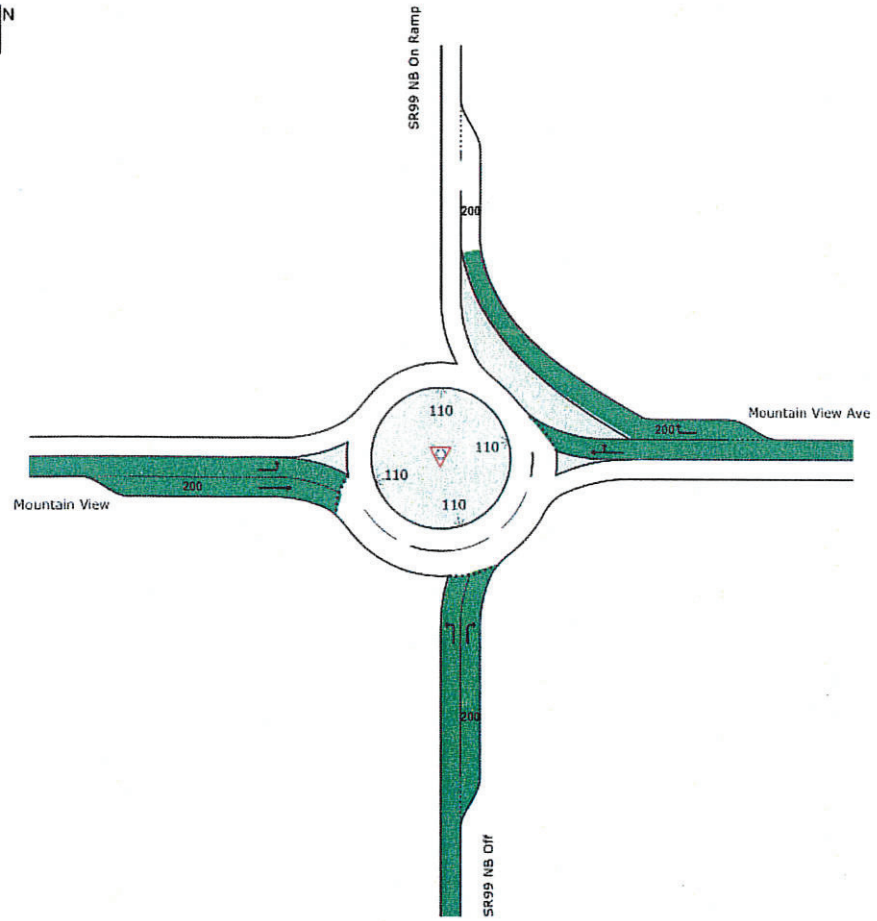
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB - AM - Construction Year]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB - AM - Construction Year]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR99 NB Off													
Lane 1	50	18.0	573	0.087	100	7.3	LOS A	0.3	7.5	Full	1600	0.0	0.0
Lane 2[d]	52	25.0	600	0.087	100	7.0	LOS A	0.2	7.3	Short	200	0.0	NA
Approach	102	21.6		0.087		7.2	LOS A	0.3	7.5				
East: Mountain View Ave													
Lane 1[d]	405	6.0	1176	0.344	100	6.4	LOS A	1.6	42.3	Full	1100	0.0	0.0
Lane 2	304	6.0	1580	0.192	56[6]	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	709	6.0		0.344		3.7	LOS A	1.6	42.3				
West: Mountain View													
Lane 1	86	10.0	1291	0.067	100	3.3	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2[d]	620	6.0	1340	0.462	100	7.3	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	705	6.5		0.462		6.8	LOS A	0.0	0.0				
Intersection	1516	7.3		0.462		5.4	LOS A	1.6	42.3				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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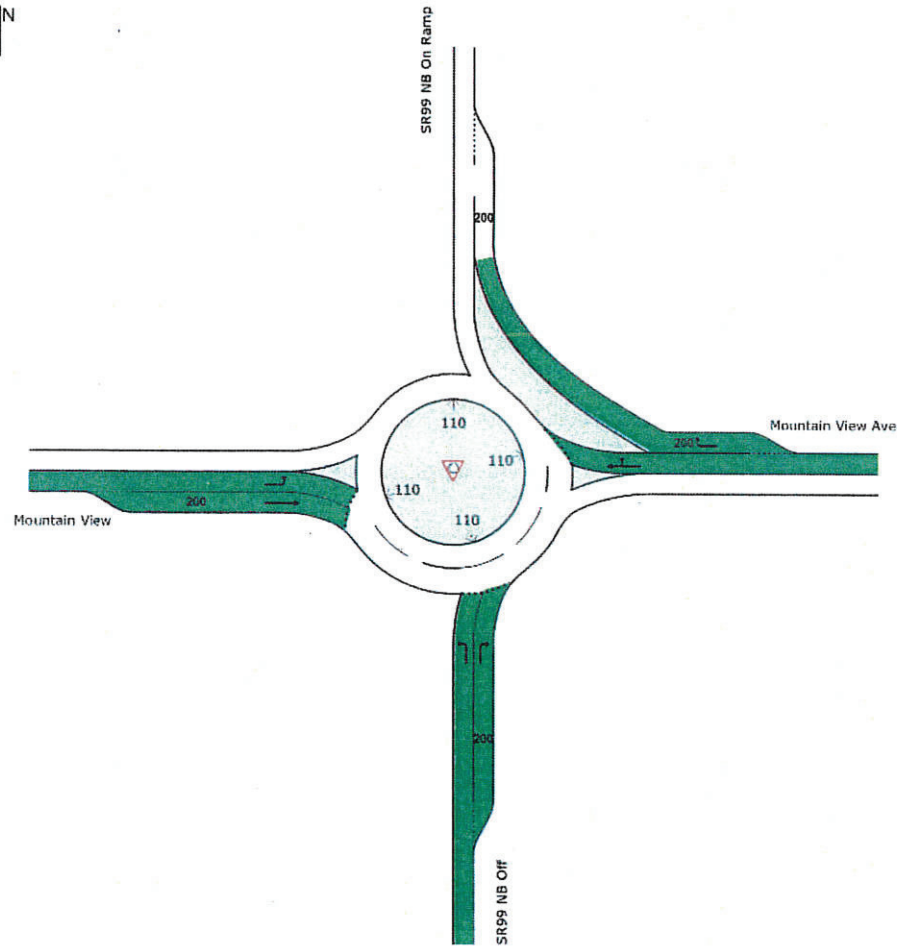
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB - PM - Construction Year]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB - PM - Construction Year]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR99 NB Off													
Lane 1	57	18.0	452	0.125	100	9.7	LOS A	0.4	10.5	Full	1600	0.0	0.0
Lane 2[d]	58	25.0	482	0.119	100	9.1	LOS A	0.3	9.8	Short	200	0.0	NA
Approach	114	21.5		0.125		9.4	LOS A	0.4	10.5				
East: Mountain View Ave													
Lane 1[d]	358	6.0	1073	0.333	100	6.7	LOS A	1.5	38.8	Full	1100	0.0	0.0
Lane 2	295	6.0	1580	0.186	56[6]	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	652	6.0		0.333		3.7	LOS A	1.5	38.8				
West: Mountain View													
Lane 1	177	10.0	1291	0.137	100	3.9	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2[d]	767	6.0	1340	0.573	100	9.1	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	945	6.8		0.573		8.1	LOS A	0.0	0.0				
Intersection	1711	7.5		0.573		6.5	LOS A	1.5	38.8				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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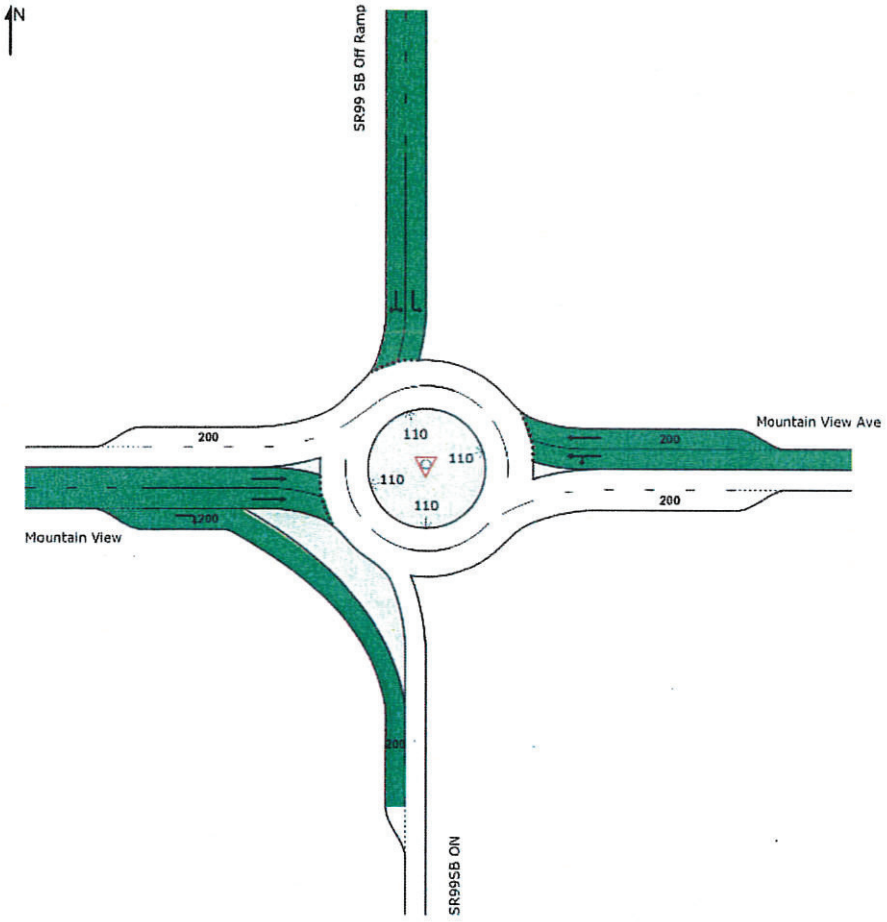
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB - AM - Construction Year]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB - AM - Construction Year]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Mountain View Ave													
Lane 1[d]	149	5.1	1351	0.110	100	3.5	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2	121	8.0	1250	0.097	88[6]	3.7	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	270	6.4		0.110		3.6	LOS A	0.0	0.0				
North: SR99 SB Off Ramp													
Lane 1	228	11.0	934	0.245	100	6.3	LOS A	1.0	26.0	Full	1600	0.0	0.0
Lane 2[d]	240	13.4	981	0.245	100	6.1	LOS A	0.9	25.3	Full	1600	0.0	0.0
Approach	468	12.2		0.245		6.2	LOS A	1.0	26.0				
West: Mountain View													
Lane 1[d]	194	6.5	912	0.213	100	6.1	LOS A	0.8	21.1	Full	1100	0.0	0.0
Lane 2	157	6.5	841	0.187	88[6]	6.2	LOS A	0.7	18.5	Full	1100	0.0	0.0
Lane 3	74	9.0	1536	0.048	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	425	6.9		0.213		5.1	LOS A	0.8	21.1				
Intersection	1163	8.9		0.245		5.2	LOS A	1.0	26.0				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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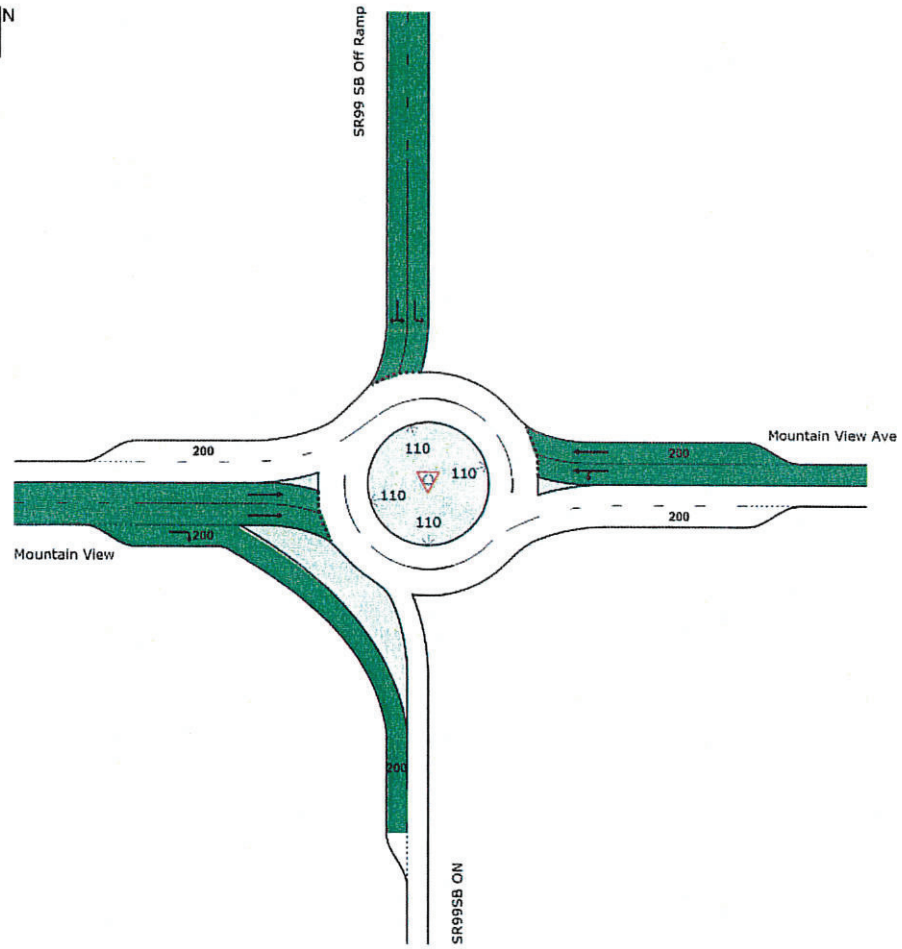
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB - PM - Construction Year]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB - PM - Construction Year]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Mountain View Ave													
Lane 1[d]	190	5.4	1348	0.141	100	3.8	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2	155	8.0	1250	0.124	88[6]	3.9	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	345	6.6		0.141		3.9	LOS A	0.0	0.0				
North: SR99 SB Off Ramp													
Lane 1	263	11.0	868	0.303	100	7.5	LOS A	1.2	32.9	Full	1600	0.0	0.0
Lane 2[d]	276	14.1	911	0.303	100	7.2	LOS A	1.2	32.0	Full	1600	0.0	0.0
Approach	539	12.6		0.303		7.3	LOS A	1.2	32.9				
West: Mountain View													
Lane 1[d]	319	6.5	893	0.357	100	8.0	LOS A	1.5	39.3	Full	1100	0.0	0.0
Lane 2	257	6.5	822	0.313	88[6]	7.9	LOS A	1.3	33.7	Full	1100	0.0	0.0
Lane 3	78	9.0	1536	0.051	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	654	6.8		0.357		7.0	LOS A	1.5	39.3				
Intersection	1538	8.8		0.357		6.4	LOS A	1.5	39.3				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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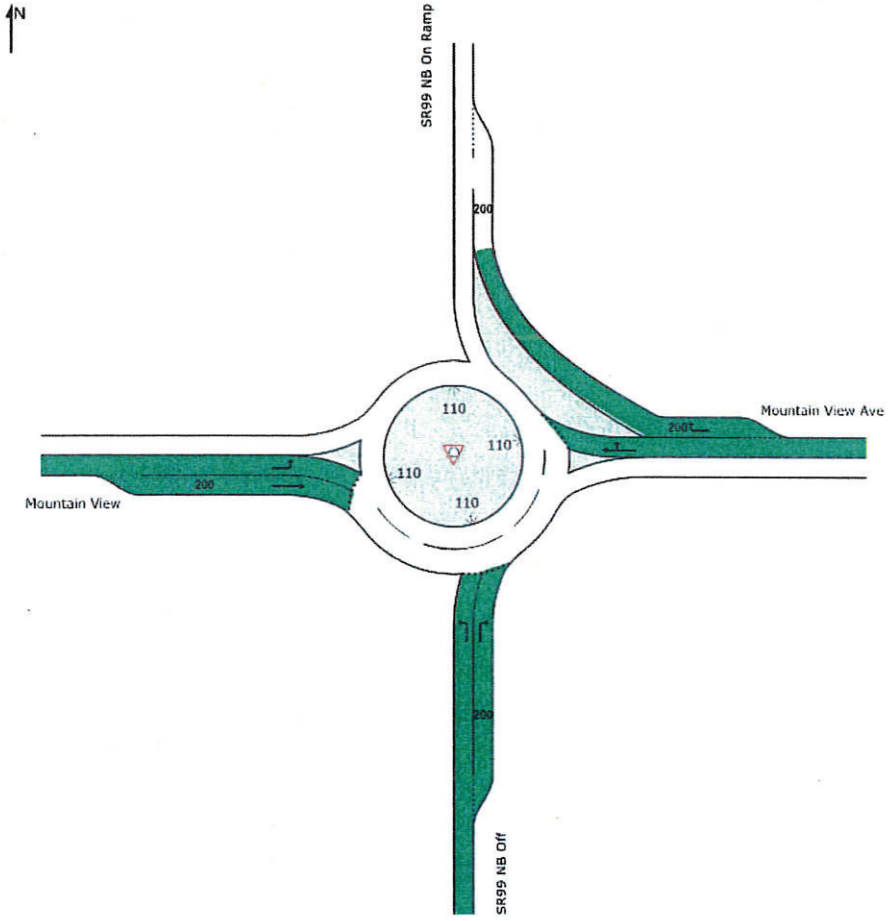
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB - 2035 AM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB - 2035 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR99 NB Off													
Lane 1[d]	82	11.0	588	0.139	100	7.8	LOS A	0.4	11.9	Full	1600	0.0	0.0
Lane 2	75	17.4	496	0.151	100	9.3	LOS A	0.5	13.0	Short	200	0.0	NA
Approach	157	14.1		0.151		8.5	LOS A	0.5	13.0				
East: Mountain View Ave													
Lane 1[d]	485	5.0	1128	0.430	100	7.7	LOS A	2.2	57.3	Full	1100	0.0	0.0
Lane 2	384	4.8	1598	0.241	56[6]	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	870	4.9		0.430		4.3	LOS A	2.2	57.3				
West: Mountain View													
Lane 1	115	7.5	1322	0.087	100	3.4	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2[d]	753	4.9	1353	0.557	100	8.7	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	868	5.3		0.557		8.0	LOS A	0.0	0.0				
Intersection	1895	5.8		0.557		6.4	LOS A	2.2	57.3				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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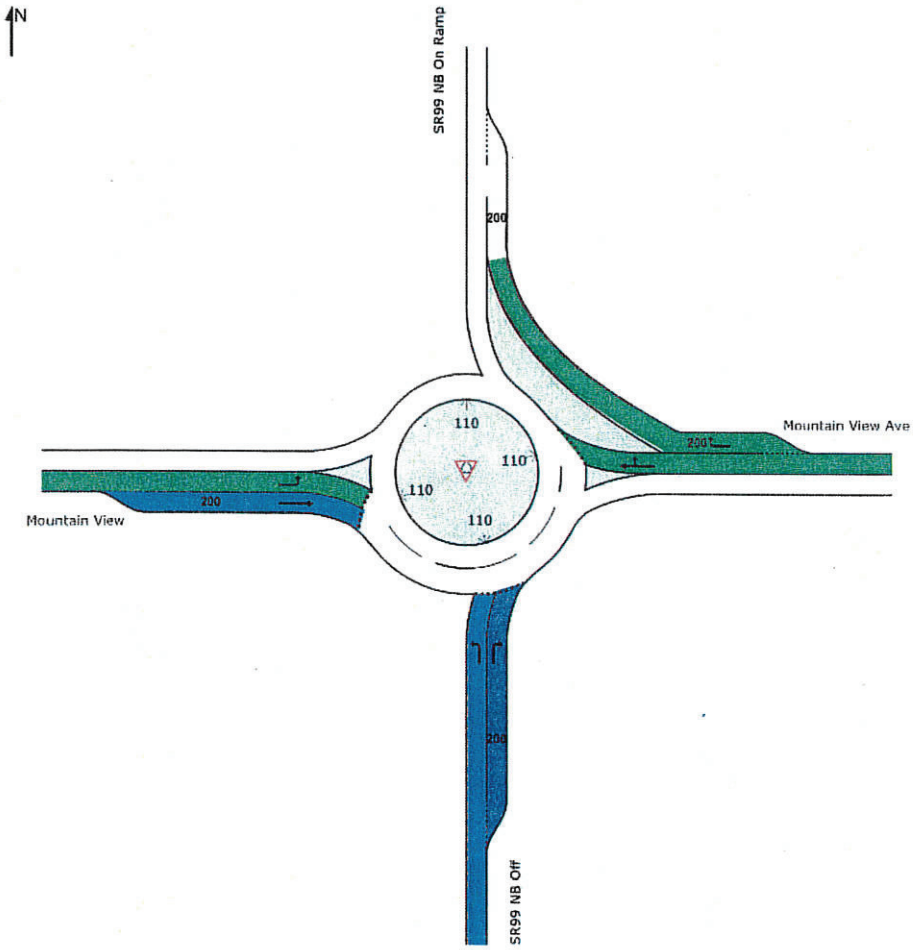
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB - 2035 PM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	B	A	B	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB - 2035 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR99 NB Off													
Lane 1[d]	110	18.0	423	0.260	100	12.8	LOS B	0.8	22.3	Full	1600	0.0	0.0
Lane 2	89	25.0	348	0.256	100	15.1	LOS C	0.7	21.7	Short	200	0.0	NA
Approach	199	21.1		0.260		13.8	LOS B	0.8	22.3				
East: Mountain View Ave													
Lane 1[d]	463	6.0	967	0.478	100	9.5	LOS A	2.8	73.4	Full	1100	0.0	0.0
Lane 2	422	6.0	1580	0.267	56[6]	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	885	6.0		0.478		5.0	LOS A	2.8	73.4				
West: Mountain View													
Lane 1	230	10.0	1291	0.179	100	4.3	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2[d]	922	6.0	1340	0.688	100	11.8	LOS B	0.0	0.0	Short	200	0.0	NA
Approach	1152	6.8		0.688		10.3	LOS B	0.0	0.0				
Intersection	2236	7.8		0.688		8.5	LOS A	2.8	73.4				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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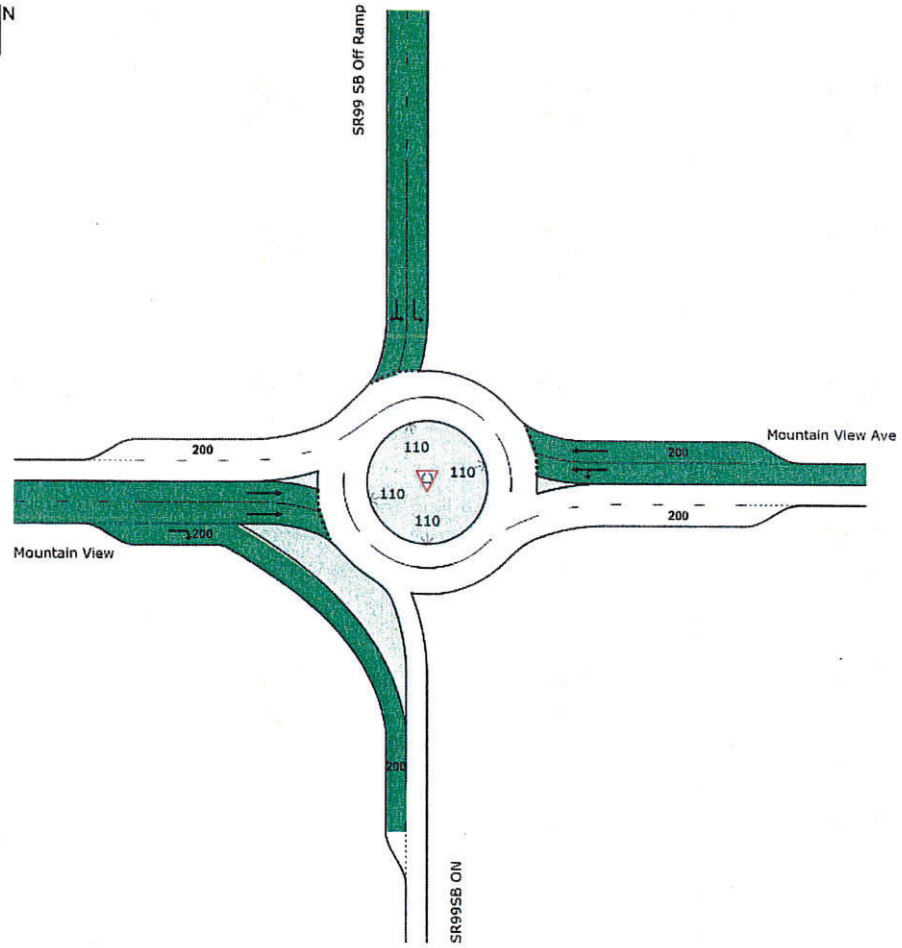
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB - 2035 AM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB - 2035 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Mountain View Ave													
Lane 1[d]	188	5.2	1351	0.139	100	3.8	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2	153	8.0	1250	0.122	88[6]	3.9	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	340	6.4		0.139		3.8	LOS A	0.0	0.0				
North: SR99 SB Off Ramp													
Lane 1	315	11.0	872	0.362	100	8.3	LOS A	1.5	41.3	Full	1600	0.0	0.0
Lane 2[d]	330	14.2	913	0.362	100	8.0	LOS A	1.4	40.1	Full	1600	0.0	0.0
Approach	646	12.6		0.362		8.1	LOS A	1.5	41.3				
West: Mountain View													
Lane 1[d]	242	6.5	838	0.288	100	7.5	LOS A	1.1	29.5	Full	1100	0.0	0.0
Lane 2	194	6.5	767	0.253	88[6]	7.5	LOS A	1.0	25.6	Full	1100	0.0	0.0
Lane 3	99	9.0	1536	0.064	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	535	7.0		0.288		6.1	LOS A	1.1	29.5				
Intersection	1521	9.3		0.362		6.5	LOS A	1.5	41.3				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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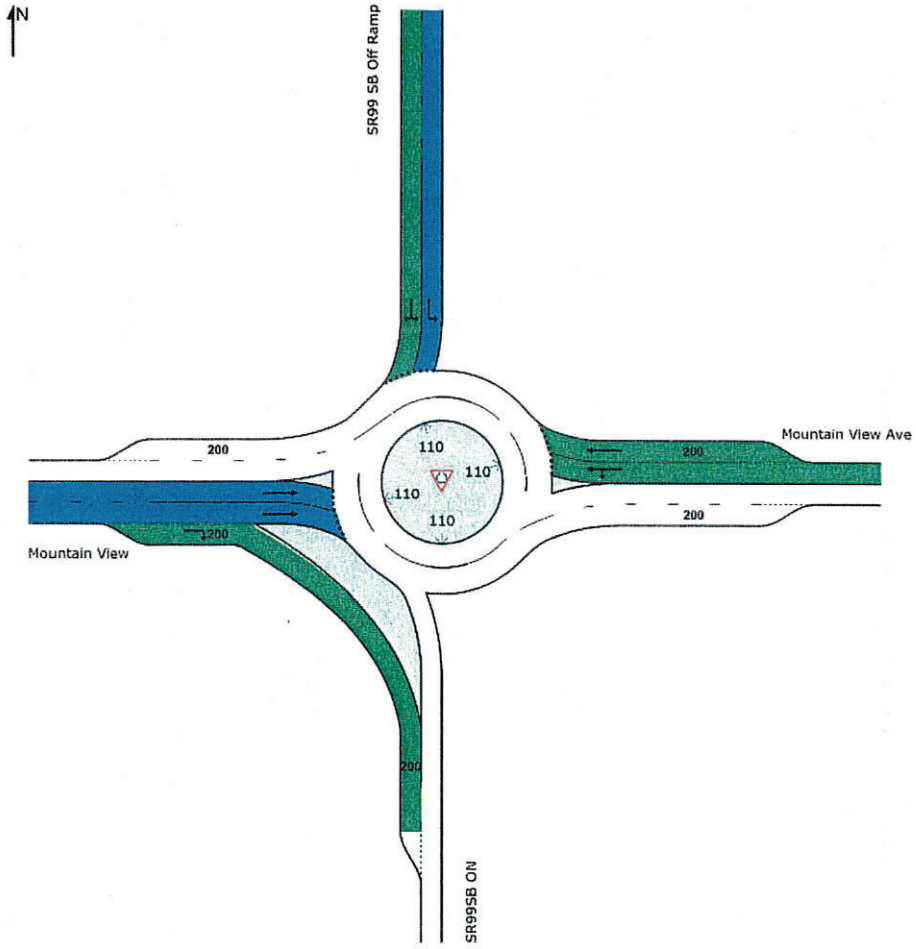
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB - 2035 PM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	B	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB - 2035 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Mountain View Ave													
Lane 1[d]	268	3.6	1371	0.195	100	4.2	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2	219	5.6	1279	0.172	88[6]	4.3	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	487	4.5		0.195		4.2	LOS A	0.0	0.0				
North: SR99 SB Off Ramp													
Lane 1	335	11.5	758	0.442	100	10.7	LOS B	2.3	62.1	Full	1600	0.0	0.0
Lane 2[d]	364	11.8	824	0.442	100	10.0	LOS A	2.2	61.2	Full	1600	0.0	0.0
Approach	699	11.7		0.442		10.3	LOS B	2.3	62.1				
West: Mountain View													
Lane 1[d]	410	3.8	855	0.480	100	10.4	LOS B	2.9	75.5	Full	1100	0.0	0.0
Lane 2	329	3.8	782	0.421	88[6]	10.0	LOS B	2.2	57.2	Full	1100	0.0	0.0
Lane 3	102	8.7	1540	0.066	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	841	4.4		0.480		9.0	LOS A	2.9	75.5				
Intersection	2027	6.9		0.480		8.3	LOS A	2.9	75.5				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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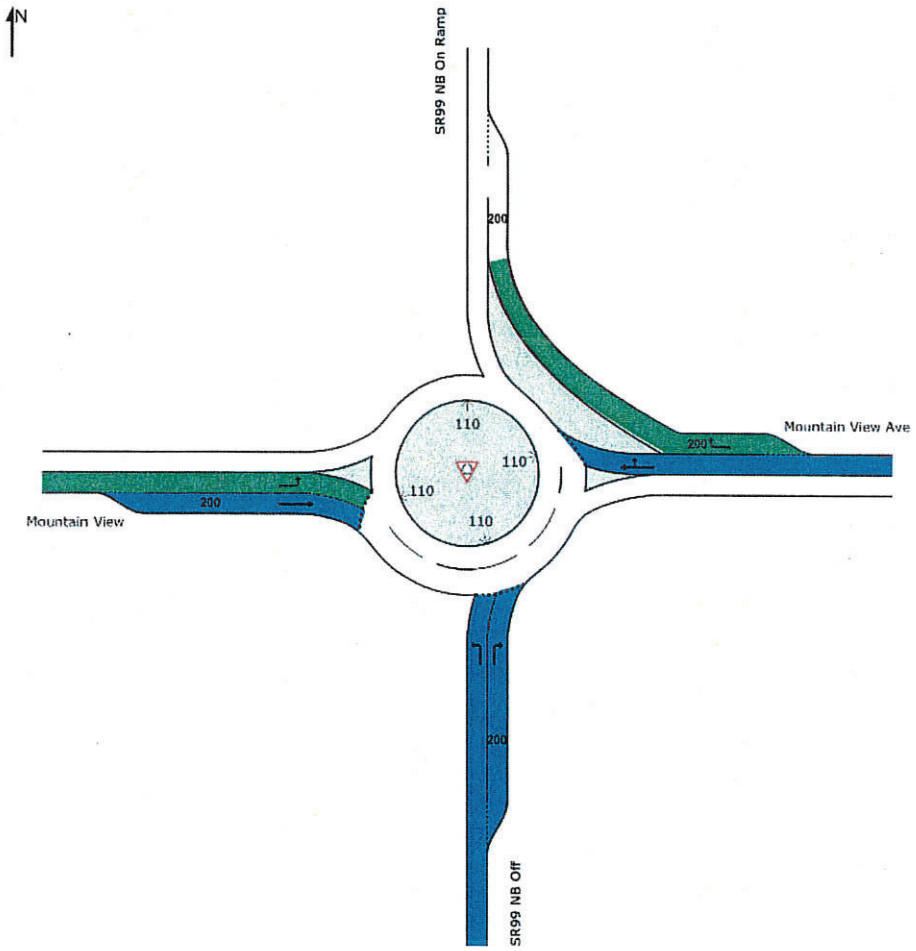
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB - 2045 AM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	B	A	B	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB - 2045 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR99 NB Off													
Lane 1[d]	136	6.6	480	0.283	100	11.9	LOS B	1.0	25.9	Full	1600	0.0	0.0
Lane 2	108	12.1	399	0.270	100	13.7	LOS B	0.9	24.0	Short	200	0.0	NA
Approach	243	9.1		0.283		12.7	LOS B	1.0	25.9				
East: Mountain View Ave													
Lane 1[d]	570	4.2	1051	0.542	100	10.1	LOS B	4.0	102.7	Full	1100	0.0	0.0
Lane 2	489	3.8	1613	0.303	56[6]	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	1059	4.0		0.542		5.5	LOS A	4.0	102.7				
West: Mountain View													
Lane 1	153	5.6	1345	0.114	100	3.6	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2[d]	1002	3.7	1369	0.732	100	13.1	LOS B	0.0	0.0	Short	200	0.0	NA
Approach	1155	4.0		0.732		11.8	LOS B	0.0	0.0				
Intersection	2458	4.5		0.732		9.2	LOS A	4.0	102.7				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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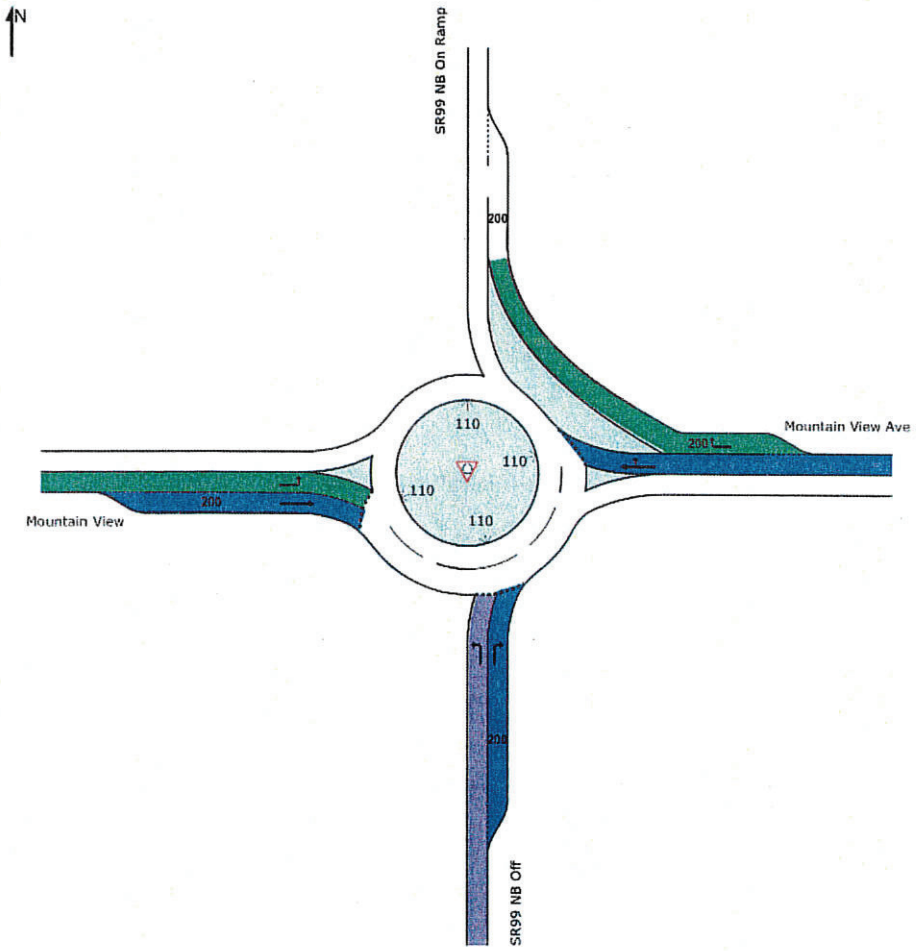
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB - 2045 PM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	D	A	C	B



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB - 2045 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR99 NB Off													
Lane 1[d]	213	4.2	366	0.583	100	25.6	LOS D	2.7	69.3	Full	1600	0.0	0.0
Lane 2	138	9.4	297	0.465	100	24.6	LOS C	1.8	47.2	Short	200	0.0	NA
Approach	351	6.3		0.583		25.2	LOS D	2.7	69.3				
East: Mountain View Ave													
Lane 1[d]	580	3.1	876	0.661	100	15.0	LOS C	6.7	172.5	Full	1100	0.0	0.0
Lane 2	594	4.1	1608	0.370	56[6]	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	1174	3.6		0.661		7.4	LOS A	6.7	172.5				
West: Mountain View													
Lane 1	300	2.9	1380	0.217	100	4.4	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2[d]	1202	3.1	1377	0.873	100	21.3	LOS C	0.0	0.0	Short	200	0.0	NA
Approach	1502	3.0		0.873		17.9	LOS C	0.0	0.0				
Intersection	3027	3.6		0.873		14.7	LOS B	6.7	172.5				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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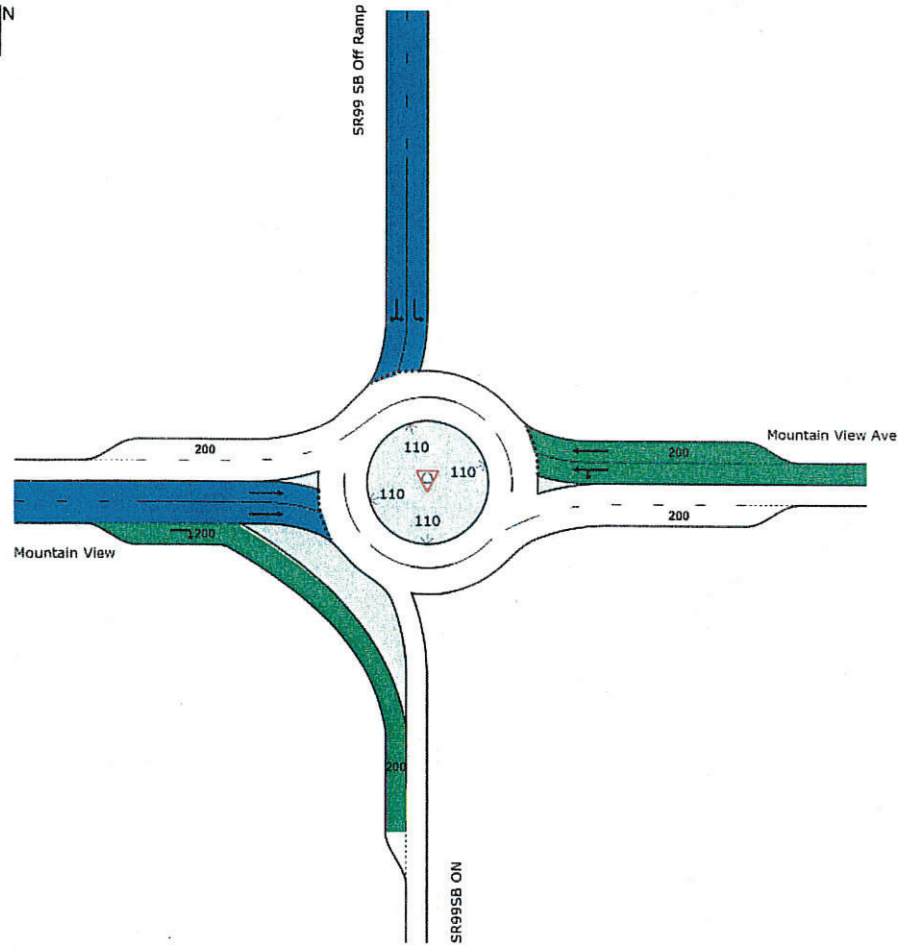
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB - 2045 AM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	B	A	B



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB - 2045 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Mountain View Ave													
Lane 1[d]	239	8.2	1313	0.182	100	4.3	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2	192	12.7	1198	0.160	88[6]	4.4	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	430	10.2		0.182		4.3	LOS A	0.0	0.0				
North: SR99 SB Off Ramp													
Lane 1	456	11.4	783	0.583	100	13.7	LOS B	4.5	123.6	Full	1600	0.0	0.0
Lane 2[d]	469	18.0	804	0.583	100	13.5	LOS B	4.3	122.8	Full	1600	0.0	0.0
Approach	925	14.7		0.583		13.6	LOS B	4.5	123.6				
West: Mountain View													
Lane 1[d]	350	9.9	731	0.479	100	11.8	LOS B	2.6	70.6	Full	1100	0.0	0.0
Lane 2	279	9.9	663	0.420	88[6]	11.4	LOS B	2.0	54.5	Full	1100	0.0	0.0
Lane 3	132	9.1	1534	0.086	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	760	9.7		0.479		9.6	LOS A	2.6	70.6				
Intersection	2115	12.0		0.583		10.3	LOS B	4.5	123.6				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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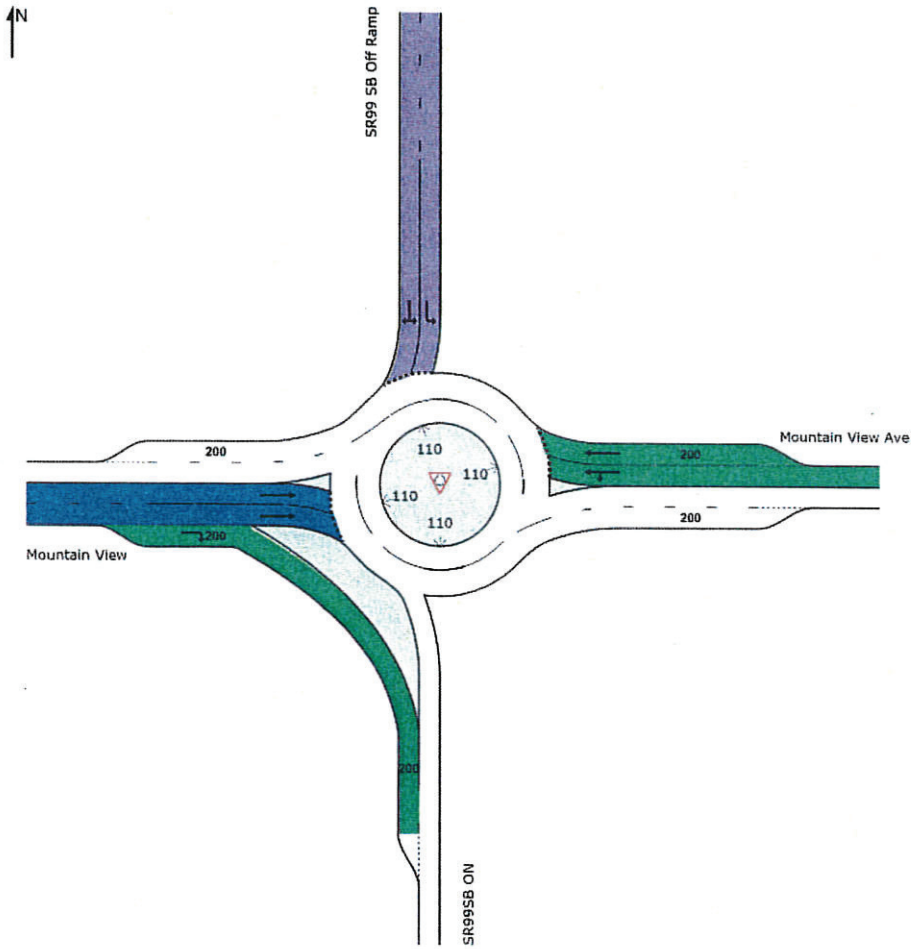
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB - 2045 PM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	D	C	C



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB - 2045 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Mountain View Ave													
Lane 1[d]	374	5.3	1350	0.277	100	5.1	LOS A	0.0	0.0	Full	1100	0.0	0.0
Lane 2	304	8.0	1250	0.243	88[6]	5.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	678	6.5		0.277		5.0	LOS A	0.0	0.0				
North: SR99 SB Off Ramp													
Lane 1	496	11.0	626	0.793	100	28.1	LOS D	8.6	234.3	Full	1600	0.0	0.0
Lane 2[d]	527	15.5	665	0.793	100	26.9	LOS D	8.6	243.0	Full	1600	0.0	0.0
Approach	1024	13.3		0.793		27.5	LOS D	8.6	243.0				
West: Mountain View													
Lane 1[d]	532	6.5	713	0.746	100	22.1	LOS C	7.6	198.7	Full	1100	0.0	0.0
Lane 2	422	6.5	644	0.656	88[6]	18.9	LOS C	5.1	134.7	Full	1100	0.0	0.0
Lane 3	134	9.0	1536	0.087	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	1088	6.8		0.746		18.1	LOS C	7.6	198.7				
Intersection	2790	9.1		0.793		18.4	LOS C	8.6	243.0				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

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Mendocino Avenue Intersections

2018 Existing TWSC Level of Service Reports

HCS7 Two-Way Stop-Control Report

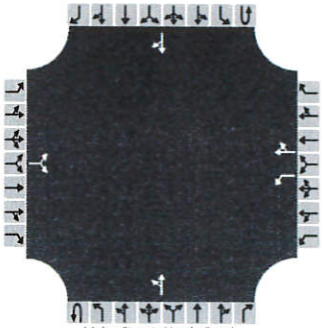
General Information

Analyst	Hien
gency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2018
Time Analyzed	AM Peak
ntersection Orientation	North-South
Project Description	SR 99 NB Off-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		1	1	0	0	0	1	0	0	0	1	0
Configuration			LR			L		TR		LT						TR
Volume (veh/h)		5		19		43	0	134		73	335				403	80
Percent Heavy Vehicles (%)		20		0		26	17	10		11						
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2		7.1	6.5	6.2		4.1						
Critical Headway (sec)		7.30		6.20		7.36	6.67	6.30		4.21						
Base Follow-Up Headway (sec)		3.5		3.3		3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)		3.68		3.30		3.73	4.15	3.39		2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			29			52		163		89						
Capacity, c (veh/h)			472			139		626		943						
v/c Ratio			0.06			0.38		0.26		0.09						
95% Queue Length, Q_{95} (veh)			0.2			1.6		1.0		0.3						
Control Delay (s/veh)			13.1			45.8		12.8		9.2						
Level of Service (LOS)			B			E		B		A						
Approach Delay (s/veh)		13.1				20.8				2.6						
pproach LOS		B				C										

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HCS 2010 Two-Way Stop-Control Report

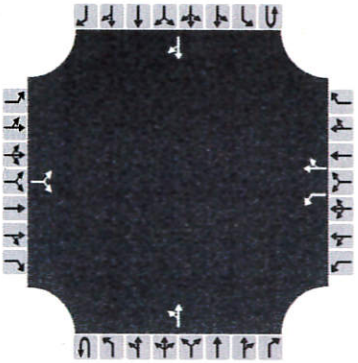
General Information

Analyst	Hien
gency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2018
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	SR 99 NB Off-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	1	0	0	0	1	0	0	0	1	0
Configuration			LR			L		TR		LT						TR
Volume, V (veh/h)		18		18		36	20	149		70	345				280	60
Percent Heavy Vehicles (%)		0		0		17	5	7		11						
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2		7.1	6.5	6.2		4.1						
Critical Headway (sec)		7.10		6.20		7.27	6.55	6.27		4.21						
Base Follow-Up Headway (sec)		3.5		3.3		3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)		3.50		3.30		3.65	4.04	3.36		2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			44			44		206		85						
Capacity, c (veh/h)			239			192		510		1098						
v/c Ratio			0.18			0.23		0.40		0.08						
95% Queue Length, Q_{95} (veh)			0.7			0.9		1.9		0.3						
Control Delay (s/veh)			23.4			29.2		16.8		8.6						
Level of Service, LOS			C			D		C		A						
Approach Delay (s/veh)		23.4				19.0				2.2						
Approach LOS		C				C										

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HCS7 Two-Way Stop-Control Report

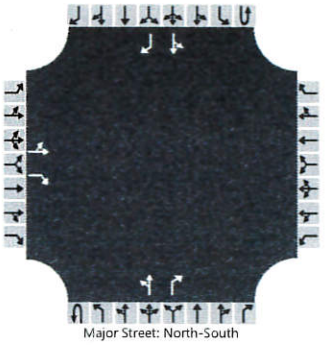
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2018
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	SR 99 SB On-Ramp

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	0	0	0	0	1	1	0	0	1	1
Configuration		LT		R						LT		R		LT		R
Volume (veh/h)		158	13	21						5	250	62		165	229	71
Percent Heavy Vehicles (%)		4	8	5						0				3		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes								Yes				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1				4.1		
Critical Headway (sec)		7.14	6.58	6.25						4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2				2.2		
Follow-Up Headway (sec)		3.54	4.07	3.35						2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		206		25						6				199		
Capacity, c (veh/h)		182		756						1208				1254		
v/c Ratio		1.13		0.03						0.00				0.16		
95% Queue Length, Q_{95} (veh)		10.5		0.1						0.0				0.6		
Control Delay (s/veh)		160.2		9.9						8.0				8.4		
Level of Service (LOS)		F		A						A				A		
Approach Delay (s/veh)		143.8								0.2				3.8		
Approach LOS		F														

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HCS7 Two-Way Stop-Control Report

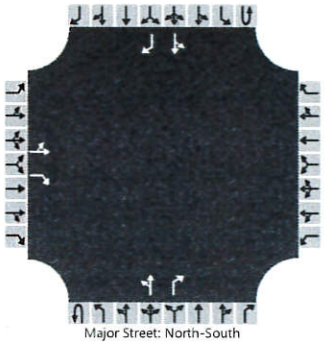
General Information

Analyst	Hien
ıency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2018
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	SR 99 SB On-Ramp

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
·umber of Lanes		0	1	1		0	0	0	0	0	1	1	0	0	1	1
ɔnfiguration		LT		R						LT		R		LT		R
Volume (veh/h)		106	25	10						6	309	66		101	163	70
Percent Heavy Vehicles (%)		13	0	0						0				6		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes								Yes				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1				4.1		
Critical Headway (sec)		7.23	6.50	6.20						4.10				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2				2.2		
Follow-Up Headway (sec)		3.62	4.00	3.30						2.20				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		158		12						7				122		
Capacity, c (veh/h)		243		850						1293				1165		
v/c Ratio		0.65		0.01						0.01				0.10		
95% Queue Length, Q_{95} (veh)		4.0		0.0						0.0				0.3		
Control Delay (s/veh)		43.8		9.3						7.8				8.5		
Level of Service (LOS)		E		A						A				A		
Approach Delay (s/veh)		41.3								0.2				3.0		
proach LOS		E														

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Mendocino Avenue Intersections

2025 No-Build TWSC Level of Service Reports

HCS 2010 Two-Way Stop-Control Report

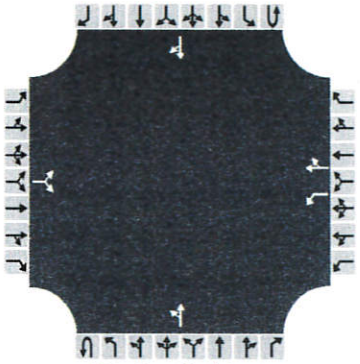
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	SR 99 NB Off-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	1	0	0	0	1	0	0	0	1	0
Configuration			LR			L		TR		LT						TR
Volume, V (veh/h)		6		22		50	0	166		85	411				509	147
Percent Heavy Vehicles (%)		20		0		26	17	10		11						
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2		7.1	6.5	6.2		4.1						
Critical Headway (sec)		7.30		6.20		7.36	6.67	6.30		4.21						
Base Follow-Up Headway (sec)		3.5		3.3		3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)		3.68		3.30		3.73	4.15	3.39		2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			34			61		202		104						
Capacity, c (veh/h)			234			80		554		785						
v/c Ratio			0.15			0.77		0.36		0.13						
95% Queue Length, Q_{95} (veh)			0.5			3.8		1.7		0.5						
Control Delay (s/veh)			22.9			132.7		15.2		10.3						
Level of Service, LOS			C			F		C		B						
Approach Delay (s/veh)		22.9				42.4				3.3						
Approach LOS		C				E										

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HCS 2010 Two-Way Stop-Control Report

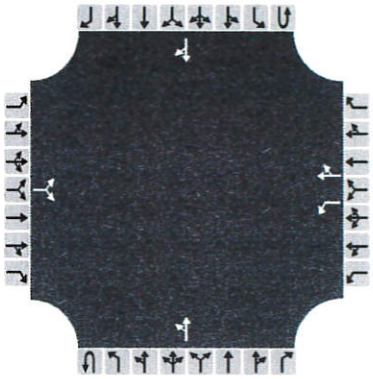
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	SR 99 NB Off-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	1	0	0	0	1	0	0	0	1	0
Configuration			LR			L		TR		LT						TR
Volume, V (veh/h)		21		21		42	23	224		82	457				356	102
Percent Heavy Vehicles (%)		0		0		17	5	7		11						
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2		7.1	6.5	6.2		4.1						
Critical Headway (sec)		7.10		6.20		7.27	6.55	6.27		4.21						
Base Follow-Up Headway (sec)		3.5		3.3		3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)		3.50		3.30		3.65	4.04	3.36		2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			52			51		301		100						
Capacity, c (veh/h)			81			115		409		969						
v/c Ratio			0.64			0.44		0.74		0.10						
95% Queue Length, Q_{95} (veh)			3.0			1.9		5.8		0.3						
Control Delay (s/veh)			107.8			59.3		34.6		9.1						
Level of Service, LOS			F			F		D		A						
Approach Delay (s/veh)		107.8				38.2				2.5						
Approach LOS		F				E										

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HCS 2010 Two-Way Stop-Control Report

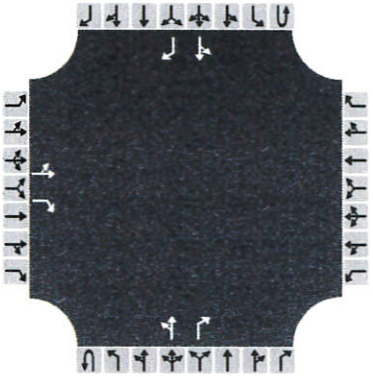
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	SR 99 SB On-Ramp

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	0	0	0	0	1	1	0	0	1	1
Configuration		LT		R						LT		R		LT		R
Volume, V (veh/h)		205	15	24						6	291	72		232	267	83
Percent Heavy Vehicles (%)		4	8	5						0				3		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1				4.1		
Critical Headway (sec)		7.14	6.58	6.25						4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2				2.2		
Follow-Up Headway (sec)		3.54	4.07	3.35						2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		265		29						7				280		
Capacity, c (veh/h)		145		712						1148				1202		
v/c Ratio		1.82		0.04						0.01				0.23		
95% Queue Length, Q_{95} (veh)		19.9		0.1						0.0				0.9		
Control Delay (s/veh)		449.1		10.3						8.2				8.9		
Level of Service, LOS		F		B						A				A		
Approach Delay (s/veh)		405.9								0.2				4.8		
Approach LOS		F														

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HCS 2010 Two-Way Stop-Control Report

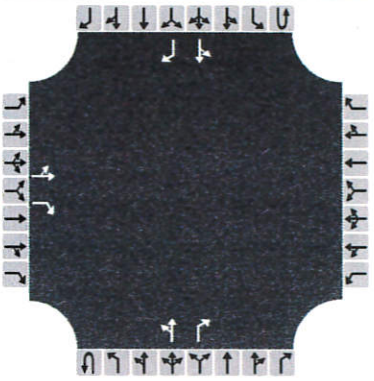
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	SR 99 SB On-Ramp

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	0	0	0	0	1	1	0	0	1	1
Configuration		LT		R						LT		R		LT		R
Volume, V (veh/h)		178	29	12						7	360	77		148	190	82
Percent Heavy Vehicles (%)		13	0	0						0				6		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1				4.1		
Critical Headway (sec)		7.23	6.50	6.20						4.10				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2				2.2		
Follow-Up Headway (sec)		3.62	4.00	3.30						2.20				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		249		14						8				178		
Capacity, c (veh/h)		197		815						1243				1105		
v/c Ratio		1.26		0.02						0.01				0.16		
95% Queue Length, Q_{95} (veh)		13.4		0.1						0.0				0.6		
Control Delay (s/veh)		200.7		9.5						7.9				8.9		
Level of Service, LOS		F		A						A				A		
Approach Delay (s/veh)		190.5								0.2				3.9		
Approach LOS		F														

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Mendocino Avenue Intersections

2035 No-Build TWSC Level of Service Reports

HCS 2010 Two-Way Stop-Control Report

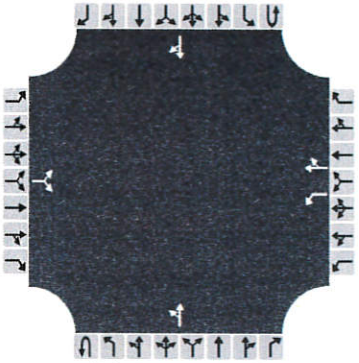
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	SR 99 NB Off-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	1	0	0	0	1	0	0	0	1	0
Configuration			LR			L		TR		LT						TR
Volume, V (veh/h)		7		28		62	0	204		106	506				623	170
Percent Heavy Vehicles (%)		20		0		26	17	10		11						
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2		7.1	6.5	6.2		4.1						
Critical Headway (sec)		7.30		6.20		7.36	6.67	6.30		4.21						
Base Follow-Up Headway (sec)		3.5		3.3		3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)		3.68		3.30		3.73	4.15	3.39		2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			43			76		249		129						
Capacity, c (veh/h)			81			41		476		678						
v/c Ratio			0.53			1.87		0.52		0.19						
95% Queue Length, Q_{95} (veh)			2.3			8.0		3.0		0.7						
Control Delay (s/veh)			91.0			626.2		20.6		11.6						
Level of Service, LOS			F			F		C		B						
Approach Delay (s/veh)		91.0				162.2				4.8						
Approach LOS		F				F										

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HCS 2010 Two-Way Stop-Control Report

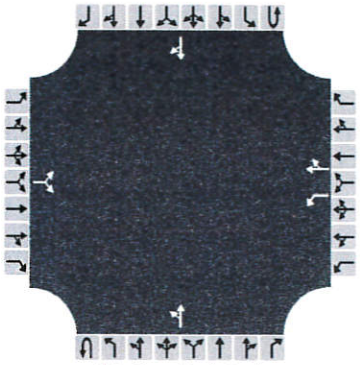
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	SR 99 NB Off-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	1	0	0	0	1	0	0	0	1	0
Configuration			LR			L		TR		LT						TR
Volume, V (veh/h)		26		26		52	29	266		101	554				435	119
Percent Heavy Vehicles (%)		0		0		17	5	7		11						
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2		7.1	6.5	6.2		4.1						
Critical Headway (sec)		7.10		6.20		7.27	6.55	6.27		4.21						
Base Follow-Up Headway (sec)		3.5		3.3		3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)		3.50		3.30		3.65	4.04	3.36		2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			64			63		359		123						
Capacity, c (veh/h)			22			67		310		876						
v/c Ratio			2.94			0.94		1.16		0.14						
95% Queue Length, Q_{95} (veh)			8.2			4.6		15.1		0.5						
Control Delay (s/veh)			1249.1			194.8		137.8		9.8						
Level of Service, LOS			F			F		F		A						
Approach Delay (s/veh)		1249.1				146.3				3.4						
Approach LOS		F				F										

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HCS 2010 Two-Way Stop-Control Report

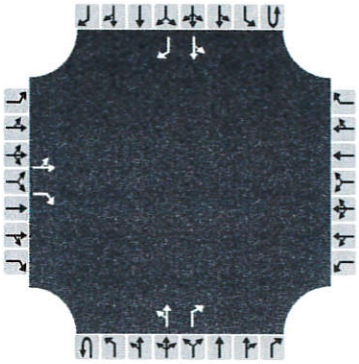
General Information

·alyst	Hien
·gency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	SR 99 SB On-Ramp

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
·ority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	0	0	0	0	1	1	0	0	1	1
Configuration		LT		R						LT		R		LT		R
Volume, V (veh/h)		250	19	30						7	362	90		279	332	103
Percent Heavy Vehicles (%)		4	8	5						0				3		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1				4.1		
Critical Headway (sec)		7.14	6.58	6.25						4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2				2.2		
Follow-Up Headway (sec)		3.54	4.07	3.35						2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		324		36						8				336		
Capacity, c (veh/h)		92		644						1053				1119		
v/c Ratio		3.53		0.06						0.01				0.30		
95% Queue Length, Q_{95} (veh)		32.7		0.2						0.0				1.3		
Control Delay (s/veh)		1235.2		10.9						8.4				9.6		
·el of Service, LOS		F		B						A				A		
·pproach Delay (s/veh)		1112.7								0.2				5.7		
Approach LOS		F														

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HCS 2010 Two-Way Stop-Control Report

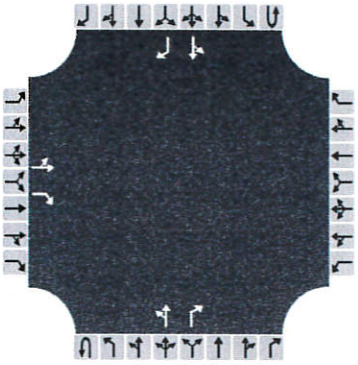
General Information

·alyst	Hien
.gency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	SR 99 SB On-Ramp

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
·ority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	0	0	0	0	1	1	0	0	1	1
Configuration		LT		R						LT		R		LT		R
Volume, V (veh/h)		208	36	14						9	447	96		176	236	101
Percent Heavy Vehicles (%)		13	0	0						0				6		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes				No				Yes				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1				4.1		
Critical Headway (sec)		7.23	6.50	6.20						4.10				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2				2.2		
Follow-Up Headway (sec)		3.62	4.00	3.30						2.20				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		294		17						11				212		
Capacity, c (veh/h)		134		760						1164				1010		
v/c Ratio		2.19		0.02						0.01				0.21		
95% Queue Length, Q_{95} (veh)		24.5		0.1						0.0				0.8		
Control Delay (s/veh)		614.9		9.8						8.1				9.5		
·el of Service, LOS		F		A						A				A		
·pproach Delay (s/veh)		581.9								0.2				4.5		
Approach LOS		F														

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Mendocino Avenue Intersections

Alternative 1

Reconstruct Ave 394/SB Off Ramp and install All Way Stop Control at SB on and NB Off Ramps Terminals

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

HCS 2010 All-Way Stop-Control Summary Report

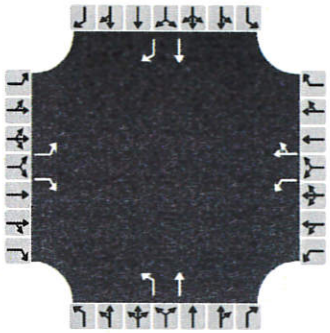
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	6		22	50	0	166	85	411			509	147
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	R		L	TR		L	T		T	R	
Flow Rate, v (veh/h)	7	27		61	202		104	501		621	179	
Percent Heavy Vehicles	2	2		26	17		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.007	0.024		0.054	0.180		0.092	0.446		0.552	0.159	
Final Departure Headway, hd (s)	8.77	7.61		8.52	7.20		7.08	6.59		6.47	5.77	
Final Degree of Utilization, x	0.018	0.057		0.144	0.405		0.204	0.917		1.115	0.287	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	6.47	5.31		6.22	4.90		4.78	4.29		4.17	3.47	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	7	27		61	202		104	501		621	179	
Capacity	411	473		422	500		508	546		557	624	
95% Queue Length, Q_{95} (veh)	0.1	0.2		0.5	1.9		0.8	11.2		19.8	1.2	
Control Delay (s/veh)	11.6	10.8		12.7	14.7		11.6	46.1		97.6	10.8	
Level of Service, LOS	B	B		B	B		B	E		F	B	
Approach Delay (s/veh)	11.0			14.2			40.2			78.1		
Approach LOS	B			B			E			F		
Intersection Delay, s/veh | LOS	53.4						F					

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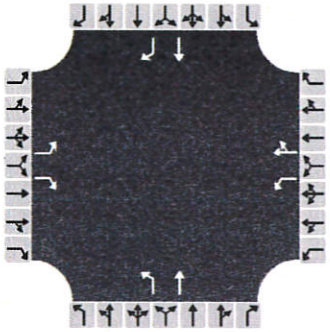
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.85

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	21		21	42	23	224	82	457			356	102
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	R		L	TR		L	T		T	R	
Flow Rate, v (veh/h)	25	25		49	291		96	538		419	120	
Percent Heavy Vehicles	2	2		17	5		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.022	0.022		0.044	0.258		0.086	0.478		0.372	0.107	
Final Departure Headway, hd (s)	8.80	7.65		8.29	6.99		7.22	6.72		6.88	6.19	
Final Degree of Utilization, x	0.060	0.053		0.114	0.564		0.193	1.003		0.800	0.206	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	6.50	5.35		5.99	4.69		4.92	4.42		4.58	3.89	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	25	25		49	291		96	538		419	120	
Capacity	409	471		434	515		499	536		523	582	
95% Queue Length, Q_{95} (veh)	0.2	0.2		0.4	3.5		0.7	14.3		7.6	0.8	
Control Delay (s/veh)	12.1	10.8		12.1	18.3		11.6	65.1		31.7	10.5	
Level of Service, LOS	B	B		B	C		B	F		D	B	
Approach Delay (s/veh)	11.4			17.4			57.0			27.0		
Approach LOS	B			C			F			D		
Intersection Delay, s/veh | LOS	36.6						E					

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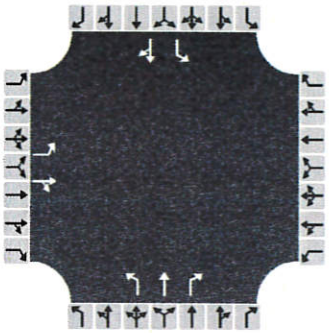
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	205	15	24				6	291	72	232	267	83
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					L	T	R	L	TR	
Flow Rate, v (veh/h)	247	47					7	351	87	280	422	
Percent Heavy Vehicles	2	2					2	2	7	2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20	3.20	3.20	3.20	
Initial Degree of Utilization, x	0.220	0.042					0.006	0.312	0.077	0.248	0.375	
Final Departure Headway, hd (s)	8.72	7.77					8.28	7.76	7.13	7.82	7.14	
Final Degree of Utilization, x	0.598	0.101					0.017	0.756	0.172	0.608	0.837	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3	2.3	2.3	2.3	
Service Time, ts (s)	6.42	5.47					5.98	5.46	4.83	5.52	4.84	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	247	47					7	351	87	280	422	
Capacity	413	463					435	464	505	460	504	
95% Queue Length, Q_{95} (veh)	3.8	0.3					0.1	6.4	0.6	4.0	8.4	
Control Delay (s/veh)	23.6	11.3					11.1	30.8	11.3	21.9	36.6	
Level of Service, LOS	C	B					B	D	B	C	E	
Approach Delay (s/veh)	21.6						26.7			30.8		
Approach LOS	C						D			D		
Intersection Delay, s/veh | LOS	27.6						D					

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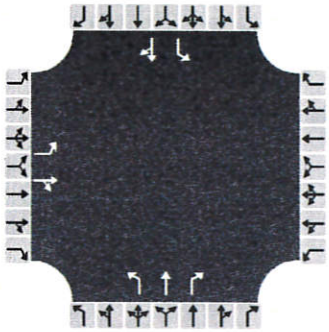
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	178	29	12				7	360	77	148	190	82
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					L	T	R	L	TR	
Flow Rate, v (veh/h)	214	49					8	434	93	178	328	
Percent Heavy Vehicles	2	2					2	2	6	2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20	3.20	3.20	3.20	
Initial Degree of Utilization, x	0.191	0.044					0.007	0.386	0.082	0.159	0.291	
Final Departure Headway, hd (s)	8.44	7.72					7.66	7.15	6.51	7.77	7.05	
Final Degree of Utilization, x	0.503	0.106					0.018	0.862	0.168	0.385	0.642	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3	2.3	2.3	2.3	
Service Time, ts (s)	6.14	5.42					5.36	4.85	4.21	5.47	4.75	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	214	49					8	434	93	178	328	
Capacity	427	466					470	503	553	463	511	
95% Queue Length, Q_{95} (veh)	2.7	0.4					0.1	9.1	0.6	1.8	4.5	
Control Delay (s/veh)	19.4	11.3					10.5	39.9	10.5	15.3	21.5	
Level of Service, LOS	C	B					B	E	B	C	C	
Approach Delay (s/veh)	17.9						34.4			19.3		
Approach LOS	C						D			C		
Intersection Delay, s/veh | LOS	25.2						D					

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HCS7 Two-Way Stop-Control Report

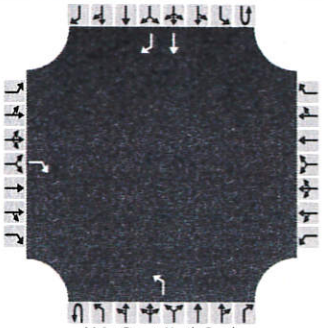
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2025
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.77
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				137						89					107	12
Percent Heavy Vehicles (%)				3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.23						4.13						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.33						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				178						116						
Capacity, c (veh/h)				906						1441						
v/c Ratio				0.20						0.08						
95% Queue Length, Q_{95} (veh)				0.7						0.3						
Control Delay (s/veh)				9.9						7.7						
Level of Service (LOS)				A						A						
Approach Delay (s/veh)		9.9								7.7						
Approach LOS		A														

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HCS7 Two-Way Stop-Control Report

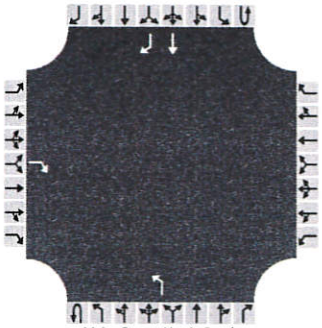
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2025
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				100						89					119	45
Percent Heavy Vehicles (%)				1						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.21						4.12						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				102						91						
Capacity, c (veh/h)				932						1469						
v/c Ratio				0.11						0.06						
95% Queue Length, Q_{95} (veh)				0.4						0.2						
Control Delay (s/veh)				9.3						7.6						
Level of Service (LOS)				A						A						
Approach Delay (s/veh)		9.3								7.6						
Approach LOS		A														

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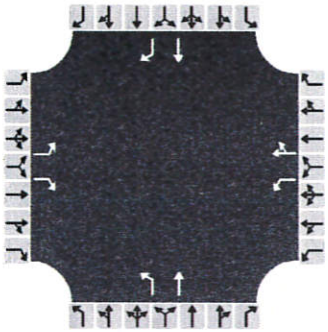
General Information

Analyst	Hien
ɣency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
ˈɔlume	7		28	62	0	204	106	506			623	170
₀ Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	R		L	TR		L	T		T	R	
Flow Rate, v (veh/h)	9	34		76	249		129	617		760	207	
Percent Heavy Vehicles	2	2		26	17		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.008	0.030		0.067	0.221		0.115	0.549		0.675	0.184	
Final Departure Headway, hd (s)	9.23	8.07		8.83	7.49		7.44	6.95		6.89	6.20	
Final Degree of Utilization, x	0.022	0.077		0.185	0.518		0.267	1.191		1.455	0.357	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	6.93	5.77		6.53	5.19		5.14	4.65		4.59	3.90	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	9	34		76	249		129	617		760	207	
Capacity	390	446		408	481		484	518		522	580	
95% Queue Length, Q_{95} (veh)	0.1	0.2		0.7	2.9		1.1	22.6		37.3	1.6	
Control Delay (s/veh)	12.1	11.4		13.5	18.0		12.8	127.4		234.4	12.3	
Level of Service, LOS	B	B		B	C		B	F		F	B	
ɔproach Delay (s/veh)	11.6			16.9			107.5			186.8		
Approach LOS	B			C			F			F		
Intersection Delay, s/veh | LOS	128.3						F					

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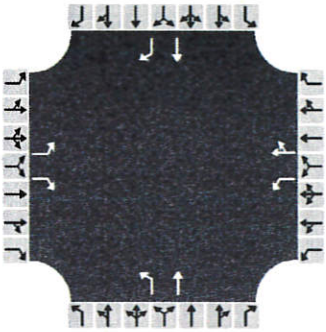
General Information

Analyst	Hien
ɟency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.85

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
ˈlume	26		26	52	29	266	101	554			435	119
⁄o Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	R		L	TR		L	T		T	R	
Flow Rate, v (veh/h)	31	31		61	347		119	652		512	140	
Percent Heavy Vehicles	2	2		17	5		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.027	0.027		0.054	0.308		0.106	0.579		0.455	0.124	
Final Departure Headway, hd (s)	9.44	8.28		8.71	7.39		7.79	7.30		7.30	6.61	
Final Degree of Utilization, x	0.080	0.070		0.148	0.712		0.257	1.322		1.038	0.257	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	7.14	5.98		6.41	5.09		5.49	5.00		5.00	4.31	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	31	31		61	347		119	652		512	140	
Capacity	382	435		414	487		462	493		493	544	
95% Queue Length, Q_{95} (veh)	0.3	0.2		0.5	5.6		1.0	28.4		15.1	1.0	
Control Delay (s/veh)	13.0	11.6		12.9	26.3		13.2	180.3		77.6	11.6	
Level of Service, LOS	B	B		B	D		B	F		F	B	
ˈproach Delay (s/veh)	12.3			24.3			154.5			63.4		
Approach LOS	B			C			F			F		
Intersection Delay, s/veh | LOS	90.4						F					

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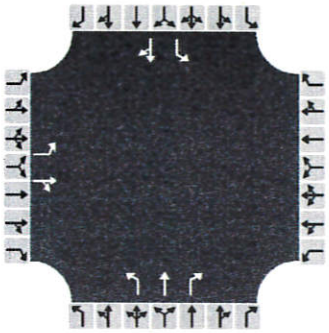
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	250	19	30				7	362	90	279	332	103
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					L	T	R	L	TR	
Flow Rate, v (veh/h)	301	59					8	436	108	336	524	
Percent Heavy Vehicles	2	2					2	2	7	2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20	3.20	3.20	3.20	
Initial Degree of Utilization, x	0.268	0.052					0.007	0.388	0.096	0.299	0.466	
Final Departure Headway, hd (s)	9.30	8.37					8.83	8.33	7.71	8.48	7.81	
Final Degree of Utilization, x	0.778	0.137					0.021	1.009	0.232	0.792	1.138	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3	2.3	2.3	2.3	
Service Time, ts (s)	7.00	6.07					6.53	6.03	5.41	6.18	5.51	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	301	59					8	436	108	336	524	
Capacity	387	430					408	432	467	424	461	
95% Queue Length, Q_{95} (veh)	6.5	0.5					0.1	13.0	0.9	7.0	18.5	
Control Delay (s/veh)	37.8	12.4					11.7	74.7	12.7	36.6	111.9	
Level of Service, LOS	E	B					B	F	B	E	F	
Approach Delay (s/veh)	33.7						61.6			82.5		
Approach LOS	D						F			F		
Intersection Delay, s/veh | LOS	66.0						F					

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HCS 2010 All-Way Stop-Control Summary Report

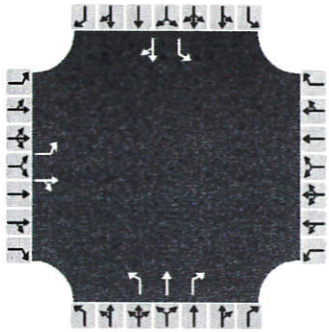
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	208	36	14				9	447	96	176	236	101
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					L	T	R	L	TR	
Flow Rate, v (veh/h)	251	60					11	539	116	212	406	
Percent Heavy Vehicles	2	2					2	2	6	2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20	3.20	3.20	3.20	
Initial Degree of Utilization, x	0.223	0.054					0.010	0.479	0.103	0.188	0.361	
Final Departure Headway, hd (s)	8.90	8.21					8.26	7.75	7.10	8.17	7.46	
Final Degree of Utilization, x	0.620	0.137					0.025	1.159	0.228	0.481	0.841	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3	2.3	2.3	2.3	
Service Time, ts (s)	6.60	5.91					5.96	5.45	4.80	5.87	5.16	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	251	60					11	539	116	212	406	
Capacity	404	439					436	465	507	441	483	
95% Queue Length, Q_{95} (veh)	4.0	0.5					0.1	19.6	0.9	2.6	8.5	
Control Delay (s/veh)	25.1	12.2					11.2	119.1	11.9	18.2	38.5	
Level of Service, LOS	D	B					B	F	B	C	E	
Approach Delay (s/veh)	22.6						98.7			31.5		
Approach LOS	C						F			D		
Intersection Delay, s/veh | LOS	57.8						F					

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HCS7 Two-Way Stop-Control Report

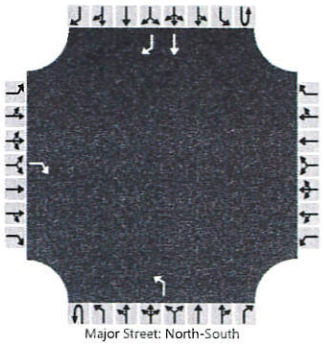
General Information

Analyst	Hien
,ency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2035
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.77
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
mber of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				171						110					128	14
Percent Heavy Vehicles (%)				3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.23						4.13						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.33						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				222						143						
Capacity, c (veh/h)				874						1408						
v/c Ratio				0.25						0.10						
95% Queue Length, Q_{95} (veh)				1.0						0.3						
Control Delay (s/veh)				10.5						7.8						
Level of Service (LOS)				B						A						
Approach Delay (s/veh)		10.5								7.8						
proach LOS		B														

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HCS7 Two-Way Stop-Control Report

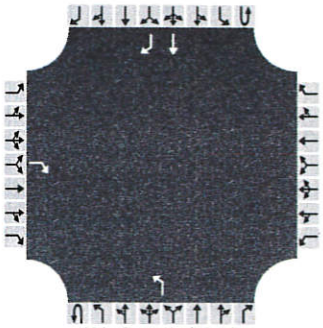
General Information

Analyst	Hien
gency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2035
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
umber of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				124						110					135	56
Percent Heavy Vehicles (%)				1						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.21						4.12						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				127						112						
Capacity, c (veh/h)				913						1449						
v/c Ratio				0.14						0.08						
95% Queue Length, Q_{95} (veh)				0.5						0.3						
Control Delay (s/veh)				9.6						7.7						
Level of Service (LOS)				A						A						
Approach Delay (s/veh)		9.6								7.7						
pproach LOS		A														

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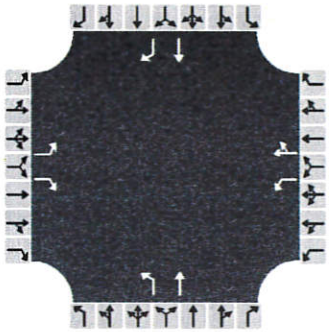
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.82

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	9		34	77	0	251	131	624			765	198
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	R		L	TR		L	T		T	R	
Flow Rate, v (veh/h)	11	41		94	306		160	761		933	241	
Percent Heavy Vehicles	2	2		26	17		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.010	0.037		0.083	0.272		0.142	0.676		0.829	0.215	
Final Departure Headway, hd (s)	9.49	8.33		8.95	7.61		7.82	7.33		7.28	6.59	
Final Degree of Utilization, x	0.029	0.096		0.233	0.647		0.347	1.549		1.886	0.442	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	7.19	6.03		6.65	5.31		5.52	5.03		4.98	4.29	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	11	41		94	306		160	761		933	241	
Capacity	379	432		402	473		460	491		495	547	
95% Queue Length, Q_{95} (veh)	0.1	0.3		0.9	4.5		1.5	40.7		60.6	2.2	
Control Delay (s/veh)	12.5	11.9		14.4	23.2		14.6	276.4		423.5	14.4	
Level of Service, LOS	B	B		B	C		B	F		F	B	
Approach Delay (s/veh)	12.0			21.1			231.0			339.4		
Approach LOS	B			C			F			F		
Intersection Delay, s/veh | LOS	243.5						F					

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HCS 2010 All-Way Stop-Control Summary Report

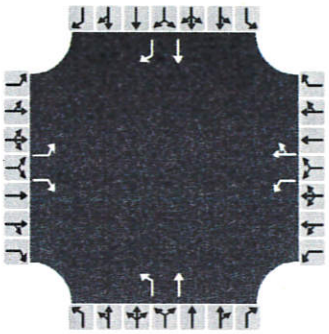
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Off-Ramp
Peak Hour Factor	0.85

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	32		32	65	36	318	126	676			534	140
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	R		L	TR		L	T		T	R	
Flow Rate, v (veh/h)	38	38		76	416		148	795		628	165	
Percent Heavy Vehicles	2	2		17	5		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.033	0.033		0.068	0.370		0.132	0.707		0.558	0.146	
Final Departure Headway, hd (s)	9.70	8.55		8.83	7.51		8.21	7.71		7.72	7.03	
Final Degree of Utilization, x	0.101	0.089		0.187	0.869		0.338	1.704		1.347	0.322	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	7.40	6.25		6.53	5.21		5.91	5.41		5.42	4.73	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	38	38		76	416		148	795		628	165	
Capacity	371	421		408	479		439	467		466	512	
95% Queue Length, Q_{95} (veh)	0.3	0.3		0.7	9.2		1.5	47.4		28.5	1.4	
Control Delay (s/veh)	13.5	12.1		13.6	42.4		15.0	345.0		192.4	13.0	
Level of Service, LOS	B	B		B	E		C	F		F	B	
Approach Delay (s/veh)	12.8			38.0			293.1			155.2		
Approach LOS	B			E			F			F		
Intersection Delay, s/veh | LOS	181.9						F					

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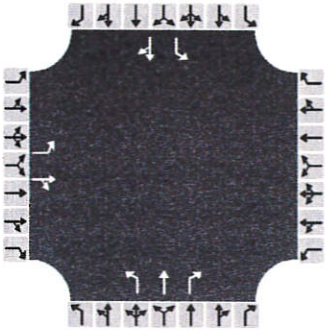
General Information

Analyst	Hien
gency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
'olume	305	23	38				9	450	112	337	412	128
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					L	T	R	L	TR	
Flow Rate, v (veh/h)	367	73					11	542	135	406	651	
Percent Heavy Vehicles	2	2					2	2	7	2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20	3.20	3.20	3.20	
Initial Degree of Utilization, x	0.327	0.065					0.010	0.482	0.120	0.361	0.578	
Final Departure Headway, hd (s)	9.54	8.60					9.35	8.85	8.24	8.95	8.28	
Final Degree of Utilization, x	0.973	0.176					0.028	1.333	0.309	1.009	1.496	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3	2.3	2.3	2.3	
Service Time, ts (s)	7.24	6.30					7.05	6.55	5.94	6.65	5.98	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	367	73					11	542	135	406	651	
Capacity	378	419					385	407	437	402	435	
95% Queue Length, Q_{95} (veh)	11.1	0.6					0.1	25.1	1.3	12.6	34.1	
Control Delay (s/veh)	71.1	13.1					12.3	191.1	14.6	77.5	256.9	
Level of Service, LOS	F	B					B	F	B	F	F	
oproach Delay (s/veh)	61.5						153.7			188.0		
Approach LOS	F						F			F		
Intersection Delay, s/veh | LOS	151.7						F					

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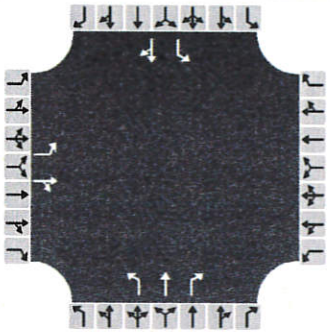
General Information

Analyst	Hien
,ency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 1-Reconstruct Ave 394/SB Off-Ramp Intersection

Site Information

Intersection	SR 99 SB On-Ramp/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
`lume	246	45	18				11	556	119	212	293	126
⁄o Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					L	T	R	L	TR	
Flow Rate, v (veh/h)	296	76					13	670	143	255	505	
Percent Heavy Vehicles	2	2					2	2	6	2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20	3.20	3.20	3.20	
Initial Degree of Utilization, x	0.263	0.067					0.012	0.595	0.127	0.227	0.449	
Final Departure Headway, hd (s)	9.24	8.54					8.72	8.22	7.59	8.55	7.84	
Final Degree of Utilization, x	0.760	0.180					0.032	1.530	0.302	0.607	1.099	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3	2.3	2.3	2.3	
Service Time, ts (s)	6.94	6.24					6.42	5.92	5.29	6.25	5.54	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	296	76					13	670	143	255	505	
Capacity	390	422					413	438	474	421	459	
95% Queue Length, Q_{95} (veh)	6.2	0.6					0.1	36.0	1.3	3.9	16.9	
Control Delay (s/veh)	35.9	13.1					11.7	271.1	13.5	23.6	99.0	
Level of Service, LOS	E	B					B	F	B	C	F	
`pproach Delay (s/veh)	31.3						222.3			73.6		
Approach LOS	D						F			F		
Intersection Delay, s/veh | LOS	128.3						F					

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HCS7 Two-Way Stop-Control Report

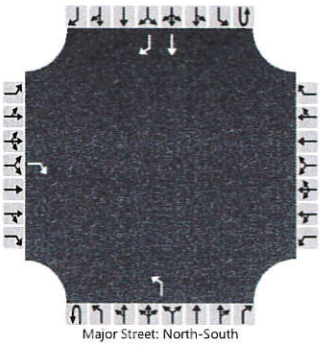
General Information

Analyst	Hien
ɟency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2045
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.77
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
ımber of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				212						137					154	18
Percent Heavy Vehicles (%)				3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.23						4.13						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.33						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				275						178						
Capacity, c (veh/h)				837						1369						
v/c Ratio				0.33						0.13						
95% Queue Length, Q_{95} (veh)				1.4						0.4						
Control Delay (s/veh)				11.4						8.0						
Level of Service (LOS)				B						A						
^ɒproach Delay (s/veh)		11.4								8.0						
,ɒroach LOS		B														

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HCS7 Two-Way Stop-Control Report

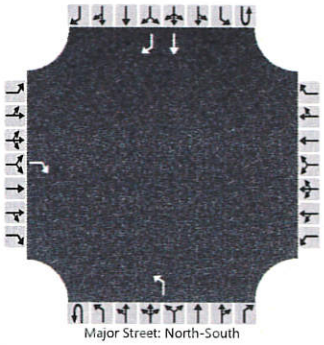
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2045
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				155						137					154	70
Percent Heavy Vehicles (%)				1						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.21						4.12						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				158						140						
Capacity, c (veh/h)				890						1426						
v/c Ratio				0.18						0.10						
95% Queue Length, Q_{95} (veh)				0.6						0.3						
Control Delay (s/veh)				9.9						7.8						
Level of Service (LOS)				A						A						
Approach Delay (s/veh)		9.9								7.8						
Approach LOS		A														

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Mendocino Avenue Intersections

Alternative 2

Reconstruct Ave 394/SB Off Ramp and Signalized intersections at SB on and NB off Ramps Terminals

2025 Level of Service Reports

2035 Level of Service Reports

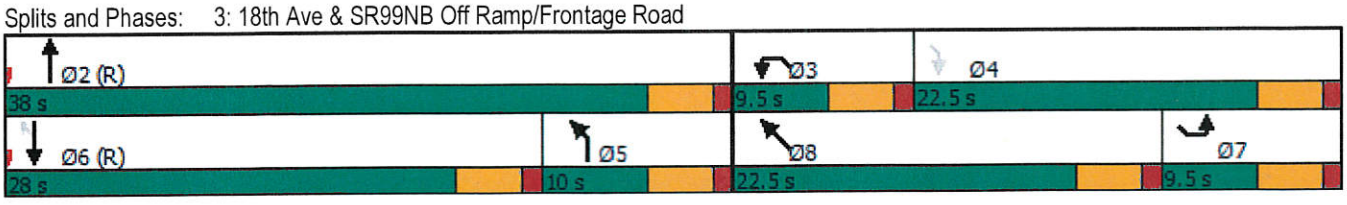
2045 Level of Service Reports

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	85	411	0	0	509	147	6	0	23	50	0	166
Future Volume (vph)	85	411	0	0	509	147	6	0	23	50	0	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		100	0		100	100		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850		0.850	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1583	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						234			164		419	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		668			641			822			1644	
Travel Time (s)		15.2			14.6			18.7			37.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	447	0	0	553	160	7	0	25	54	0	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	447	0	0	553	160	7	0	25	54	180	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1	1	2	
Detector Template	Left	Thru			Thru	Right	Left		Right	Left	Thru	
Leading Detector (ft)	20	100			100	20	20		20	20	100	
Trailing Detector (ft)	0	0			0	0	0		0	0	0	
Detector 1 Position(ft)	0	0			0	0	0		0	0	0	
Detector 1 Size(ft)	20	6			6	20	20		20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm	Prot		Perm	Prot	NA	
Protected Phases	5	2			6		7			3	8	
Permitted Phases						6			4			

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Detector Phase	5	2			6	6	7		4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5	9.5	22.5	
Total Split (s)	10.0	38.0			28.0	28.0	9.5		22.5	9.5	22.5	
Total Split (%)	14.3%	54.3%			40.0%	40.0%	13.6%		32.1%	13.6%	32.1%	
Maximum Green (s)	5.5	33.5			23.5	23.5	5.0		18.0	5.0	18.0	
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5	4.5	4.5	
Lead/Lag	Lag				Lead	Lead	Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes				Yes	Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max			C-Max	C-Max	None		None	None	None	
Walk Time (s)		7.0			7.0	7.0			7.0		7.0	
Flash Dont Walk (s)		11.0			11.0	11.0			11.0		11.0	
Pedestrian Calls (#/hr)		0			0	0			0		0	
Act Effct Green (s)	5.5	51.4			43.4	43.4	5.9		5.8	5.1	7.4	
Actuated g/C Ratio	0.08	0.73			0.62	0.62	0.08		0.08	0.07	0.11	
v/c Ratio	0.66	0.33			0.48	0.15	0.05		0.09	0.42	0.33	
Control Delay	46.6	0.6			11.0	0.8	29.8		0.6	41.4	1.6	
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	46.6	0.6			11.0	0.8	29.8		0.6	41.4	1.6	
LOS	D	A			B	A	C		A	D	A	
Approach Delay		8.4			8.7			7.0			10.8	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 3 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 8.9		Intersection LOS: A	
Intersection Capacity Utilization 53.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & SR99NB Off Ramp/Frontage Road



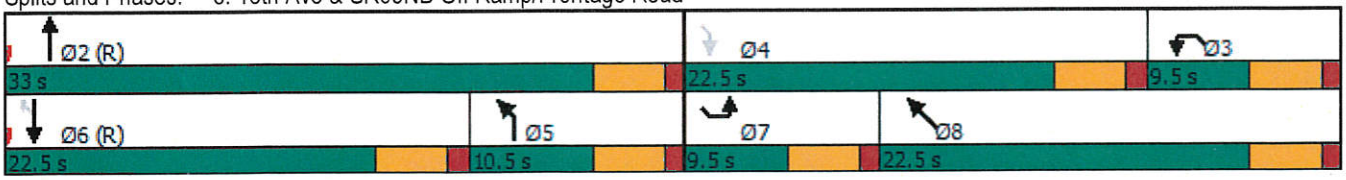
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	82	457	0	0	356	102	21	0	22	42	23	224
Future Volume (vph)	82	457	0	0	356	102	21	0	22	42	23	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		100	0		100	100		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850		0.864	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1609	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1609	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						252			176		243	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		668			641			822			1644	
Travel Time (s)		15.2			14.6			18.7			37.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	497	0	0	387	111	23	0	24	46	25	243
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	497	0	0	387	111	23	0	24	46	268	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1	1	2	
Detector Template	Left	Thru			Thru	Right	Left		Right	Left	Thru	
Leading Detector (ft)	20	100			100	20	20		20	20	100	
Trailing Detector (ft)	0	0			0	0	0		0	0	0	
Detector 1 Position(ft)	0	0			0	0	0		0	0	0	
Detector 1 Size(ft)	20	6			6	20	20		20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm	Prot		Perm	Prot	NA	
Protected Phases	5	2			6		7			3	8	
Permitted Phases						6			4			

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Detector Phase	5	2			6	6	7		4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5	9.5	22.5	
Total Split (s)	10.5	33.0			22.5	22.5	9.5		22.5	9.5	22.5	
Total Split (%)	16.2%	50.8%			34.6%	34.6%	14.6%		34.6%	14.6%	34.6%	
Maximum Green (s)	6.0	28.5			18.0	18.0	5.0		18.0	5.0	18.0	
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5	4.5	4.5	
Lead/Lag	Lag				Lead	Lead	Lead		Lead	Lag	Lag	
Lead-Lag Optimize?	Yes				Yes	Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max			C-Max	C-Max	None		None	None	None	
Walk Time (s)		7.0			7.0	7.0			7.0		7.0	
Flash Dont Walk (s)		11.0			11.0	11.0			11.0		11.0	
Pedestrian Calls (#/hr)		0			0	0			0		0	
Act Effct Green (s)	5.9	43.9			35.5	35.5	5.0		5.5	8.2	8.3	
Actuated g/C Ratio	0.09	0.68			0.55	0.55	0.08		0.08	0.13	0.13	
v/c Ratio	0.55	0.40			0.38	0.11	0.17		0.08	0.21	0.64	
Control Delay	32.7	2.7			13.2	0.2	31.2		0.5	26.1	12.8	
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	32.7	2.7			13.2	0.2	31.2		0.5	26.1	12.8	
LOS	C	A			B	A	C		A	C	B	
Approach Delay		7.2			10.3			15.5			14.7	
Approach LOS		A			B			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 65
Offset: 60 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 10.2 Intersection LOS: B
Intersection Capacity Utilization 51.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: 18th Ave & SR99NB Off Ramp/Frontage Road

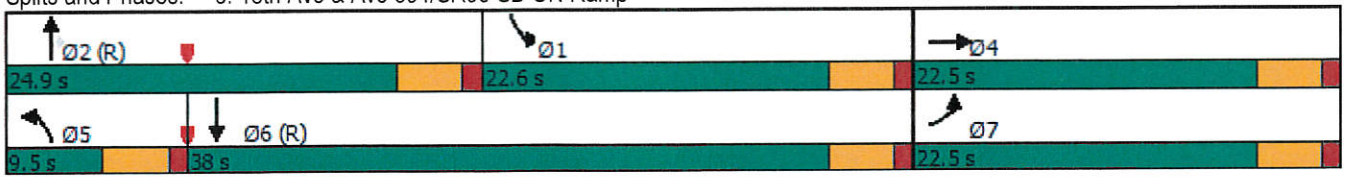


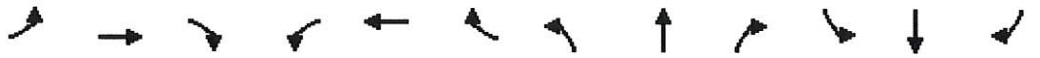
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	15	24	0	0	0	6	291	72	232	267	83
Future Volume (vph)	205	15	24	0	0	0	6	291	72	232	267	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.907							0.850		0.964	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1690	0	0	0	0	1770	1863	1583	1770	1796	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1690	0	0	0	0	1770	1863	1583	1770	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26							94		31	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		670			1706			1221			668	
Travel Time (s)		15.2			38.8			27.8			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	16	26	0	0	0	7	316	78	252	290	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	223	42	0	0	0	0	7	316	78	252	380	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA					Prot	NA	Perm	Prot	NA	
Protected Phases	7	4					5	2		1	6	
Permitted Phases									2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4					5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5					9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5					9.5	24.9	24.9	22.6	38.0	
Total Split (%)	32.1%	32.1%					13.6%	35.6%	35.6%	32.3%	54.3%	
Maximum Green (s)	18.0	18.0					5.0	20.4	20.4	18.1	33.5	
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5					4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None					None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0						7.0	7.0		7.0	
Flash Dont Walk (s)		11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0						0	0		0	
Act Effct Green (s)	13.7	13.7					5.6	24.7	24.7	18.1	45.4	
Actuated g/C Ratio	0.20	0.20					0.08	0.35	0.35	0.26	0.65	
v/c Ratio	0.64	0.12					0.05	0.48	0.13	0.55	0.32	
Control Delay	34.1	12.7					30.8	21.9	4.2	19.9	1.8	
Queue Delay	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Delay	34.1	12.7					30.8	21.9	4.2	19.9	1.8	
LOS	C	B					C	C	A	B	A	
Approach Delay		30.8						18.6			9.0	
Approach LOS		C						B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 8 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 50.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



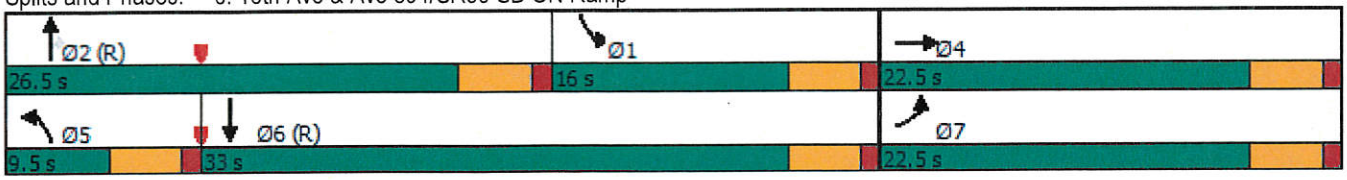


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	29	12	0	0	0	7	361	77	148	190	82
Future Volume (vph)	178	29	12	0	0	0	7	361	77	148	190	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.957							0.850		0.955	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1783	0	0	0	0	1770	1863	1583	1770	1779	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1783	0	0	0	0	1770	1863	1583	1770	1779	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13							101		42	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		670			1706			1221			668	
Travel Time (s)		15.2			38.8			27.8			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	193	32	13	0	0	0	8	392	84	161	207	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	45	0	0	0	0	8	392	84	161	296	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA					Prot	NA	Perm	Prot	NA	
Protected Phases	7	4					5	2		1	6	
Permitted Phases									2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4					5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5					9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5					9.5	26.5	26.5	16.0	33.0	
Total Split (%)	34.6%	34.6%					14.6%	40.8%	40.8%	24.6%	50.8%	
Maximum Green (s)	18.0	18.0					5.0	22.0	22.0	11.5	28.5	
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5					4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None					None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0						7.0	7.0		7.0	
Flash Dont Walk (s)		11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0						0	0		0	
Act Effct Green (s)	12.3	12.3					5.8	30.9	30.9	10.6	41.6	
Actuated g/C Ratio	0.19	0.19					0.09	0.48	0.48	0.16	0.64	
v/c Ratio	0.58	0.13					0.05	0.44	0.10	0.56	0.26	
Control Delay	30.4	16.5					27.7	16.0	3.1	22.0	1.1	
Queue Delay	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Delay	30.4	16.5					27.7	16.0	3.1	22.0	1.1	
LOS	C	B					C	B	A	C	A	
Approach Delay		27.8						14.0			8.4	
Approach LOS		C						B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 64 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



HCS7 Two-Way Stop-Control Report

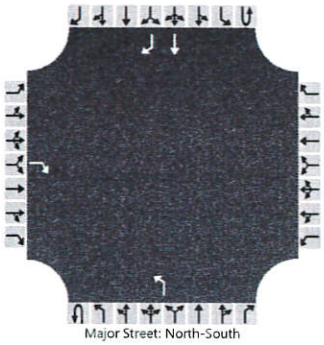
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2025
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.77
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				137						89					107	12
Percent Heavy Vehicles (%)				3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.23						4.13						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.33						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				178						116						
Capacity, c (veh/h)				906						1441						
v/c Ratio				0.20						0.08						
95% Queue Length, Q_{95} (veh)				0.7						0.3						
Control Delay (s/veh)				9.9						7.7						
Level of Service (LOS)				A						A						
Approach Delay (s/veh)		9.9								7.7						
Approach LOS		A														

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HCS7 Two-Way Stop-Control Report

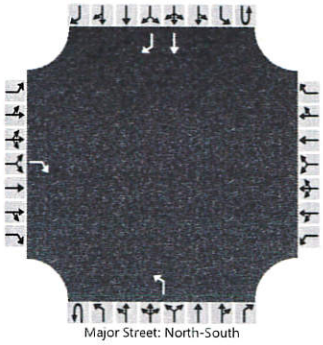
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2025
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				100						89					119	45
Percent Heavy Vehicles (%)				1						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.21						4.12						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				102						91						
Capacity, c (veh/h)				932						1469						
v/c Ratio				0.11						0.06						
95% Queue Length, Q_{95} (veh)				0.4						0.2						
Control Delay (s/veh)				9.3						7.6						
Level of Service (LOS)				A						A						
Approach Delay (s/veh)		9.3								7.6						
Approach LOS		A														

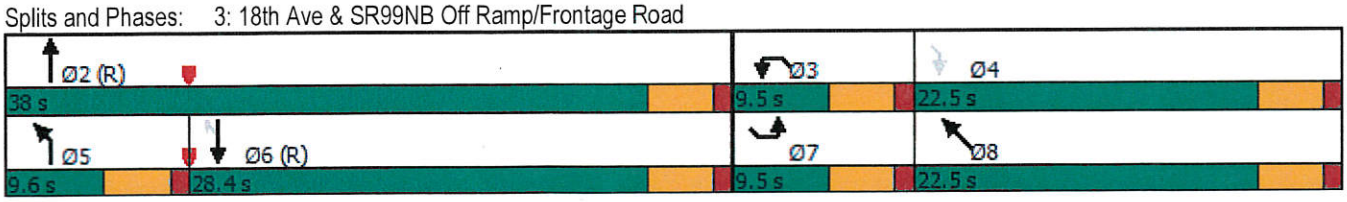
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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	106	506	0	0	623	170	7	0	29	62	0	204
Future Volume (vph)	106	506	0	0	623	170	7	0	29	62	0	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		100	0		100	100		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850		0.850	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1583	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164			164		347	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		668			641			828			1644	
Travel Time (s)		15.2			14.6			18.8			37.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	550	0	0	677	185	8	0	32	67	0	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	550	0	0	677	185	8	0	32	67	222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1	1	2	
Detector Template	Left	Thru			Thru	Right	Left		Right	Left	Thru	
Leading Detector (ft)	20	100			100	20	20		20	20	100	
Trailing Detector (ft)	0	0			0	0	0		0	0	0	
Detector 1 Position(ft)	0	0			0	0	0		0	0	0	
Detector 1 Size(ft)	20	6			6	20	20		20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm	Prot		Perm	Prot	NA	
Protected Phases	5	2			6		7			3	8	
Permitted Phases						6			4			

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Detector Phase	5	2			6	6	7		4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5	9.5	22.5	
Total Split (s)	9.6	38.0			28.4	28.4	9.5		22.5	9.5	22.5	
Total Split (%)	13.7%	54.3%			40.6%	40.6%	13.6%		32.1%	13.6%	32.1%	
Maximum Green (s)	5.1	33.5			23.9	23.9	5.0		18.0	5.0	18.0	
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5	4.5	4.5	
Lead/Lag	Lead				Lag	Lag	Lead		Lag	Lead	Lag	
Lead-Lag Optimize?	Yes				Yes	Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max			C-Max	C-Max	None		None	None	None	
Walk Time (s)		7.0			7.0	7.0			7.0		7.0	
Flash Dont Walk (s)		11.0			11.0	11.0			11.0		11.0	
Pedestrian Calls (#/hr)		0			0	0			0		0	
Act Effct Green (s)	11.0	51.6			36.1	36.1	5.0		5.6	5.2	7.5	
Actuated g/C Ratio	0.16	0.74			0.52	0.52	0.07		0.08	0.07	0.11	
v/c Ratio	0.41	0.40			0.71	0.21	0.06		0.12	0.51	0.46	
Control Delay	39.3	3.4			21.3	3.9	31.6		0.8	46.5	3.5	
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	39.3	3.4			21.3	3.9	31.6		0.8	46.5	3.5	
LOS	D	A			C	A	C		A	D	A	
Approach Delay		9.6			17.6			7.0			13.5	
Approach LOS		A			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 11 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 13.8		Intersection LOS: B	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & SR99NB Off Ramp/Frontage Road

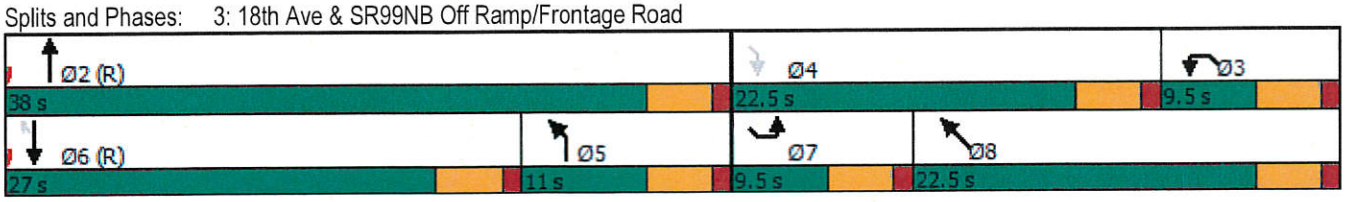


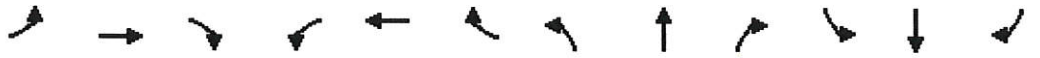
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	101	554	0	0	435	119	26	0	26	52	29	266
Future Volume (vph)	101	554	0	0	435	119	26	0	26	52	29	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		100	0		100	100		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850		0.865	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1611	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1863	0	0	1863	1583	1770	0	1583	1770	1611	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						234			164		276	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		668			641			828			1644	
Travel Time (s)		15.2			14.6			18.8			37.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	602	0	0	473	129	28	0	28	57	32	289
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	602	0	0	473	129	28	0	28	57	321	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1		1	1	2	
Detector Template	Left	Thru			Thru	Right	Left		Right	Left	Thru	
Leading Detector (ft)	20	100			100	20	20		20	20	100	
Trailing Detector (ft)	0	0			0	0	0		0	0	0	
Detector 1 Position(ft)	0	0			0	0	0		0	0	0	
Detector 1 Size(ft)	20	6			6	20	20		20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm	Prot		Perm	Prot	NA	
Protected Phases	5	2			6		7			3	8	
Permitted Phases						6			4			

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Detector Phase	5	2			6	6	7		4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5			22.5	22.5	9.5		22.5	9.5	22.5	
Total Split (s)	11.0	38.0			27.0	27.0	9.5		22.5	9.5	22.5	
Total Split (%)	15.7%	54.3%			38.6%	38.6%	13.6%		32.1%	13.6%	32.1%	
Maximum Green (s)	6.5	33.5			22.5	22.5	5.0		18.0	5.0	18.0	
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5		4.5	4.5	4.5	
Lead/Lag	Lag				Lead	Lead	Lead		Lead	Lag	Lag	
Lead-Lag Optimize?	Yes				Yes	Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max			C-Max	C-Max	None		None	None	None	
Walk Time (s)		7.0			7.0	7.0			7.0		7.0	
Flash Dont Walk (s)		11.0			11.0	11.0			11.0		11.0	
Pedestrian Calls (#/hr)		0			0	0			0		0	
Act Effct Green (s)	6.5	47.9			39.1	39.1	5.0		5.5	9.3	9.3	
Actuated g/C Ratio	0.09	0.68			0.56	0.56	0.07		0.08	0.13	0.13	
v/c Ratio	0.67	0.47			0.46	0.13	0.22		0.10	0.24	0.71	
Control Delay	41.2	3.2			15.3	0.3	35.2		0.7	27.7	14.8	
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	41.2	3.2			15.3	0.3	35.2		0.7	27.7	14.8	
LOS	D	A			B	A	D		A	C	B	
Approach Delay		9.1			12.1			18.0			16.8	
Approach LOS		A			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 4 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & SR99NB Off Ramp/Frontage Road



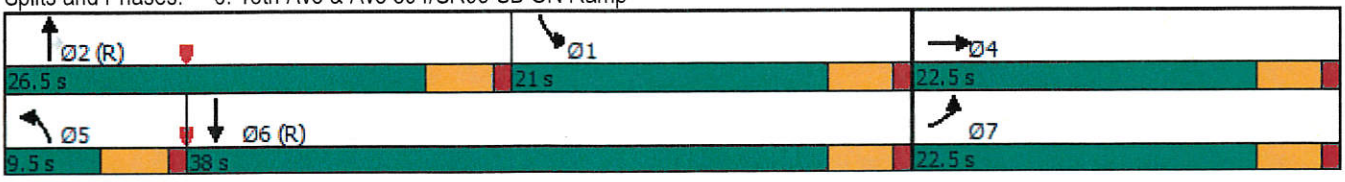


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	19	30	0	0	0	7	362	90	279	332	103
Future Volume (vph)	250	19	30	0	0	0	7	362	90	279	332	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.908							0.850		0.964	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1691	0	0	0	0	1770	1863	1583	1770	1796	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1691	0	0	0	0	1770	1863	1583	1770	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33							98		31	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		774			1706			1221			668	
Travel Time (s)		17.6			38.8			27.8			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	21	33	0	0	0	8	393	98	303	361	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	272	54	0	0	0	0	8	393	98	303	473	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA					Prot	NA	Perm	Prot	NA	
Protected Phases	7	4					5	2		1	6	
Permitted Phases									2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4					5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5					9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5					9.5	26.5	26.5	21.0	38.0	
Total Split (%)	32.1%	32.1%					13.6%	37.9%	37.9%	30.0%	54.3%	
Maximum Green (s)	18.0	18.0					5.0	22.0	22.0	16.5	33.5	
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5					4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None					None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0						7.0	7.0		7.0	
Flash Dont Walk (s)		11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0						0	0		0	
Act Effct Green (s)	15.1	15.1					5.4	24.9	24.9	16.5	44.0	
Actuated g/C Ratio	0.22	0.22					0.08	0.36	0.36	0.24	0.63	
v/c Ratio	0.72	0.14					0.06	0.59	0.16	0.73	0.41	
Control Delay	36.1	12.1					31.3	23.9	5.1	23.6	2.8	
Queue Delay	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Delay	36.1	12.1					31.3	23.9	5.1	23.6	2.8	
LOS	D	B					C	C	A	C	A	
Approach Delay		32.1						20.3			11.0	
Approach LOS		C						C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 16 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp

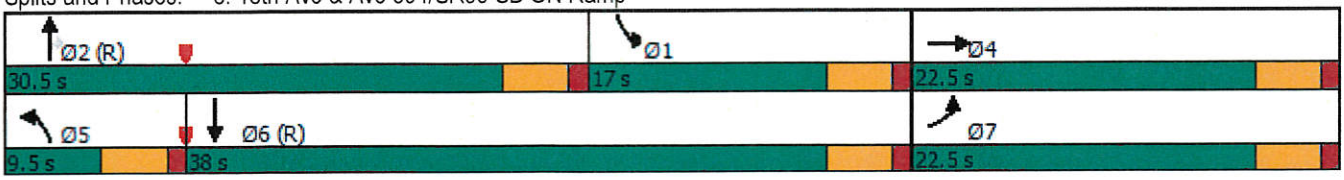


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	36	14	0	0	0	9	447	96	176	236	101
Future Volume (vph)	208	36	14	0	0	0	9	447	96	176	236	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958							0.850		0.955	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1785	0	0	0	0	1770	1863	1583	1770	1779	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1785	0	0	0	0	1770	1863	1583	1770	1779	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15							104		42	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		774			1706			1221			668	
Travel Time (s)		17.6			38.8			27.8			15.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	39	15	0	0	0	10	486	104	191	257	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	54	0	0	0	0	10	486	104	191	367	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA					Prot	NA	Perm	Prot	NA	
Protected Phases	7	4					5	2		1	6	
Permitted Phases									2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4					5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5					9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5					9.5	30.5	30.5	17.0	38.0	
Total Split (%)	32.1%	32.1%					13.6%	43.6%	43.6%	24.3%	54.3%	
Maximum Green (s)	18.0	18.0					5.0	26.0	26.0	12.5	33.5	
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5					4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None					None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0						7.0	7.0		7.0	
Flash Dont Walk (s)		11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0						0	0		0	
Act Effct Green (s)	13.8	13.8					5.6	30.2	30.2	12.5	45.3	
Actuated g/C Ratio	0.20	0.20					0.08	0.43	0.43	0.18	0.65	
v/c Ratio	0.65	0.15					0.07	0.61	0.14	0.60	0.31	
Control Delay	34.3	17.7					31.1	20.3	4.0	23.9	1.3	
Queue Delay	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Delay	34.3	17.7					31.1	20.3	4.0	23.9	1.3	
LOS	C	B					C	C	A	C	A	
Approach Delay		31.1						17.7			9.0	
Approach LOS		C						B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 8 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 56.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



HCS7 Two-Way Stop-Control Report

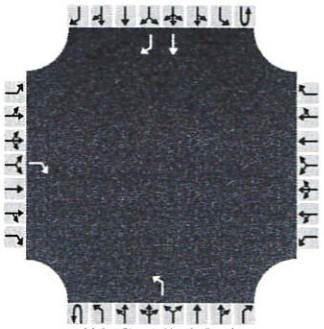
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2035
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.77
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				171						110					128	14
Percent Heavy Vehicles (%)				3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.23						4.13						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.33						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				222						143						
Capacity, c (veh/h)				874						1408						
v/c Ratio				0.25						0.10						
95% Queue Length, Q_{95} (veh)				1.0						0.3						
Control Delay (s/veh)				10.5						7.8						
Level of Service (LOS)				B						A						
Approach Delay (s/veh)		10.5								7.8						
Approach LOS		B														

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HCS7 Two-Way Stop-Control Report

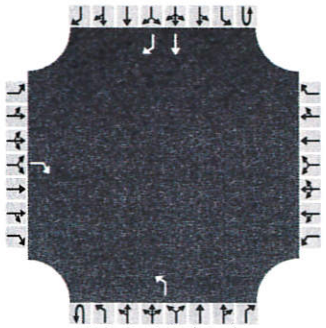
General Information

Analyst	Hien
,ency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2035
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
ıber of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				124						110					135	56
Percent Heavy Vehicles (%)				1						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.21						4.12						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				127						112						
Capacity, c (veh/h)				913						1449						
v/c Ratio				0.14						0.08						
95% Queue Length, Q_{95} (veh)				0.5						0.3						
Control Delay (s/veh)				9.6						7.7						
Level of Service (LOS)				A						A						
^pproach Delay (s/veh)		9.6								7.7						
proach LOS		A														

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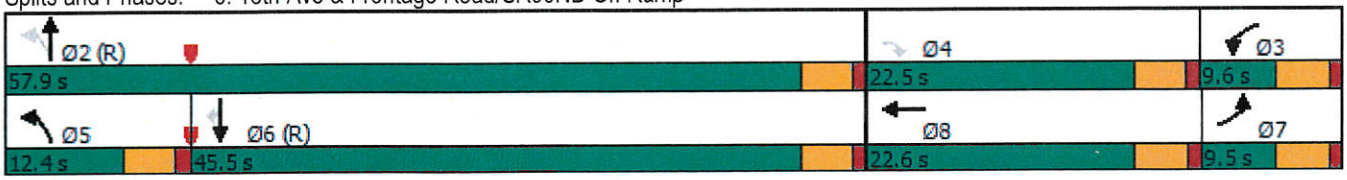


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	34	77	1	251	131	624	0	0	765	198
Future Volume (vph)	10	0	34	77	1	251	131	624	0	0	765	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	1		1	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.851							0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1770	0	1583	1770	1585	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950			0.950			0.108					
Satd. Flow (perm)	1770	0	1583	1770	1585	0	201	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127		273							127
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1631			671			641	
Travel Time (s)		25.3			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	0	37	84	1	273	142	678	0	0	832	215
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	0	37	84	274	0	142	678	0	0	832	215
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1		1	1	2		1	2			2	1
Detector Template	Left		Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20		20	20	100		20	100			100	20
Trailing Detector (ft)	0		0	0	0		0	0			0	0
Detector 1 Position(ft)	0		0	0	0		0	0			0	0
Detector 1 Size(ft)	20		20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot	NA		pm+pt	NA			NA	Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4				2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7		4	3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	9.5		22.5	9.5	22.5		9.5	22.5			22.5	22.5
Total Split (s)	9.5		22.5	9.6	22.6		12.4	57.9			45.5	45.5
Total Split (%)	10.6%		25.0%	10.7%	25.1%		13.8%	64.3%			50.6%	50.6%
Maximum Green (s)	5.0		18.0	5.1	18.1		7.9	53.4			41.0	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)	1.0		1.0	1.0	1.0		1.0	1.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5		4.5	4.5			4.5	4.5
Lead/Lag	Lag		Lead	Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes							
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None		None	None	None		None	C-Max			C-Max	C-Max
Walk Time (s)			7.0		7.0			7.0			7.0	7.0
Flash Dont Walk (s)			11.0		11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)			0		0			0			0	0
Act Effct Green (s)	6.2		5.5	11.2	14.8		63.8	63.8			51.5	51.5
Actuated g/C Ratio	0.07		0.06	0.12	0.16		0.71	0.71			0.57	0.57
v/c Ratio	0.09		0.17	0.38	0.56		0.51	0.51			0.78	0.22
Control Delay	40.5		1.7	40.3	9.2		17.9	1.7			24.7	6.2
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.1			0.0	0.0
Total Delay	40.5		1.7	40.3	9.2		17.9	1.7			24.7	6.2
LOS	D		A	D	A		B	A			C	A
Approach Delay		10.6			16.5			4.5			20.9	
Approach LOS		B			B			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp





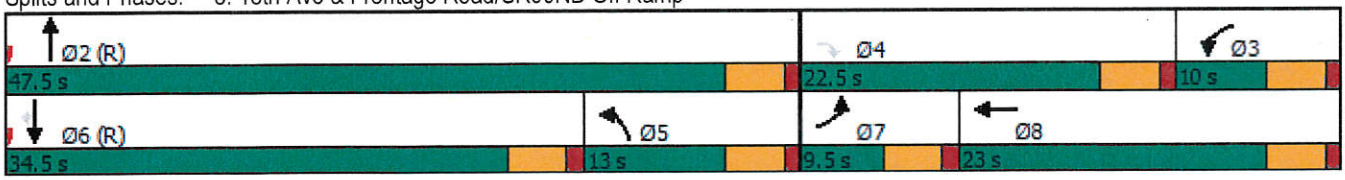
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	0	32	65	36	318	126	676	0	0	534	140
Future Volume (vph)	32	0	32	65	36	318	126	676	0	0	534	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	1		1	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.865							0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1770	0	1583	1770	1611	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1770	0	1583	1770	1611	0	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		221							205
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1630			671			963	
Travel Time (s)		25.3			37.0			15.3			21.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	0	35	71	39	346	137	735	0	0	580	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	0	35	71	385	0	137	735	0	0	580	152
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1		1	1	2		1	2			2	1
Detector Template	Left		Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20		20	20	100		20	100			100	20
Trailing Detector (ft)	0		0	0	0		0	0			0	0
Detector 1 Position(ft)	0		0	0	0		0	0			0	0
Detector 1 Size(ft)	20		20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Prot		Perm	Prot	NA		Prot	NA			NA	Perm
Protected Phases	7			3	8		5	2			6	
Permitted Phases			4									6

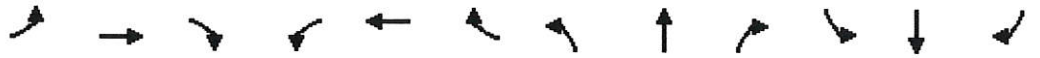
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7		4	3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	9.5		22.5	9.5	22.5		9.5	22.5			22.5	22.5
Total Split (s)	9.5		22.5	10.0	23.0		13.0	47.5			34.5	34.5
Total Split (%)	11.9%		28.1%	12.5%	28.8%		16.3%	59.4%			43.1%	43.1%
Maximum Green (s)	5.0		18.0	5.5	18.5		8.5	43.0			30.0	30.0
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0		1.0	1.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5		4.5	4.5			4.5	4.5
Lead/Lag	Lead		Lead	Lag	Lag		Lag				Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes							
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None		None	None	None		None	C-Max			C-Max	C-Max
Walk Time (s)			7.0		7.0			7.0			7.0	7.0
Flash Dont Walk (s)			11.0		11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)			0		0			0			0	0
Act Effct Green (s)	5.0		5.5	13.4	13.7		8.5	51.6			38.6	38.6
Actuated g/C Ratio	0.06		0.07	0.17	0.17		0.11	0.64			0.48	0.48
v/c Ratio	0.32		0.14	0.24	0.84		0.73	0.61			0.65	0.17
Control Delay	43.9		1.2	28.7	29.9		42.6	4.1			23.2	1.6
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	43.9		1.2	28.7	29.9		42.6	4.1			23.2	1.6
LOS	D		A	C	C		D	A			C	A
Approach Delay		22.6			29.7			10.2			18.7	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 12 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 72.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp



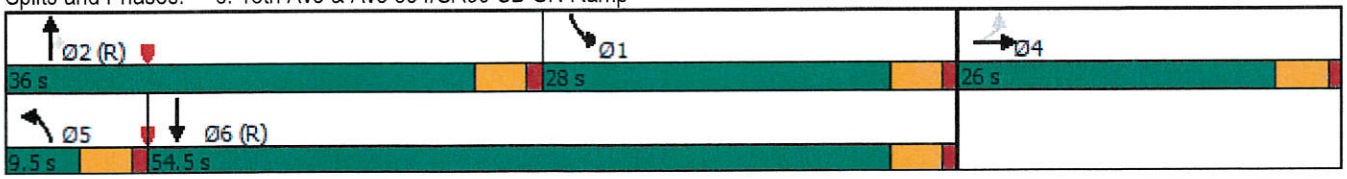


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	23	38	0	0	0	9	450	112	337	412	128
Future Volume (vph)	305	23	38	0	0	0	9	450	112	337	412	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.907							0.850		0.964	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1690	0	0	0	0	1770	1863	1583	1770	1796	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1690	0	0	0	0	1770	1863	1583	1770	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41							107		28	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		704			1706			1221			671	
Travel Time (s)		16.0			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	332	25	41	0	0	0	10	489	122	366	448	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	332	66	0	0	0	0	10	489	122	366	587	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA					Prot	NA	Perm	Prot	NA	
Protected Phases		4					5	2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4					5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5					9.5	22.5	22.5	9.5	22.5	
Total Split (s)	26.0	26.0					9.5	36.0	36.0	28.0	54.5	
Total Split (%)	28.9%	28.9%					10.6%	40.0%	40.0%	31.1%	60.6%	
Maximum Green (s)	21.5	21.5					5.0	31.5	31.5	23.5	50.0	
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5					4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None					None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	19.9	19.9					5.2	33.1	33.1	23.5	59.2	
Actuated g/C Ratio	0.22	0.22					0.06	0.37	0.37	0.26	0.66	
v/c Ratio	0.85	0.16					0.10	0.71	0.19	0.79	0.49	
Control Delay	54.5	14.7					42.7	32.0	6.3	29.3	2.8	
Queue Delay	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Delay	54.5	14.7					42.7	32.0	6.3	29.3	2.8	
LOS	D	B					D	C	A	C	A	
Approach Delay		47.9						27.2			13.0	
Approach LOS		D						C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 48 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



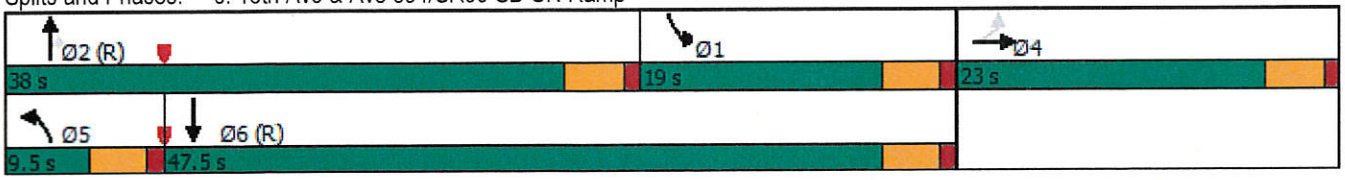
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	45	18	0	0	0	11	556	119	212	293	126
Future Volume (vph)	246	45	18	0	0	0	11	556	119	212	293	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.957							0.850		0.955	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1783	0	0	0	0	1770	1863	1583	1770	1779	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1783	0	0	0	0	1770	1863	1583	1770	1779	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20							116		42	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		704			1706			1221			671	
Travel Time (s)		16.0			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	267	49	20	0	0	0	12	604	129	230	318	137
Shared Lane Traffic (%)												
Lane Group Flow (vph)	267	69	0	0	0	0	12	604	129	230	455	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA					Prot	NA	Perm	Prot	NA	
Protected Phases		4					5	2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4					5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5					9.5	22.5	22.5	9.5	22.5	
Total Split (s)	23.0	23.0					9.5	38.0	38.0	19.0	47.5	
Total Split (%)	28.8%	28.8%					11.9%	47.5%	47.5%	23.8%	59.4%	
Maximum Green (s)	18.5	18.5					5.0	33.5	33.5	14.5	43.0	
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5					4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None					None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	15.9	15.9					5.4	36.1	36.1	14.5	53.2	
Actuated g/C Ratio	0.20	0.20					0.07	0.45	0.45	0.18	0.66	
v/c Ratio	0.76	0.19					0.10	0.72	0.17	0.72	0.38	
Control Delay	44.2	20.6					37.4	24.9	4.4	29.9	1.1	
Queue Delay	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Total Delay	44.2	20.6					37.4	24.9	4.4	29.9	1.1	
LOS	D	C					D	C	A	C	A	
Approach Delay		39.3						21.6			10.8	
Approach LOS		D						C			B	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 16 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 20.8 Intersection LOS: C
Intersection Capacity Utilization 65.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



HCS7 Two-Way Stop-Control Report

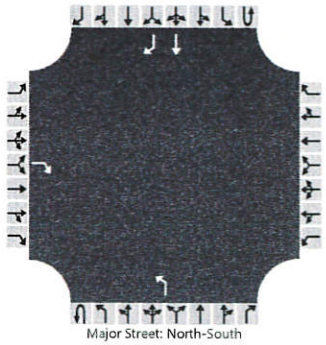
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2045
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.77
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				212						137					154	18
Percent Heavy Vehicles (%)				3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.23						4.13						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.33						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				275						178						
Capacity, c (veh/h)				837						1369						
v/c Ratio				0.33						0.13						
95% Queue Length, Q_{95} (veh)				1.4						0.4						
Control Delay (s/veh)				11.4						8.0						
Level of Service (LOS)				B						A						
Approach Delay (s/veh)		11.4								8.0						
Approach LOS		B														

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HCS7 Two-Way Stop-Control Report

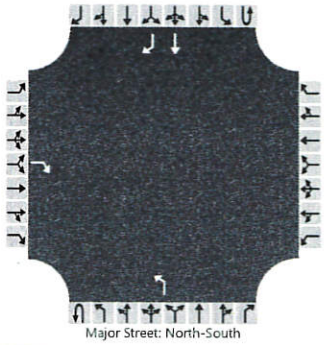
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	2/22/2019
Analysis Year	2045
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Alt 1 & 2 - SR 99 SB Off-Ramp & Ave 394

Site Information

Intersection	SB Off-Ramp & Ave 394
Jurisdiction	
East/West Street	Ave 394
North/South Street	SB Off-Ramp
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration				R						L					T	R
Volume (veh/h)				155						137					154	70
Percent Heavy Vehicles (%)				1						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												Yes		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2						4.1						
Critical Headway (sec)				6.21						4.12						
Base Follow-Up Headway (sec)				3.3						2.2						
Follow-Up Headway (sec)				3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				158						140						
Capacity, c (veh/h)				890						1426						
v/c Ratio				0.18						0.10						
95% Queue Length, Q_{95} (veh)				0.6						0.3						
Control Delay (s/veh)				9.9						7.8						
Level of Service (LOS)				A						A						
Approach Delay (s/veh)		9.9								7.8						
Approach LOS		A														

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Mendocino Avenue Intersections

Alternative 3

Reconstruct Ave 394/SB Off Ramp and construct Roundabouts at the intersections SB on and NB off Ramps Terminals

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

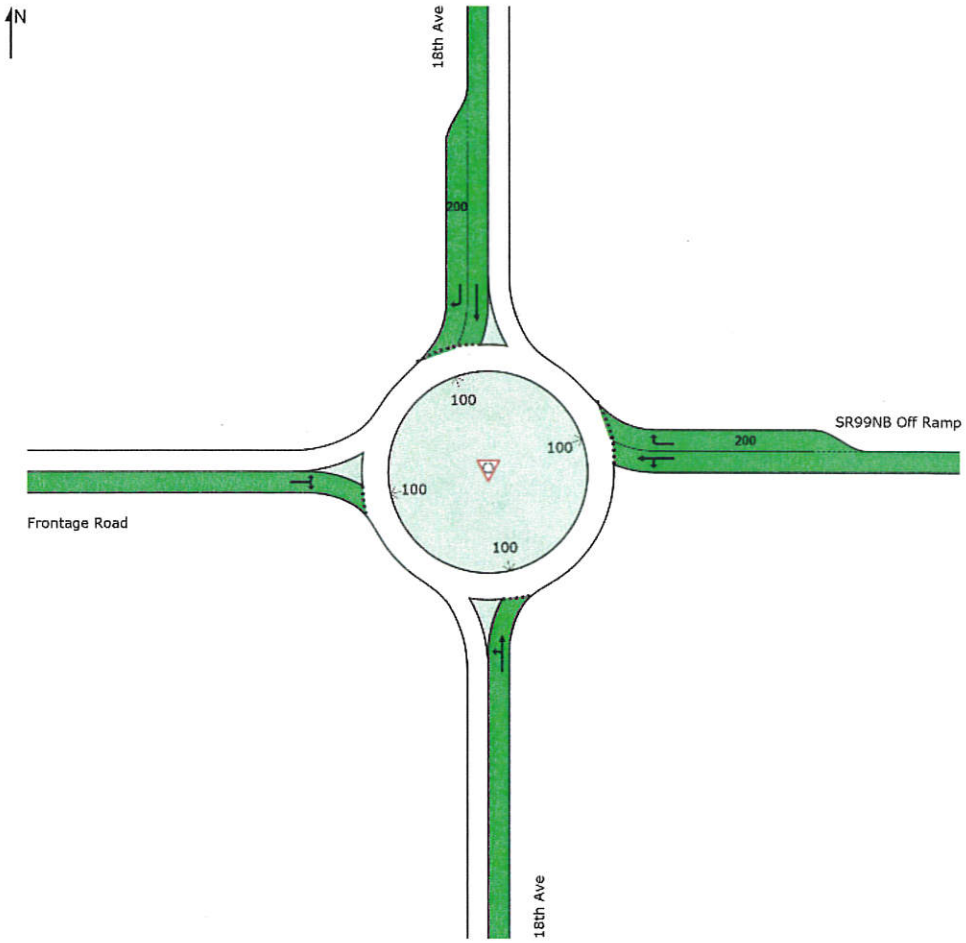
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB Ramps - 2025 AM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB Ramps - 2025 AM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	516	9.8	1247	0.414	100	7.0	LOS A	2.5	68.1	Full	650	0.0	0.0
Approach	516	9.8		0.414		7.0	LOS A	2.5	68.1				
East: SR99NB Off Ramp													
Lane 1	55	24.5	676	0.082	100	6.2	LOS A	0.2	7.4	Full	1600	0.0	0.0
Lane 2[d]	170	9.0	772	0.220	100	7.1	LOS A	0.8	22.1	Short	200	0.0	NA
Approach	225	12.8		0.220		6.9	LOS A	0.8	22.1				
North: 18th Ave													
Lane 1[d]	510	2.0	1198	0.426	100	7.3	LOS A	2.5	62.6	Full	1100	0.0	0.0
Lane 2	101	5.0	1163	0.087	100	3.8	LOS A	0.3	8.8	Short	200	0.0	NA
Approach	611	2.5		0.426		6.8	LOS A	2.5	62.6				
West: Frontage Road													
Lane 1[d]	30	6.6	710	0.043	100	5.5	LOS A	0.2	4.1	Full	1100	0.0	0.0
Approach	30	6.6		0.043		5.5	LOS A	0.2	4.1				
Intersection	1383	7.0		0.426		6.8	LOS A	2.5	68.1				

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

d Dominant lane on roundabout approach

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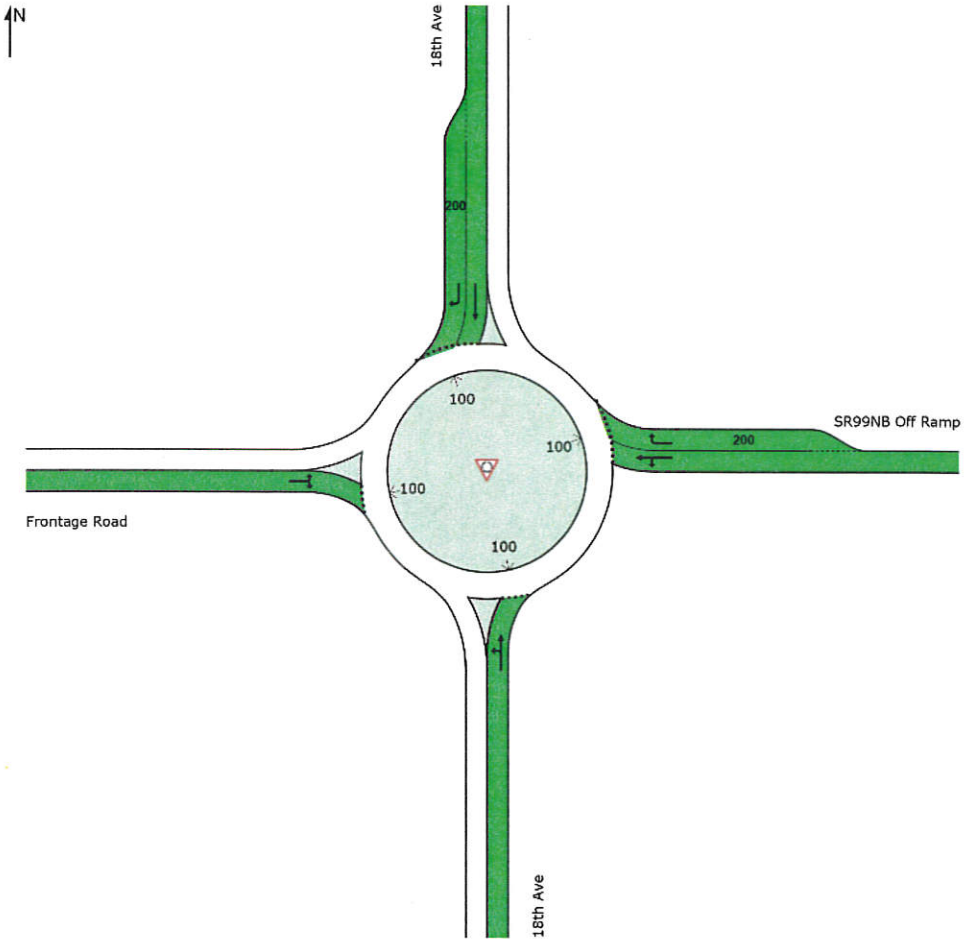
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB Ramps - 2025 PM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB Ramps - 2025 PM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	526	9.6	1228	0.428	100	7.2	LOS A	2.6	71.1	Full	650	0.0	0.0
Approach	526	9.6		0.428		7.2	LOS A	2.6	71.1				
East: SR99NB Off Ramp													
Lane 1	71	19.2	689	0.102	100	6.3	LOS A	0.3	9.4	Full	1600	0.0	0.0
Lane 2[d]	189	8.1	761	0.249	100	7.5	LOS A	1.0	25.4	Short	200	0.0	NA
Approach	260	11.1		0.249		7.2	LOS A	1.0	25.4				
North: 18th Ave													
Lane 1[d]	354	2.9	1175	0.302	100	5.9	LOS A	1.5	37.8	Full	1100	0.0	0.0
Lane 2	76	6.6	1133	0.067	100	3.7	LOS A	0.3	6.6	Short	200	0.0	NA
Approach	430	3.5		0.302		5.5	LOS A	1.5	37.8				
West: Frontage Road													
Lane 1[d]	46	4.4	858	0.053	100	4.7	LOS A	0.2	5.4	Full	1100	0.0	0.0
Approach	46	4.4		0.053		4.7	LOS A	0.2	5.4				
Intersection	1262	7.7		0.428		6.6	LOS A	2.6	71.1				

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

d Dominant lane on roundabout approach

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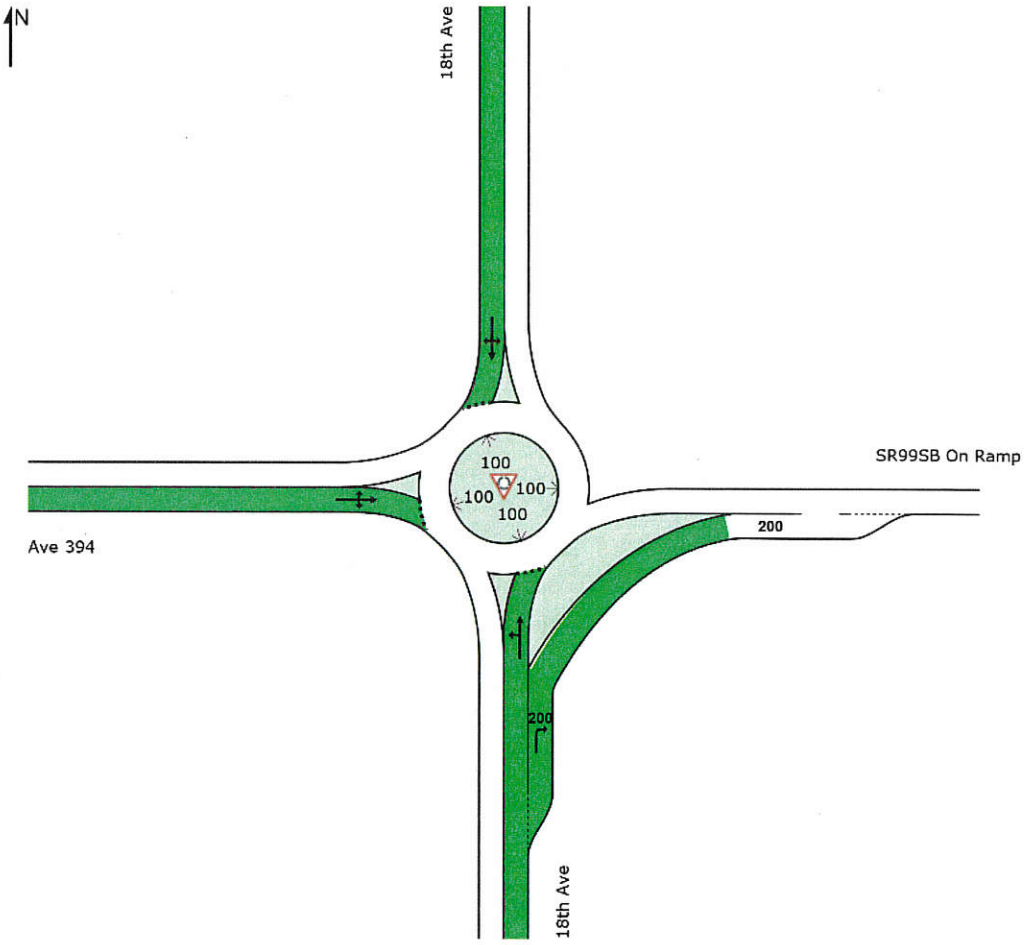
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Ramps - 2025 AM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Ramps - 2025 AM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	323	6.9	834	0.387	100	8.9	LOS A	1.8	47.4	Full	650	0.0	0.0
Lane 2	78	0.0	1675	0.047	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	401	5.5		0.387		7.2	LOS A	1.8	47.4				
North: 18th Ave													
Lane 1[d]	633	3.6	1323	0.478	100	7.6	LOS A	3.6	91.9	Full	650	0.0	0.0
Approach	633	3.6		0.478		7.6	LOS A	3.6	91.9				
West: Ave 394													
Lane 1[d]	265	5.1	738	0.359	100	9.4	LOS A	1.7	43.7	Full	1100	0.0	0.0
Approach	265	5.1		0.359		9.4	LOS A	1.7	43.7				
Intersection	1299	4.5		0.478		7.8	LOS A	3.6	91.9				

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

d Dominant lane on roundabout approach

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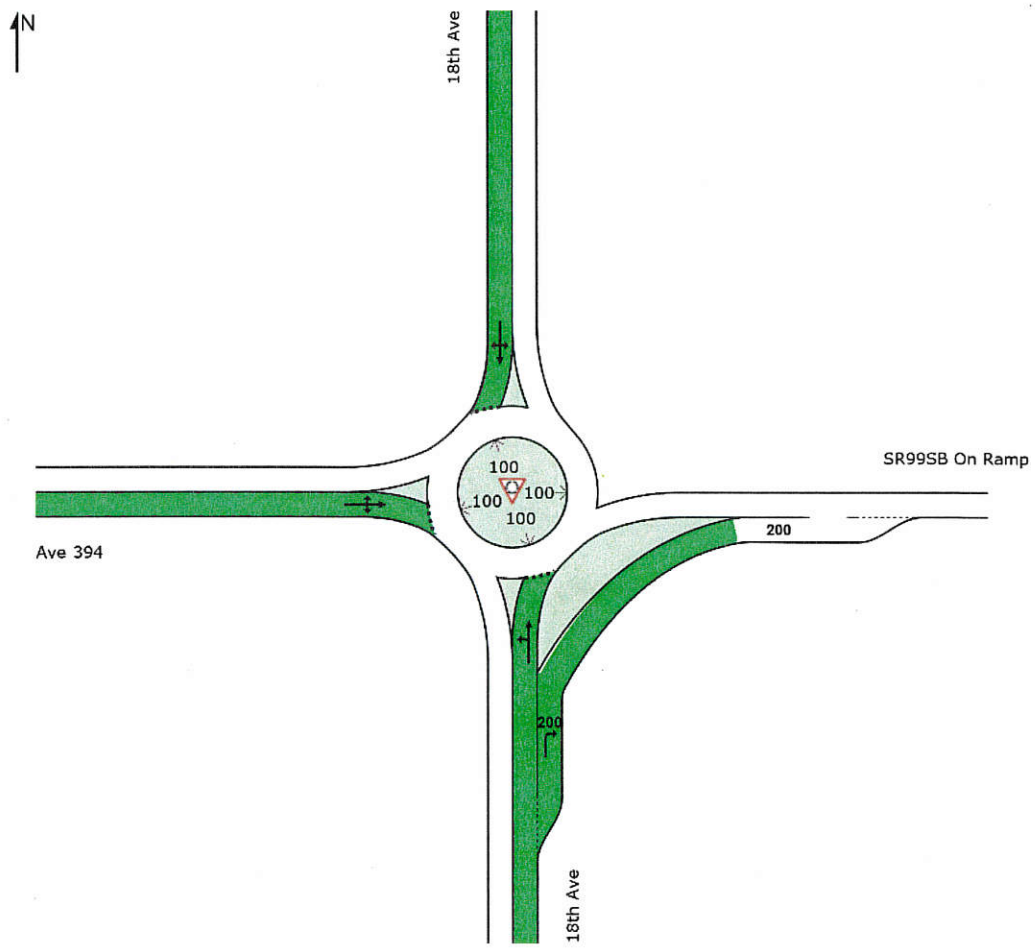
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Ramps - 2025 PM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Ramps - 2025 PM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	399	6.9	921	0.433	100	9.0	LOS A	2.2	58.3	Full	650	0.0	0.0
Lane 2	84	0.0	1675	0.050	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	483	5.7		0.433		7.5	LOS A	2.2	58.3				
North: 18th Ave													
Lane 1[d]	457	3.5	1323	0.345	100	5.9	LOS A	2.1	53.7	Full	650	0.0	0.0
Approach	457	3.5		0.345		5.9	LOS A	2.1	53.7				
West: Ave 394													
Lane 1[d]	238	5.3	887	0.268	100	6.9	LOS A	1.2	31.8	Full	1100	0.0	0.0
Approach	238	5.3		0.268		6.9	LOS A	1.2	31.8				
Intersection	1177	4.8		0.433		6.7	LOS A	2.2	58.3				

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

d Dominant lane on roundabout approach

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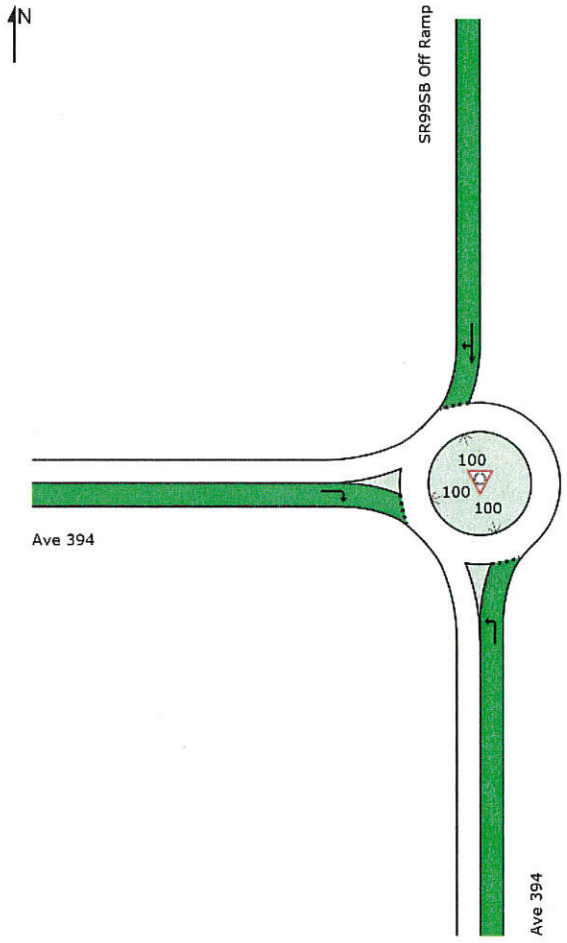
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Off & Ave 394 - 2025 AM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Off & Ave 394 - 2025 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Ave 394													
Lane 1[d]	97	0.0	1380	0.070	100	3.2	LOS A	0.0	0.0	Full	1100	0.0	0.0
Approach	97	0.0		0.070		3.2	LOS A	0.0	0.0				
North: SR99SB Off Ramp													
Lane 1[d]	129	2.8	1216	0.106	100	3.8	LOS A	0.5	12.1	Full	1100	0.0	0.0
Approach	129	2.8		0.106		3.8	LOS A	0.5	12.1				
West: Ave 394													
Lane 1[d]	149	3.0	1186	0.126	100	4.1	LOS A	0.6	14.4	Full	1100	0.0	0.0
Approach	149	3.0		0.126		4.1	LOS A	0.6	14.4				
Intersection	375	2.2		0.126		3.8	LOS A	0.6	14.4				

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

d Dominant lane on roundabout approach

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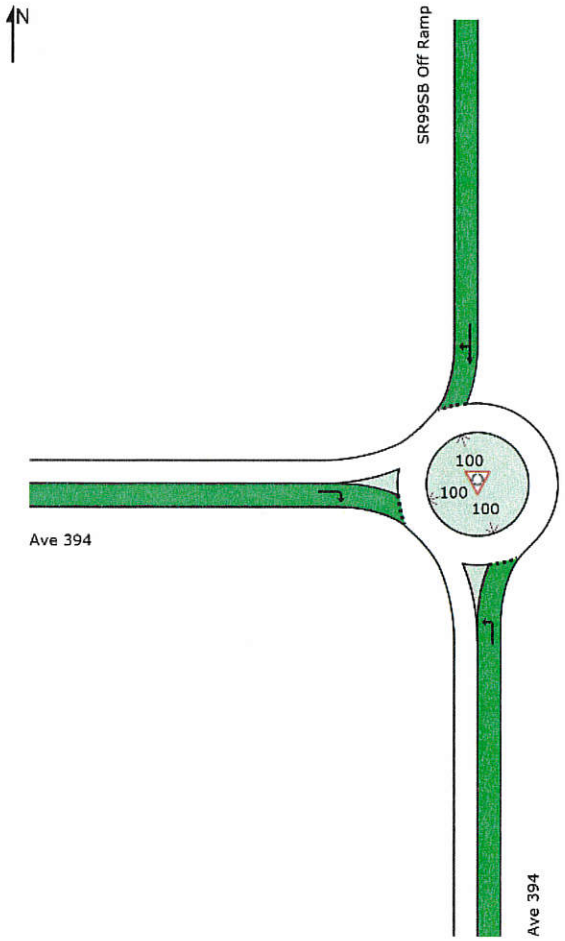
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Off & Ave 394 - 2025 PM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Off & Ave 394 - 2025 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Ave 394													
Lane 1[d]	97	0.0	1380	0.070	100	3.2	LOS A	0.0	0.0	Full	1100	0.0	0.0
Approach	97	0.0		0.070		3.2	LOS A	0.0	0.0				
North: SR99SB Off Ramp													
Lane 1[d]	178	2.5	1220	0.146	100	4.2	LOS A	0.7	17.3	Full	1100	0.0	0.0
Approach	178	2.5		0.146		4.2	LOS A	0.7	17.3				
West: Ave 394													
Lane 1[d]	109	3.0	1170	0.093	100	3.9	LOS A	0.4	10.3	Full	1100	0.0	0.0
Approach	109	3.0		0.093		3.9	LOS A	0.4	10.3				
Intersection	384	2.0		0.146		3.8	LOS A	0.7	17.3				

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

d Dominant lane on roundabout approach

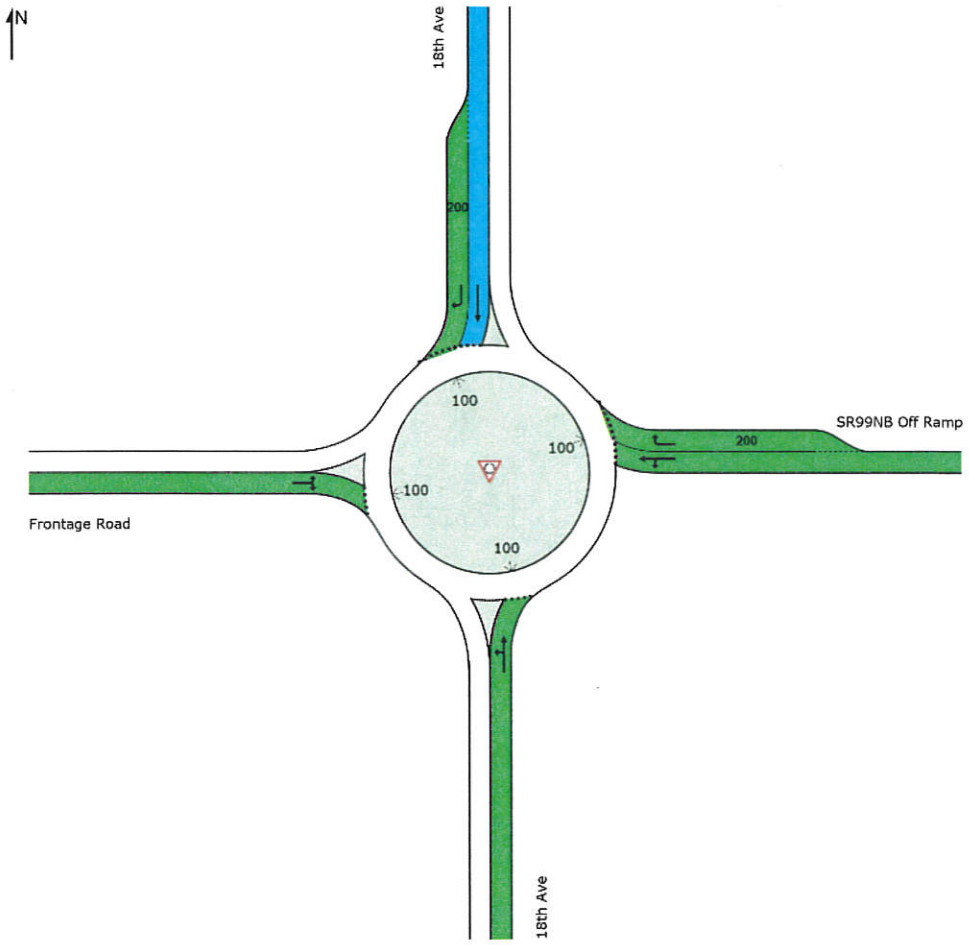
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB Ramps - 2035 AM - No Change Frontage Road - Copy]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB Ramps - 2035 AM - No Change Frontage Road - Copy]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	665	7.6	1271	0.523	100	8.5	LOS A	3.9	104.4	Full	650	0.0	0.0
Approach	665	7.6		0.523		8.5	LOS A	3.9	104.4				
East: SR99NB Off Ramp													
Lane 1	68	19.8	613	0.112	100	7.2	LOS A	0.3	10.1	Full	1600	0.0	0.0
Lane 2[d]	222	6.9	687	0.323	100	9.3	LOS A	1.3	34.3	Short	200	0.0	NA
Approach	290	9.9		0.323		8.8	LOS A	1.3	34.3				
North: 18th Ave													
Lane 1[d]	677	1.5	1165	0.581	100	10.2	LOS B	4.1	104.5	Full	1100	0.0	0.0
Lane 2	185	2.7	1151	0.161	100	4.5	LOS A	0.7	17.3	Short	200	0.0	NA
Approach	862	1.8		0.581		9.0	LOS A	4.1	104.5				
West: Frontage Road													
Lane 1[d]	38	5.3	598	0.064	100	6.7	LOS A	0.2	6.0	Full	1100	0.0	0.0
Approach	38	5.3		0.064		6.7	LOS A	0.2	6.0				
Intersection	1855	5.2		0.581		8.7	LOS A	4.1	104.5				

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

d Dominant lane on roundabout approach

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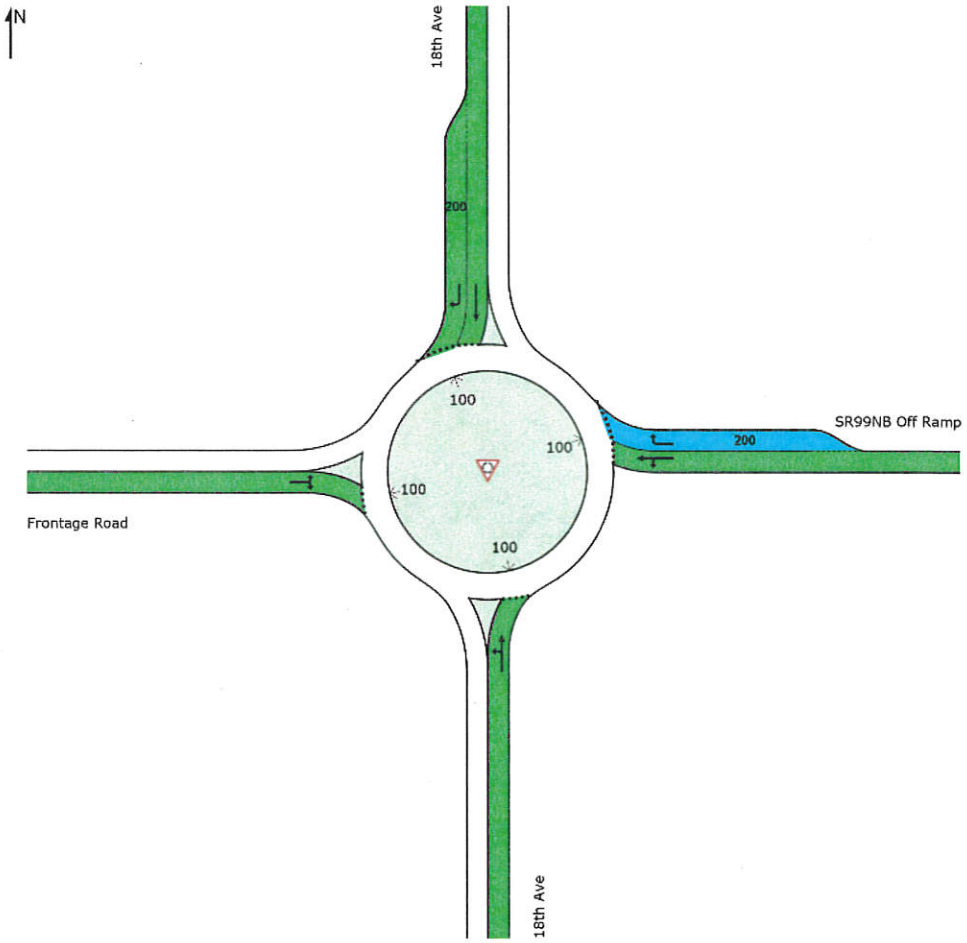
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB Ramps - 2035 PM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB Ramps - 2035 PM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	712	7.1	1250	0.569	100	9.5	LOS A	4.6	121.3	Full	650	0.0	0.0
Approach	712	7.1		0.569		9.5	LOS A	4.6	121.3				
East: SR99NB Off Ramp													
Lane 1	88	15.4	598	0.147	100	7.8	LOS A	0.5	13.4	Full	1600	0.0	0.0
Lane 2[d]	289	5.3	656	0.441	100	11.9	LOS B	2.3	59.4	Short	200	0.0	NA
Approach	377	7.6		0.441		11.0	LOS B	2.3	59.4				
North: 18th Ave													
Lane 1[d]	473	2.2	1143	0.414	100	7.4	LOS A	2.3	58.1	Full	1100	0.0	0.0
Lane 2	129	3.9	1123	0.115	100	4.2	LOS A	0.5	11.8	Short	200	0.0	NA
Approach	602	2.5		0.414		6.7	LOS A	2.3	58.1				
West: Frontage Road													
Lane 1[d]	57	3.6	758	0.075	100	5.5	LOS A	0.3	7.4	Full	1100	0.0	0.0
Approach	57	3.6		0.075		5.5	LOS A	0.3	7.4				
Intersection	1748	5.5		0.569		8.7	LOS A	4.6	121.3				

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

d Dominant lane on roundabout approach

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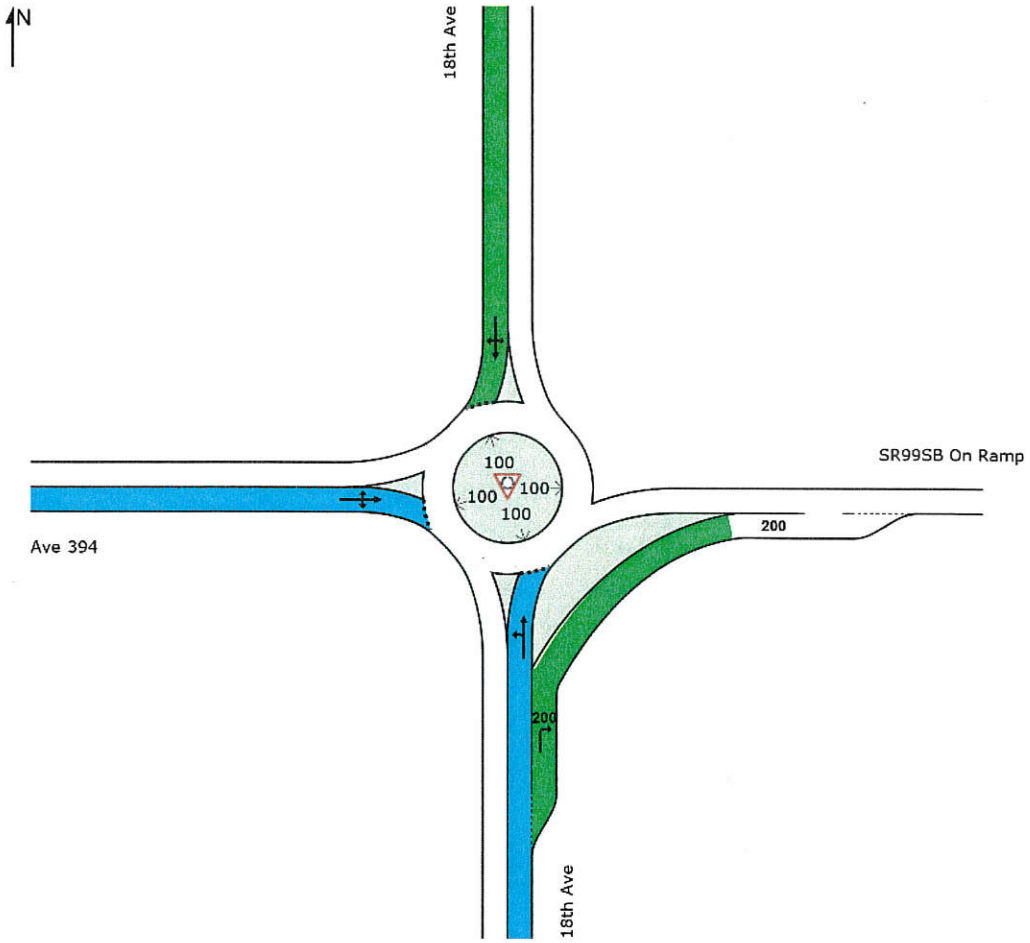
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Ramps - 2035 AM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	B	A	B	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Ramps - 2035 AM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	401	6.9	756	0.531	100	12.7	LOS B	3.5	93.2	Full	650	0.0	0.0
Lane 2	98	0.0	1675	0.058	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	499	5.5		0.531		10.2	LOS B	3.5	93.2				
North: 18th Ave													
Lane 1[d]	776	3.6	1321	0.587	100	9.5	LOS A	5.4	139.7	Full	650	0.0	0.0
Approach	776	3.6		0.587		9.5	LOS A	5.4	139.7				
West: Ave 394													
Lane 1[d]	325	5.1	649	0.501	100	13.5	LOS B	3.1	80.8	Full	1100	0.0	0.0
Approach	325	5.1		0.501		13.5	LOS B	3.1	80.8				
Intersection	1600	4.5		0.587		10.5	LOS B	5.4	139.7				

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

d Dominant lane on roundabout approach

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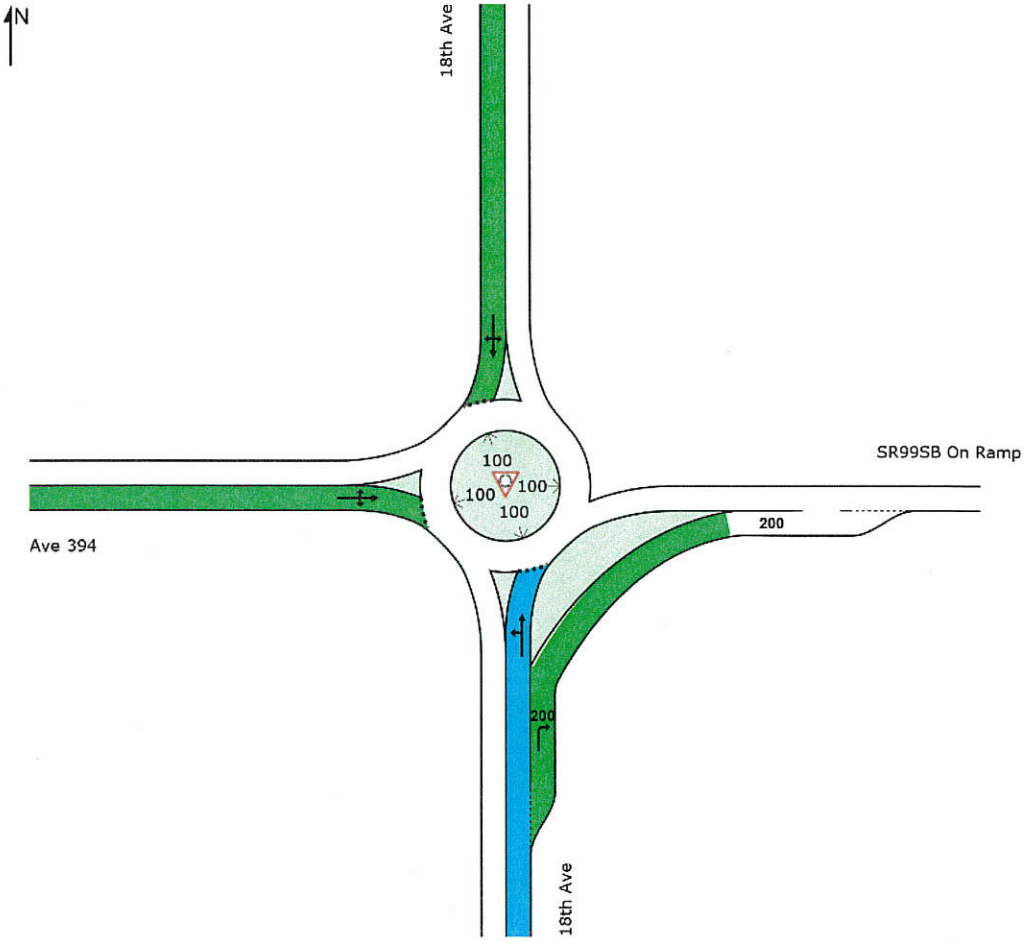
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Ramps - 2035 PM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	B	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Ramps - 2035 PM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	496	6.9	861	0.576	100	12.6	LOS B	4.7	124.4	Full	650	0.0	0.0
Lane 2	104	0.0	1675	0.062	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	600	5.7		0.576		10.4	LOS B	4.7	124.4				
North: 18th Ave													
Lane 1[d]	558	3.5	1320	0.423	100	6.8	LOS A	2.9	73.8	Full	650	0.0	0.0
Approach	558	3.5		0.423		6.8	LOS A	2.9	73.8				
West: Ave 394													
Lane 1[d]	280	5.4	814	0.345	100	8.5	LOS A	1.6	41.8	Full	1100	0.0	0.0
Approach	280	5.4		0.345		8.5	LOS A	1.6	41.8				
Intersection	1438	4.8		0.576		8.6	LOS A	4.7	124.4				

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

d Dominant lane on roundabout approach

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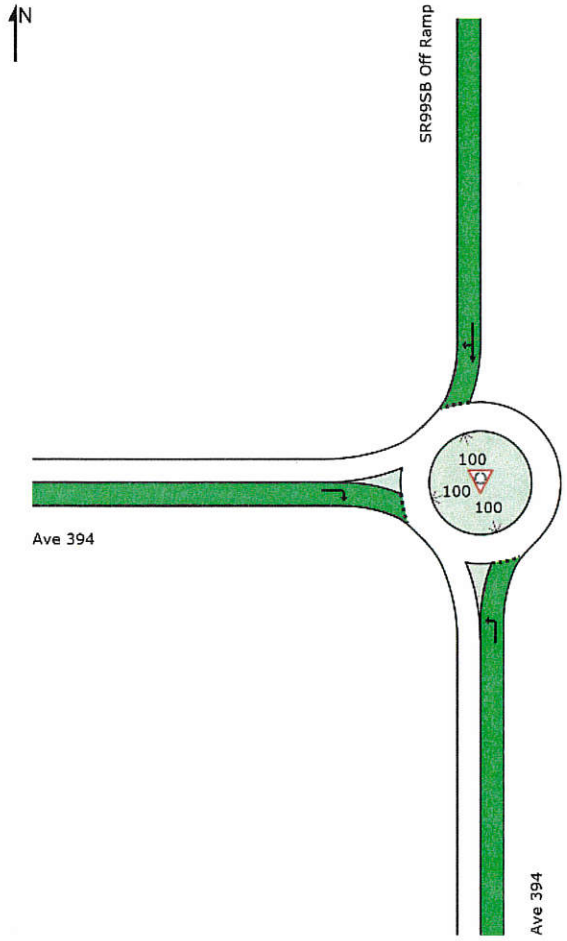
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Off & Ave 394 - 2035 AM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Off & Ave 394 - 2035 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Ave 394													
Lane 1[d]	120	0.0	1380	0.087	100	3.3	LOS A	0.0	0.0	Full	1100	0.0	0.0
Approach	120	0.0		0.087		3.3	LOS A	0.0	0.0				
North: SR99SB Off Ramp													
Lane 1[d]	154	2.8	1188	0.130	100	4.1	LOS A	0.6	15.0	Full	1100	0.0	0.0
Approach	154	2.8		0.130		4.1	LOS A	0.6	15.0				
West: Ave 394													
Lane 1[d]	186	3.0	1158	0.161	100	4.5	LOS A	0.7	18.9	Full	1100	0.0	0.0
Approach	186	3.0		0.161		4.5	LOS A	0.7	18.9				
Intersection	460	2.2		0.161		4.1	LOS A	0.7	18.9				

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

d Dominant lane on roundabout approach

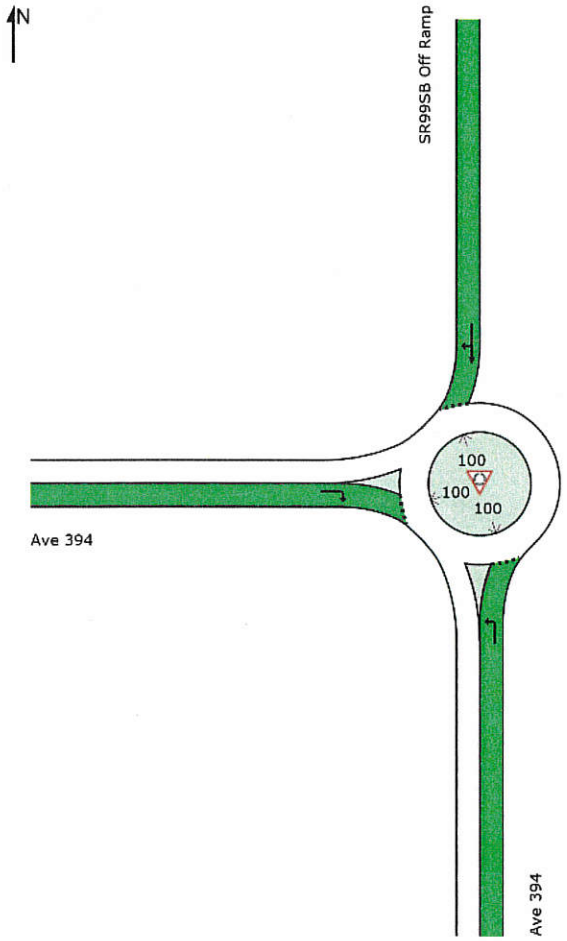
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Off & Ave 394 - 2035 PM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Off & Ave 394 - 2035 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Ave 394													
Lane 1[d]	120	0.0	1380	0.087	100	3.3	LOS A	0.0	0.0	Full	1100	0.0	0.0
Approach	120	0.0		0.087		3.3	LOS A	0.0	0.0				
North: SR99SB Off Ramp													
Lane 1[d]	208	2.4	1193	0.174	100	4.5	LOS A	0.8	21.0	Full	1100	0.0	0.0
Approach	208	2.4		0.174		4.5	LOS A	0.8	21.0				
West: Ave 394													
Lane 1[d]	135	3.0	1148	0.117	100	4.1	LOS A	0.5	13.3	Full	1100	0.0	0.0
Approach	135	3.0		0.117		4.1	LOS A	0.5	13.3				
Intersection	462	2.0		0.174		4.1	LOS A	0.8	21.0				

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

d Dominant lane on roundabout approach

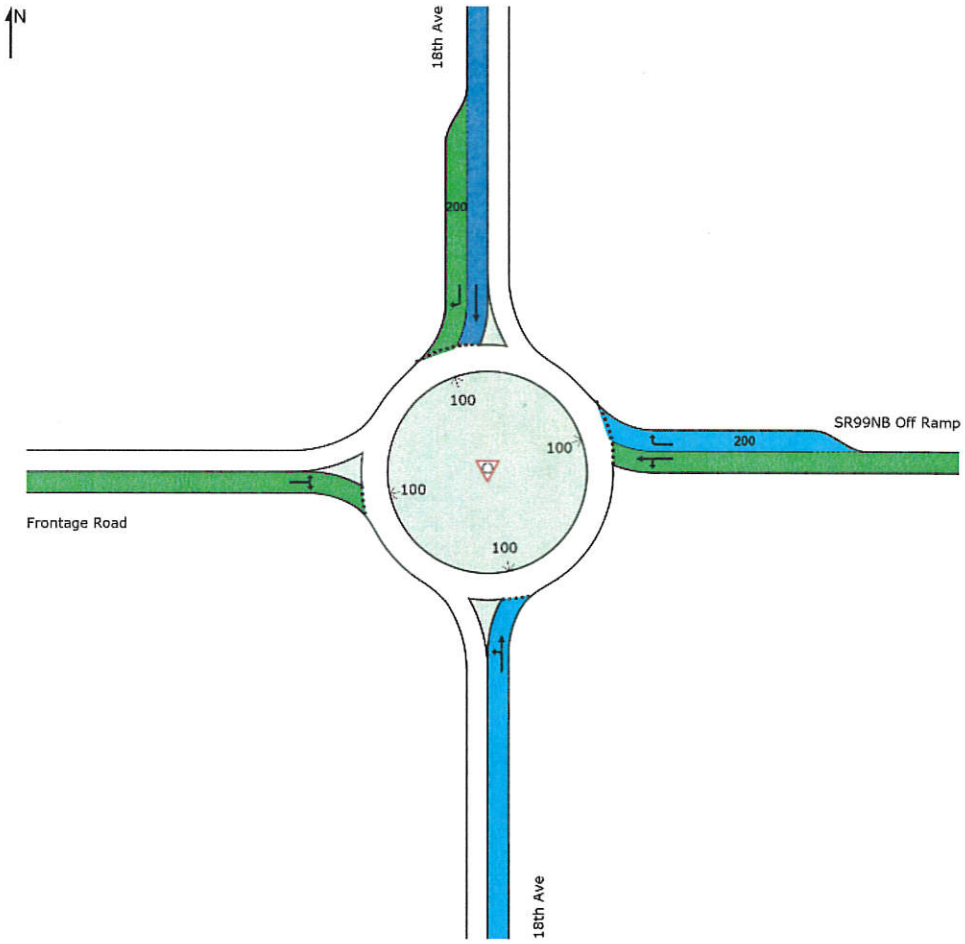
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB Ramps - 2045 AM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	B	A	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB Ramps - 2045 AM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	821	6.2	1285	0.639	100	10.8	LOS B	6.2	163.1	Full	650	0.0	0.0
Approach	821	6.2		0.639		10.8	LOS B	6.2	163.1				
East: SR99NB Off Ramp													
Lane 1	85	16.0	548	0.155	100	8.5	LOS A	0.5	13.9	Full	1600	0.0	0.0
Lane 2[d]	273	5.6	602	0.453	100	13.1	LOS B	2.3	60.0	Short	200	0.0	NA
Approach	358	8.1		0.453		12.0	LOS B	2.3	60.0				
North: 18th Ave													
Lane 1[d]	832	1.2	1123	0.741	100	15.4	LOS C	14.1	354.8	Full	1100	0.0	0.0
Lane 2	215	2.3	1110	0.194	100	5.0	LOS A	0.8	21.3	Short	200	0.0	NA
Approach	1047	1.5		0.741		13.3	LOS B	14.1	354.8				
West: Frontage Road													
Lane 1[d]	47	4.3	508	0.092	100	8.3	LOS A	0.3	8.6	Full	1100	0.0	0.0
Approach	47	4.3		0.092		8.3	LOS A	0.3	8.6				
Intersection	2272	4.3		0.741		12.1	LOS B	14.1	354.8				

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

d Dominant lane on roundabout approach

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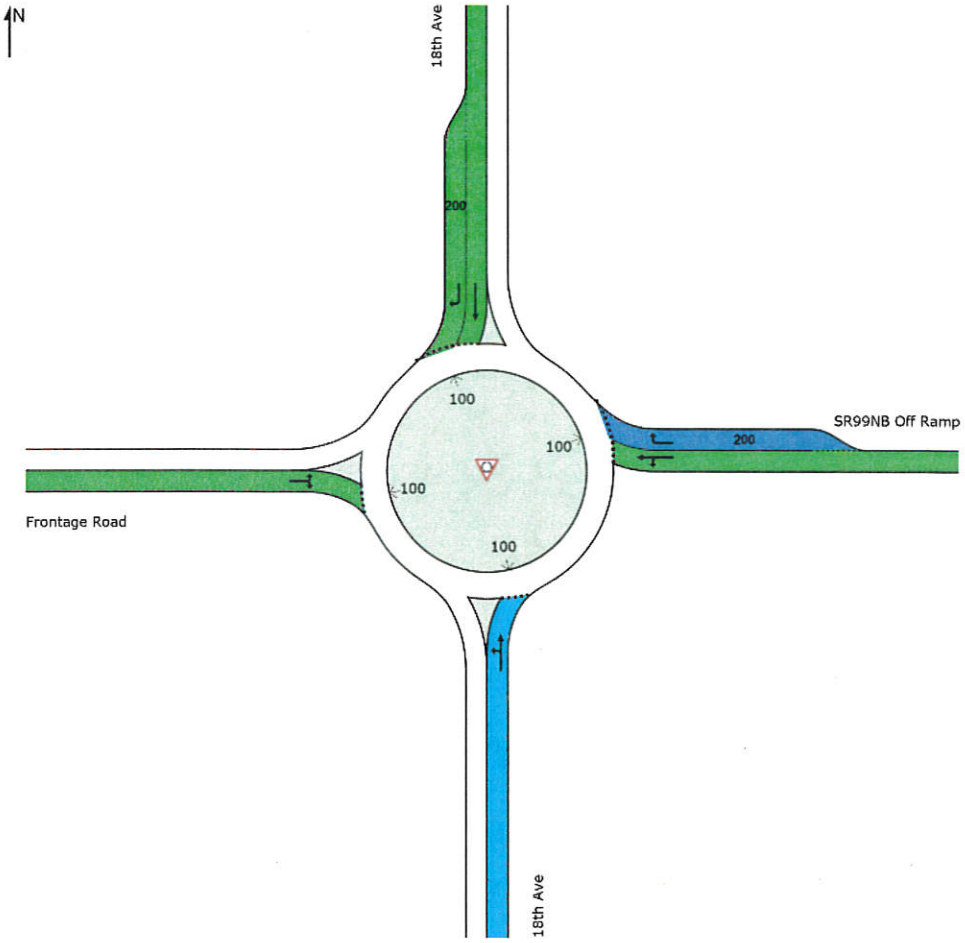
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 NB Ramps - 2045 PM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	C	A	A	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 NB Ramps - 2045 PM - No Change Frontage Road]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	872	5.8	1257	0.693	100	12.5	LOS B	7.4	194.4	Full	650	0.0	0.0
Approach	872	5.8		0.693		12.5	LOS B	7.4	194.4				
East: SR99NB Off Ramp													
Lane 1	110	12.4	528	0.208	100	9.6	LOS A	0.7	18.9	Full	1600	0.0	0.0
Lane 2[d]	346	4.4	569	0.608	100	18.7	LOS C	3.9	100.6	Short	200	0.0	NA
Approach	455	6.3		0.608		16.5	LOS C	3.9	100.6				
North: 18th Ave													
Lane 1[d]	580	1.8	1097	0.529	100	9.6	LOS A	3.4	87.2	Full	1100	0.0	0.0
Lane 2	152	3.3	1081	0.141	100	4.6	LOS A	0.6	14.7	Short	200	0.0	NA
Approach	733	2.1		0.529		8.5	LOS A	3.4	87.2				
West: Frontage Road													
Lane 1[d]	70	2.9	674	0.103	100	6.5	LOS A	0.4	10.2	Full	1100	0.0	0.0
Approach	70	2.9		0.103		6.5	LOS A	0.4	10.2				
Intersection	2129	4.5		0.693		11.8	LOS B	7.4	194.4				

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

d Dominant lane on roundabout approach

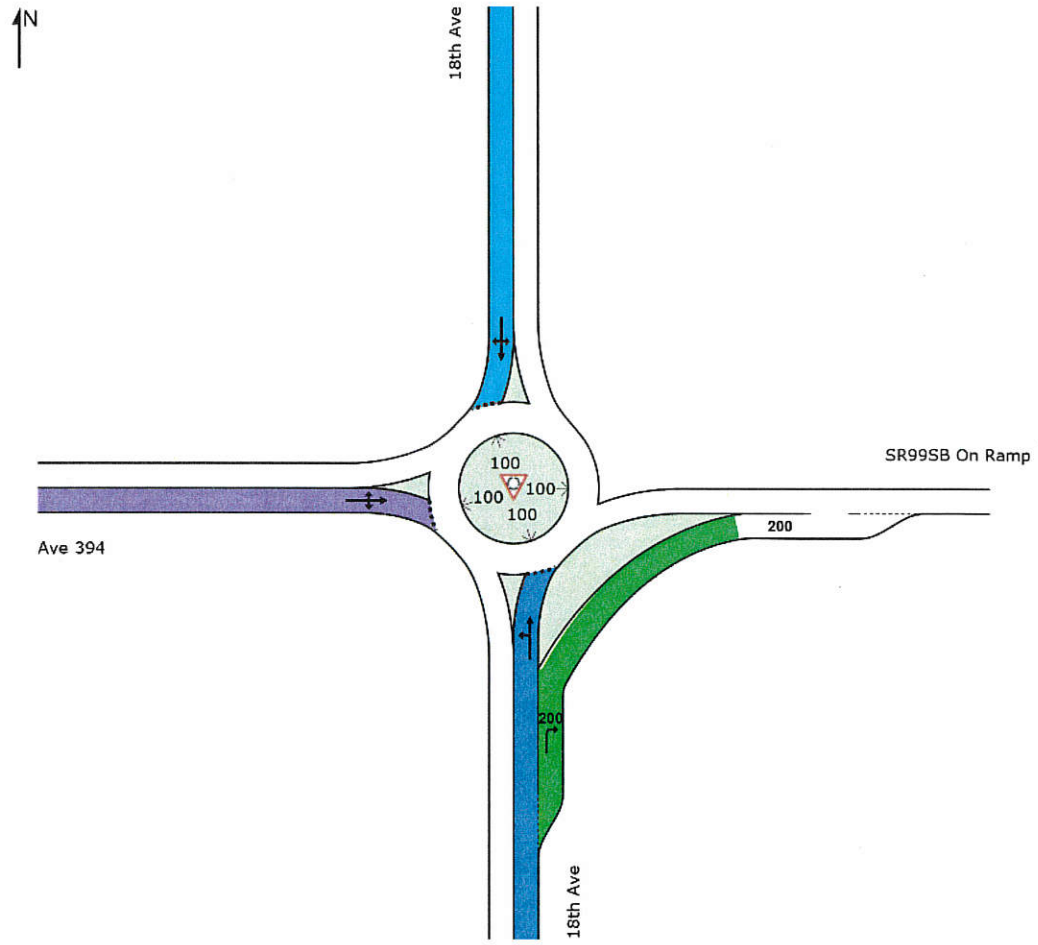
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Ramps - 2045 AM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	C	B	D	C



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Ramps - 2045 AM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	499	6.9	670	0.745	100	23.1	LOS C	7.4	194.4	Full	650	0.0	0.0
Lane 2	122	0.0	1675	0.073	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	621	5.5		0.745		18.5	LOS C	7.4	194.4				
North: 18th Ave													
Lane 1[d]	953	3.6	1318	0.723	100	13.1	LOS B	9.5	243.4	Full	650	0.0	0.0
Approach	953	3.6		0.723		13.1	LOS B	9.5	243.4				
West: Ave 394													
Lane 1[d]	398	5.1	553	0.719	100	25.0	LOS D	6.1	158.6	Full	1100	0.0	0.0
Approach	398	5.1		0.719		25.0	LOS D	6.1	158.6				
Intersection	1972	4.5		0.745		17.2	LOS C	9.5	243.4				

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

d Dominant lane on roundabout approach

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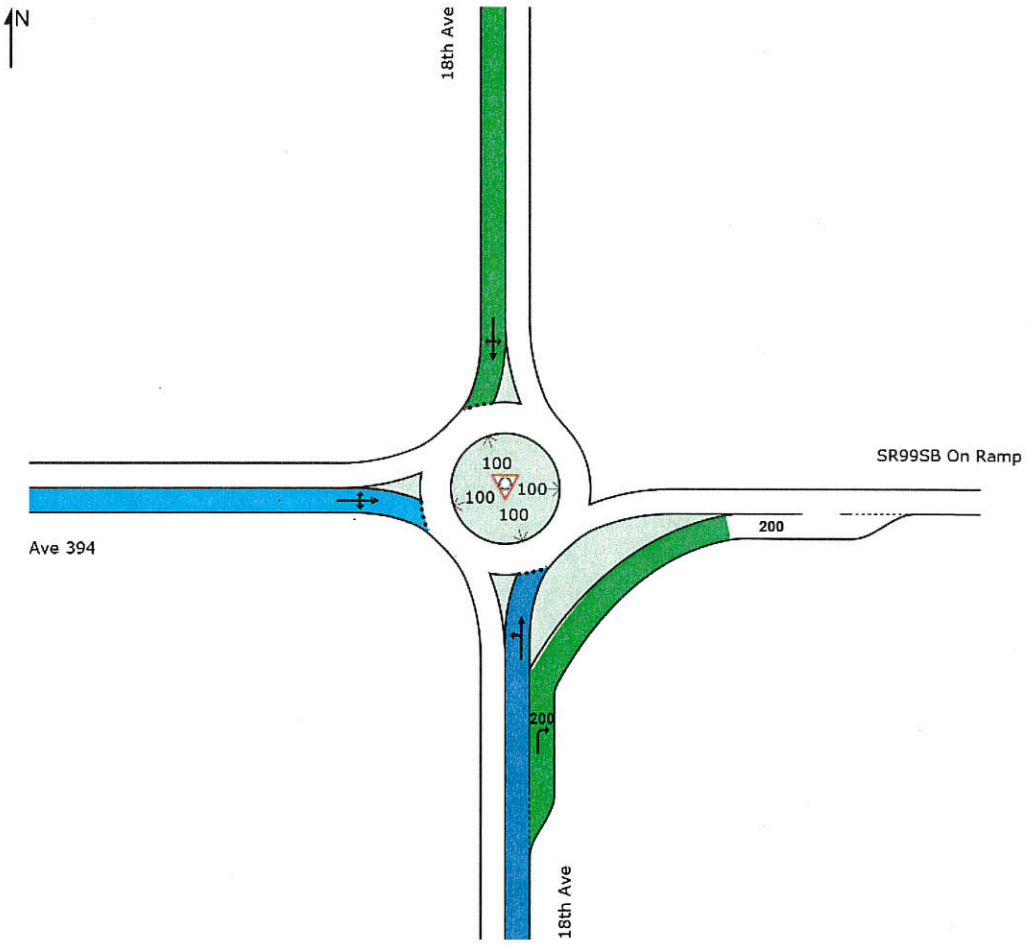
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Ramps - 2045 PM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	C	A	B	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Ramps - 2045 PM - Reconstruct Ave 394 @ SR99SB Off Ramp]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 18th Ave													
Lane 1[d]	620	6.9	790	0.784	100	22.9	LOS C	10.7	282.1	Full	650	0.0	0.0
Lane 2	129	0.0	1675	0.077	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	749	5.7		0.784		18.9	LOS C	10.7	282.1				
North: 18th Ave													
Lane 1[d]	686	3.5	1317	0.521	100	8.3	LOS A	4.2	107.7	Full	650	0.0	0.0
Approach	686	3.5		0.521		8.3	LOS A	4.2	107.7				
West: Ave 394													
Lane 1[d]	336	5.4	731	0.460	100	11.3	LOS B	2.8	72.0	Full	1100	0.0	0.0
Approach	336	5.4		0.460		11.3	LOS B	2.8	72.0				
Intersection	1771	4.8		0.784		13.4	LOS B	10.7	282.1				

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

d Dominant lane on roundabout approach

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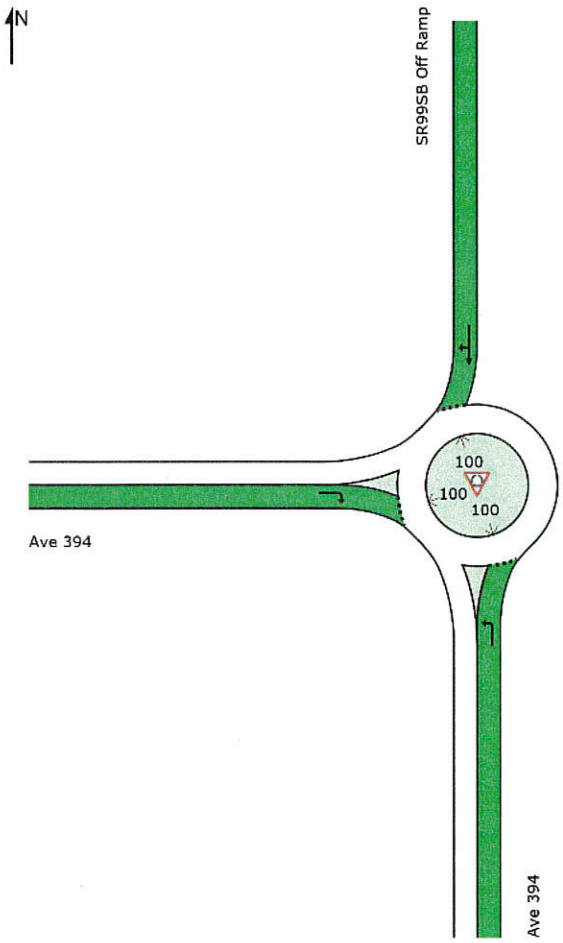
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Off & Ave 394 - 2045 AM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Off & Ave 394 - 2045 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Ave 394													
Lane 1[d]	149	0.0	1380	0.108	100	3.5	LOS A	0.0	0.0	Full	1100	0.0	0.0
Approach	149	0.0		0.108		3.5	LOS A	0.0	0.0				
North: SR99SB Off Ramp													
Lane 1[d]	187	2.8	1153	0.162	100	4.5	LOS A	0.7	19.1	Full	1100	0.0	0.0
Approach	187	2.8		0.162		4.5	LOS A	0.7	19.1				
West: Ave 394													
Lane 1[d]	230	3.0	1124	0.205	100	5.1	LOS A	1.0	25.0	Full	1100	0.0	0.0
Approach	230	3.0		0.205		5.1	LOS A	1.0	25.0				
Intersection	566	2.1		0.205		4.5	LOS A	1.0	25.0				

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

d Dominant lane on roundabout approach

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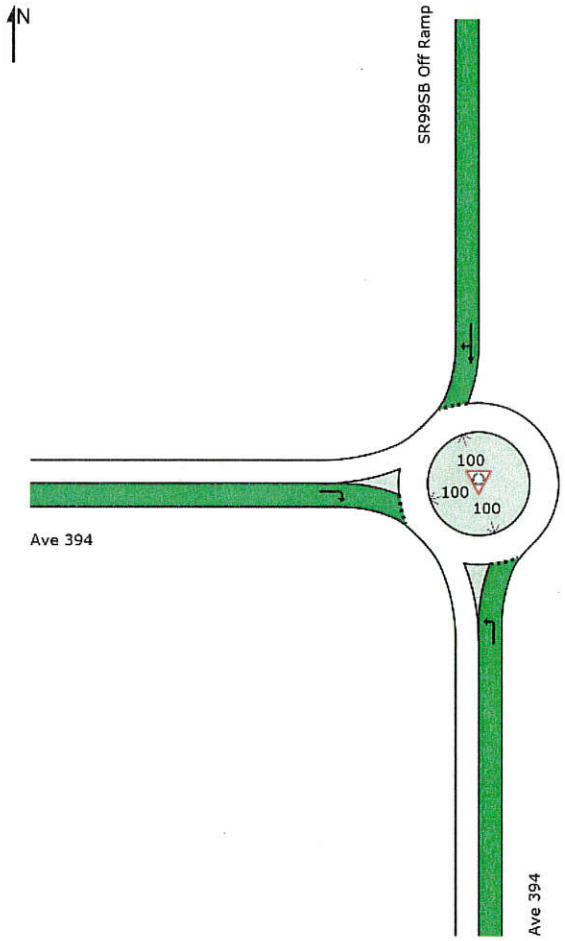
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [SR99 SB Off & Ave 394 - 2045 PM]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [SR99 SB Off & Ave 394 - 2045 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Ave 394													
Lane 1[d]	149	0.0	1380	0.108	100	3.5	LOS A	0.0	0.0	Full	1100	0.0	0.0
Approach	149	0.0		0.108		3.5	LOS A	0.0	0.0				
North: SR99SB Off Ramp													
Lane 1[d]	243	2.4	1158	0.210	100	5.0	LOS A	1.0	26.1	Full	1100	0.0	0.0
Approach	243	2.4		0.210		5.0	LOS A	1.0	26.1				
West: Ave 394													
Lane 1[d]	168	3.0	1124	0.150	100	4.5	LOS A	0.7	17.4	Full	1100	0.0	0.0
Approach	168	3.0		0.150		4.5	LOS A	0.7	17.4				
Intersection	561	1.9		0.210		4.4	LOS A	1.0	26.1				

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

d Dominant lane on roundabout approach

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Mendocino Avenue Intersections

Alternative 4

Cul-de-sac Avenue 394 to eliminate access to SB off-ramp and cul-de-sac frontage Road to eliminate access to NB on-ramp and install All Way Stop Control at SB on and NB Off Ramps Terminals

2025 Level of Service Reports

2035 Level of Service Reports

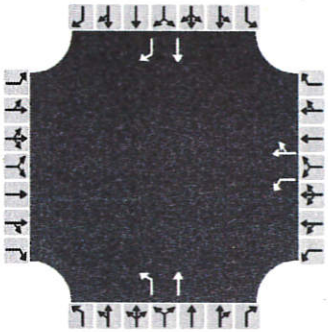
2045 Level of Service Reports

HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Hien	Intersection	SR99 NB Off/Frontage Road
Agency/Co.	Caltrans	Jurisdiction	
Date Performed	1/3/2019	East/West Street	Frontage Road
Analysis Year	2025	North/South Street	SR 99 NB Ramps
Time Analyzed	0.25	Peak Hour Factor	0.82
Anaylysis Time Period (hrs)	AM Peak		
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume				50	0	166	65	411			509	127
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				L	TR		L	T		T	R	
Flow Rate, v (veh/h)				61	202		79	501		621	155	
Percent Heavy Vehicles				26	17		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)				3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x				0.054	0.180		0.070	0.446		0.552	0.138	
Final Departure Headway, hd (s)				8.47	7.13		6.96	6.46		6.39	5.68	
Final Degree of Utilization, x				0.143	0.401		0.153	0.899		1.102	0.244	
Move-Up Time, m (s)				2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)				6.17	4.83		4.66	4.16		4.09	3.38	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)				61	202		79	501		621	155	
Capacity				425	505		517	557		563	634	
95% Queue Length, Q_{95} (veh)				0.5	1.9		0.5	10.6		19.3	1.0	
Control Delay (s/veh)				12.6	14.5		10.9	42.4		92.9	10.2	
Level of Service, LOS				B	B		B	E		F	B	
Approach Delay (s/veh)				14.1			38.1			76.4		
Approach LOS				B			E			F		
Intersection Delay, s/veh | LOS	52.5						F					

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HCS 2010 All-Way Stop-Control Summary Report

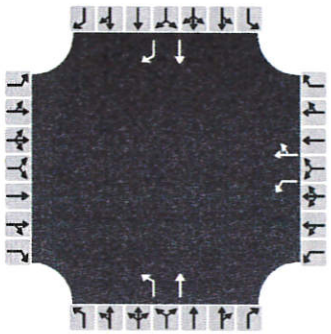
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Ramps
Peak Hour Factor	0.85

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume				42	0	224	65	457			356	85
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				L	TR		L	T		T	R	
Flow Rate, v (veh/h)				49	264		76	538		419	100	
Percent Heavy Vehicles				17	5		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)				3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x				0.044	0.234		0.068	0.478		0.372	0.089	
Final Departure Headway, hd (s)				8.19	6.77		6.94	6.43		6.58	5.87	
Final Degree of Utilization, x				0.112	0.496		0.147	0.960		0.766	0.163	
Move-Up Time, m (s)				2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)				5.89	4.47		4.64	4.13		4.28	3.57	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)				49	264		76	538		419	100	
Capacity				439	532		519	560		547	613	
95% Queue Length, Q_{95} (veh)				0.4	2.7		0.5	12.9		6.9	0.6	
Control Delay (s/veh)				11.9	15.9		10.8	53.6		27.6	9.7	
Level of Service, LOS				B	C		B	F		D	A	
Approach Delay (s/veh)				15.3			48.3			24.2		
Approach LOS				C			E			C		
Intersection Delay, s/veh | LOS	32.5						D					

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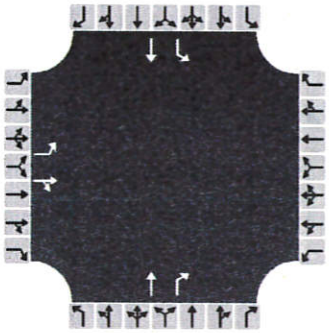
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2025
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp

Site Information

Intersection	SR99 SB On/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	89	7	13					387	87	232	327	
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					T	R		L	T	
Flow Rate, v (veh/h)	107	24					466	105		280	394	
Percent Heavy Vehicles	2	2					0	7		3	6	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.095	0.021					0.414	0.093		0.248	0.350	
Final Departure Headway, hd (s)	7.80	6.83					5.87	5.29		6.24	5.79	
Final Degree of Utilization, x	0.232	0.046					0.761	0.154		0.484	0.633	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3		2.3	2.3	
Service Time, ts (s)	5.50	4.53					3.57	2.99		3.94	3.49	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	107	24					466	105		280	394	
Capacity	462	527					613	681		577	622	
95% Queue Length, Q_{95} (veh)	0.9	0.1					6.9	0.5		2.6	4.5	
Control Delay (s/veh)	12.8	9.9					24.8	8.9		14.7	17.9	
Level of Service, LOS	B	A					C	A		B	C	
Approach Delay (s/veh)	12.3						21.9			16.6		
Approach LOS	B						C			C		
Intersection Delay, s/veh | LOS	18.4						C					

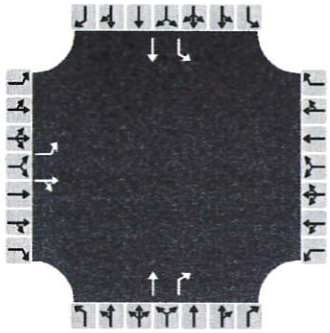
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HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Hien	Intersection	SR99 SB On/18th Ave
,ency/Co.	Caltrans	Jurisdiction	
Date Performed	1/3/2019	East/West Street	Ave 394
Analysis Year	2025	North/South Street	18th Ave
Time Analyzed	0.25	Peak Hour Factor	0.83
Anaylysis Time Period (hrs)	PM Peak		
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
lume	81	13	5					441	100	148	250	
.o Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					T	R		L	T	
Flow Rate, v (veh/h)	98	22					531	120		178	301	
Percent Heavy Vehicles	2	2					0	6		6	10	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.087	0.019					0.472	0.107		0.159	0.268	
Final Departure Headway, hd (s)	7.59	6.89					5.55	4.95		6.27	5.84	
Final Degree of Utilization, x	0.206	0.042					0.819	0.166		0.311	0.489	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3		2.3	2.3	
Service Time, ts (s)	5.29	4.59					3.25	2.65		3.97	3.54	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	98	22					531	120		178	301	
Capacity	474	523					649	728		574	617	
95% Queue Length, Q_{95} (veh)	0.8	0.1					8.6	0.6		1.3	2.7	
Control Delay (s/veh)	12.2	9.9					28.4	8.6		11.8	14.0	
Level of Service, LOS	B	A					D	A		B	B	
ɔroach Delay (s/veh)	11.8						24.7			13.2		
⌐pproach LOS	B						C			B		
Intersection Delay, s/veh | LOS	19.1						C					

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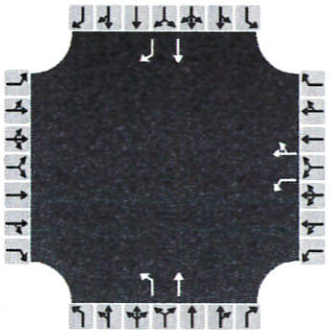
General Information

Analyst	Hien
ɟency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Ramps
Peak Hour Factor	0.82

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
ʾɔlume				62	0	206	81	511			633	158
,o Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				L	TR		L	T		T	R	
Flow Rate, v (veh/h)				76	251		99	623		772	193	
Percent Heavy Vehicles				26	17		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)				3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x				0.067	0.223		0.088	0.554		0.686	0.171	
Final Departure Headway, hd (s)				8.63	7.29		7.28	6.79		6.70	6.00	
Final Degree of Utilization, x				0.181	0.509		0.200	1.175		1.437	0.321	
Move-Up Time, m (s)				2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)				6.33	4.99		4.98	4.49		4.40	3.70	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)				76	251		99	623		772	193	
Capacity				417	494		494	531		537	600	
95% Queue Length, Q_{95} (veh)				0.7	2.8		0.7	22.1		37.1	1.4	
Control Delay (s/veh)				13.2	17.3		11.8	120.4		226.0	11.5	
Level of Service, LOS				B	C		B	F		F	B	
ɔproach Delay (s/veh)				16.4			105.5			183.2		
ʌpproach LOS				C			F			F		
Intersection Delay, s/veh | LOS	128.3						F					

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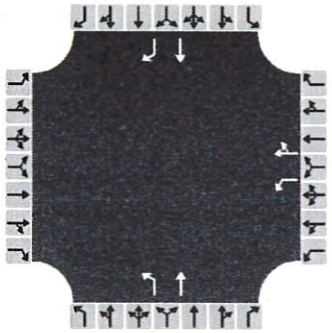
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Ramps
Peak Hour Factor	0.85

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume				52	0	278	81	568			443	106
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				L	TR		L	T		T	R	
Flow Rate, v (veh/h)				61	327		95	668		521	125	
Percent Heavy Vehicles				17	5		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)				3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x				0.054	0.291		0.085	0.594		0.463	0.111	
Final Departure Headway, hd (s)				8.42	7.03		7.56	7.05		6.93	6.23	
Final Degree of Utilization, x				0.143	0.639		0.200	1.308		1.003	0.216	
Move-Up Time, m (s)				2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)				6.12	4.73		5.26	4.75		4.63	3.93	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)				61	327		95	668		521	125	
Capacity				428	512		476	511		520	578	
95% Queue Length, Q_{95} (veh)				0.5	4.4		0.7	28.5		14.1	0.8	
Control Delay (s/veh)				12.5	21.3		12.1	173.5		66.1	10.6	
Level of Service, LOS				B	C		B	F		F	B	
Approach Delay (s/veh)				19.9			153.4			55.4		
Approach LOS				C			F			F		
Intersection Delay, s/veh | LOS	89.4						F					

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HCS 2010 All-Way Stop-Control Summary Report

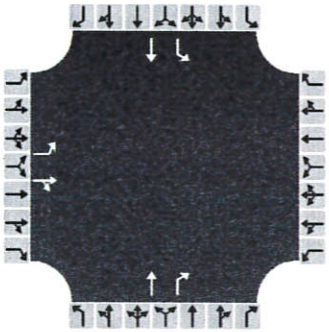
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2035
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp

Site Information

Intersection	SR99 SB On/18th Ave
Jurisdiction	
East/West Street	Ave 394
North/South Street	18th Ave
Peak Hour Factor	0.83

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	111	9	16					481	108	288	406	
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					T	R		L	T	
Flow Rate, v (veh/h)	134	30					580	130		347	489	
Percent Heavy Vehicles	2	2					0	7		3	6	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.119	0.027					0.515	0.116		0.308	0.435	
Final Departure Headway, hd (s)	8.24	7.31					6.38	5.79		6.61	6.16	
Final Degree of Utilization, x	0.306	0.061					1.027	0.209		0.637	0.837	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3		2.3	2.3	
Service Time, ts (s)	5.94	5.01					4.08	3.49		4.31	3.86	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	134	30					580	130		347	489	
Capacity	437	493					565	622		545	584	
95% Queue Length, Q_{95} (veh)	1.3	0.2					15.7	0.8		4.5	8.9	
Control Delay (s/veh)	14.5	10.5					69.7	10.0		20.2	32.8	
Level of Service, LOS	B	B					F	B		C	D	
Approach Delay (s/veh)	13.8						58.7			27.6		
Approach LOS	B						F			D		
Intersection Delay, s/veh | LOS	39.2						E					

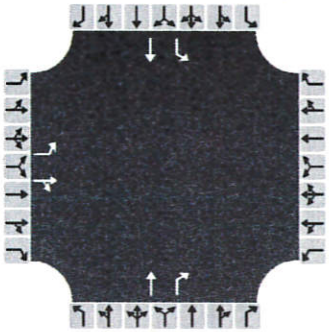
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HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Hien	Intersection	SR99 SB On/18th Ave
Agency/Co.	Caltrans	Jurisdiction	
Date Performed	1/3/2019	East/West Street	Ave 394
Analysis Year	2035	North/South Street	18th Ave
Time Analyzed	0.25	Peak Hour Factor	0.83
Anaylysis Time Period (hrs)	PM Peak		
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	101	16	6					548	124	184	311	
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					T	R		L	T	
Flow Rate, v (veh/h)	122	27					660	149		222	375	
Percent Heavy Vehicles	2	2					0	6		6	10	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.108	0.024					0.587	0.133		0.197	0.333	
Final Departure Headway, hd (s)	7.97	7.29					5.91	5.31		6.57	6.14	
Final Degree of Utilization, x	0.269	0.054					1.085	0.220		0.404	0.639	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3		2.3	2.3	
Service Time, ts (s)	5.67	4.99					3.61	3.01		4.27	3.84	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	122	27					660	149		222	375	
Capacity	452	494					609	678		548	587	
95% Queue Length, Q_{95} (veh)	1.1	0.2					19.3	0.8		1.9	4.5	
Control Delay (s/veh)	13.6	10.4					84.7	9.5		13.7	19.1	
Level of Service, LOS	B	B					F	A		B	C	
Approach Delay (s/veh)	13.0						70.8			17.0		
Approach LOS	B						F			C		
Intersection Delay, s/veh | LOS	44.7						E					

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HCS 2010 All-Way Stop-Control Summary Report

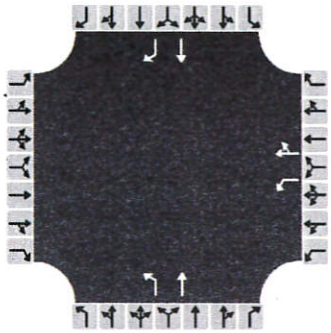
General Information

Analyst	Hien
Agency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	AM Peak
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Ramps
Peak Hour Factor	0.82

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume				77	0	257	100	635			787	196
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				L	TR		L	T		T	R	
Flow Rate, v (veh/h)				94	313		122	774		960	239	
Percent Heavy Vehicles				26	17		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)				3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x				0.083	0.279		0.108	0.688		0.853	0.212	
Final Departure Headway, hd (s)				8.71	7.37		7.66	7.16		7.06	6.36	
Final Degree of Utilization, x				0.227	0.641		0.259	1.540		1.882	0.422	
Move-Up Time, m (s)				2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)				6.41	5.07		5.36	4.86		4.76	4.06	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)				94	313		122	774		960	239	
Capacity				413	489		470	503		510	566	
95% Queue Length, Q_{95} (veh)				0.9	4.5		1.0	41.0		62.0	2.1	
Control Delay (s/veh)				13.9	22.3		13.0	272.0		421.2	13.6	
Level of Service, LOS				B	C		B	F		F	B	
Approach Delay (s/veh)				20.4			236.8			340.0		
Approach LOS				C			F			F		
Intersection Delay, s/veh | LOS	251.0						F					

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HCS 2010 All-Way Stop-Control Summary Report

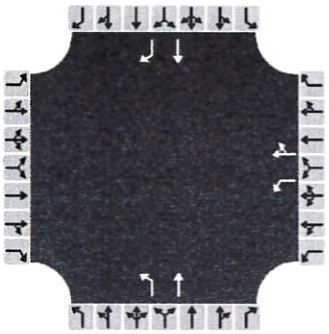
General Information

Analyst	Hien
gency/Co.	Caltrans
Date Performed	1/3/2019
Analysis Year	2045
Time Analyzed	0.25
Anaylysis Time Period (hrs)	PM Peak
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp

Site Information

Intersection	SR99 NB Off/Frontage Road
Jurisdiction	
East/West Street	Frontage Road
North/South Street	SR 99 NB Ramps
Peak Hour Factor	0.85

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
olume				65	0	346	100	706			550	131
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration				L	TR		L	T		T	R	
Flow Rate, v (veh/h)				76	407		118	831		647	154	
Percent Heavy Vehicles				17	5		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)				3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x				0.068	0.362		0.105	0.738		0.575	0.137	
Final Departure Headway, hd (s)				8.49	7.10		7.84	7.34		7.33	6.63	
Final Degree of Utilization, x				0.180	0.803		0.256	1.694		1.317	0.284	
Move-Up Time, m (s)				2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)				6.19	4.80		5.54	5.04		5.03	4.33	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)				76	407		118	831		647	154	
Capacity				424	507		459	490		491	543	
95% Queue Length, Q_{95} (veh)				0.7	7.6		1.0	48.9		28.1	1.2	
Control Delay (s/veh)				13.1	32.8		13.2	339.4		178.6	11.9	
Level of Service, LOS				B	D		B	F		F	B	
pproach Delay (s/veh)				29.6			298.9			146.5		
Approach LOS				D			F			F		
Intersection Delay, s/veh | LOS	185.9						F					

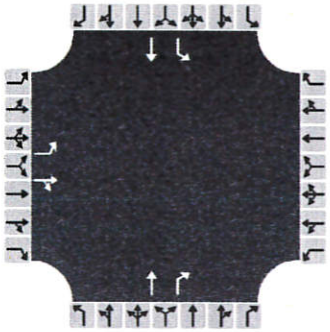
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HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Hien	Intersection	SR99 SB On/18th Ave
Agency/Co.	Caltrans	Jurisdiction	
Date Performed	1/3/2019	East/West Street	Ave 394
Analysis Year	2045	North/South Street	18th Ave
Time Analyzed	0.25	Peak Hour Factor	0.83
Anaylysis Time Period (hrs)	AM Peak		
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	138	11	20					598	134	359	505	
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					T	R		L	T	
Flow Rate, v (veh/h)	166	37					720	161		433	608	
Percent Heavy Vehicles	2	2					0	7		3	6	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.148	0.033					0.640	0.144		0.384	0.541	
Final Departure Headway, hd (s)	8.51	7.56					6.77	6.19		6.88	6.43	
Final Degree of Utilization, x	0.393	0.078					1.354	0.278		0.827	1.088	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3		2.3	2.3	
Service Time, ts (s)	6.21	5.26					4.47	3.89		4.58	4.13	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	166	37					720	161		433	608	
Capacity	423	476					532	582		523	559	
95% Queue Length, Q_{95} (veh)	1.8	0.3					32.0	1.1		8.3	18.5	
Control Delay (s/veh)	16.6	10.9					191.5	11.2		34.5	88.3	
Level of Service, LOS	C	B					F	B		D	F	
Approach Delay (s/veh)	15.6						158.5			65.9		
Approach LOS	C						F			F		
Intersection Delay, s/veh | LOS	99.5						F					

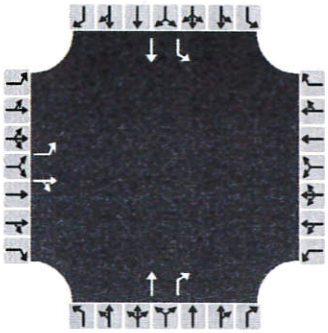
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HCS 2010 All-Way Stop-Control Summary Report

General Information

Analyst	Hien	Intersection	SR99 SB On/18th Ave
Agency/Co.	Caltrans	Jurisdiction	
Date Performed	1/3/2019	East/West Street	Ave 394
Analysis Year	2045	North/South Street	18th Ave
Time Analyzed	0.25	Peak Hour Factor	0.83
Anaylysis Time Period (hrs)	PM Peak		
Project Description	Alt 4-Realign Ave 394, SB Off-Ramp, & NB On-Ramp		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	125	20	8					681	155	229	386	
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR					T	R		L	T	
Flow Rate, v (veh/h)	151	34					820	187		276	465	
Percent Heavy Vehicles	2	2					0	6		6	10	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20					3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.134	0.030					0.729	0.166		0.245	0.413	
Final Departure Headway, hd (s)	8.23	7.54					6.35	5.75		6.83	6.40	
Final Degree of Utilization, x	0.344	0.071					1.448	0.298		0.523	0.827	
Move-Up Time, m (s)	2.3	2.3					2.3	2.3		2.3	2.3	
Service Time, ts (s)	5.93	5.24					4.05	3.45		4.53	4.10	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	151	34					820	187		276	465	
Capacity	437	477					567	626		527	563	
95% Queue Length, Q_{95} (veh)	1.5	0.2					39.5	1.2		3.0	8.5	
Control Delay (s/veh)	15.2	10.8					229.3	10.9		16.8	32.6	
Level of Service, LOS	C	B					F	B		C	D	
Approach Delay (s/veh)	14.4						188.8			26.7		
Approach LOS	B						F			D		
Intersection Delay, s/veh | LOS	110.0						F					

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Mendocino Avenue Intersections

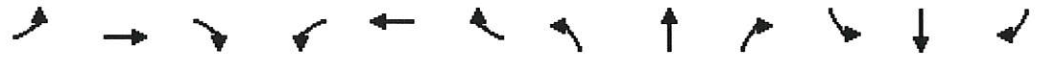
Alternative 5

Cul-de-sac Avenue 394/SB off-ramp and frontage Road/ NB on-ramp and Signalized intersections at SB on and NB off Ramps Terminals

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

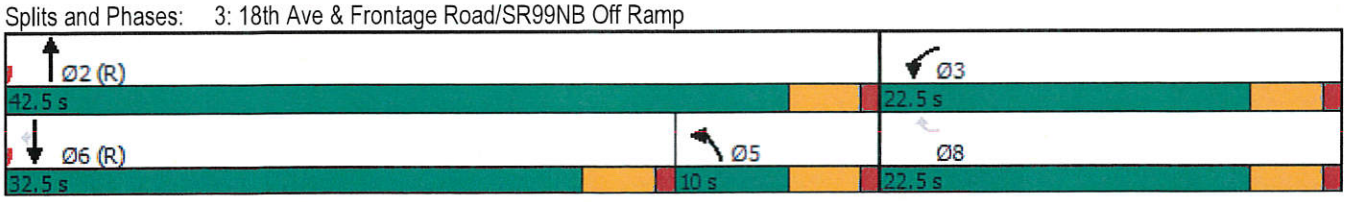


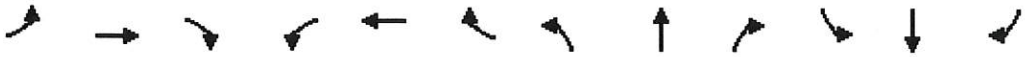
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	50	0	166	65	411	0	0	509	127
Future Volume (vph)	0	0	0	50	0	166	65	411	0	0	509	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						180						121
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	54	0	180	71	447	0	0	553	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	54	0	180	71	447	0	0	553	138
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	10.0	42.5			32.5	32.5
Total Split (%)				34.6%		34.6%	15.4%	65.4%			50.0%	50.0%
Maximum Green (s)				18.0		18.0	5.5	38.0			28.0	28.0
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				7.8		7.6	5.5	48.4			42.4	42.4
Actuated g/C Ratio				0.12		0.12	0.08	0.74			0.65	0.65
v/c Ratio				0.26		0.52	0.48	0.32			0.46	0.13
Control Delay				28.1		10.6	28.0	0.7			8.8	2.4
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				28.1		10.6	28.0	0.7			8.8	2.4
LOS				C		B	C	A			A	A
Approach Delay					14.6			4.5			7.5	
Approach LOS					B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 61 (94%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.6		Intersection LOS: A	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp





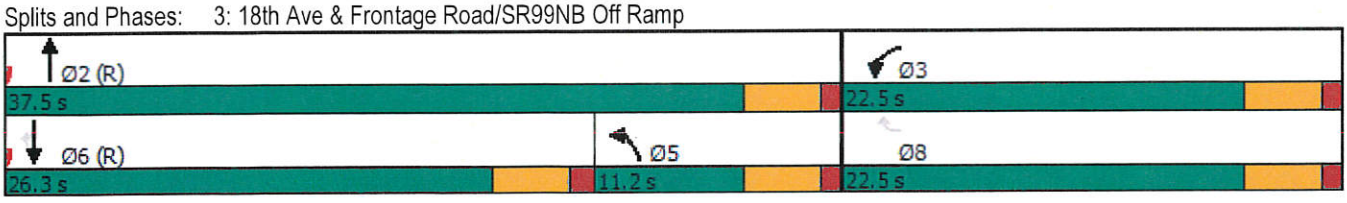
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	42	0	224	65	457	0	0	356	85
Future Volume (vph)	0	0	0	42	0	224	65	457	0	0	356	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						243						109
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	46	0	243	71	497	0	0	387	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	46	0	243	71	497	0	0	387	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	11.2	37.5			26.3	26.3
Total Split (%)				37.5%		37.5%	18.7%	62.5%			43.8%	43.8%
Maximum Green (s)				18.0		18.0	6.7	33.0			21.8	21.8
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				7.7		7.4	6.4	43.6			36.9	36.9
Actuated g/C Ratio				0.13		0.12	0.11	0.73			0.62	0.62
v/c Ratio				0.20		0.60	0.38	0.37			0.34	0.09
Control Delay				24.2		10.3	21.6	1.1			8.7	2.0
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				24.2		10.3	21.6	1.1			8.7	2.0
LOS				C		B	C	A			A	A
Approach Delay					12.5			3.7			7.4	
Approach LOS					B			A			A	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 18 (30%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 6.9 Intersection LOS: A
Intersection Capacity Utilization 47.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp

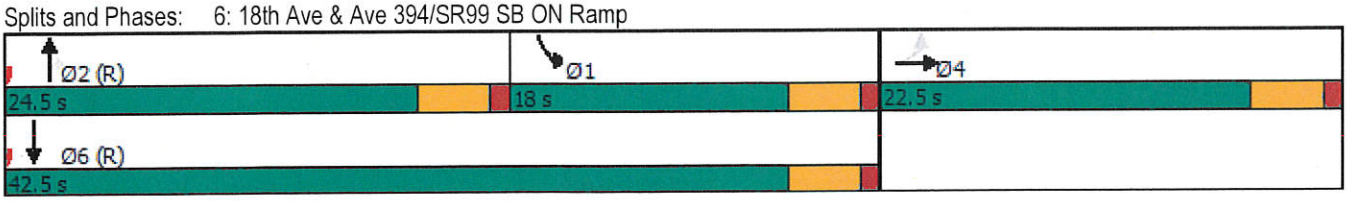


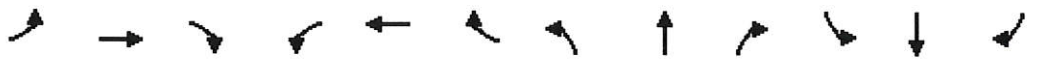
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	7	13	0	0	0	0	387	87	232	327	0
Future Volume (vph)	89	7	13	0	0	0	0	387	87	232	327	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.905							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1686	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1686	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14							101			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	8	14	0	0	0	0	421	95	252	355	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	22	0	0	0	0	0	421	95	252	355	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						24.5	24.5	18.0	42.5	
Total Split (%)	34.6%	34.6%						37.7%	37.7%	27.7%	65.4%	
Maximum Green (s)	18.0	18.0						20.0	20.0	13.5	38.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	8.9	8.9						31.1	31.1	13.5	50.0	
Actuated g/C Ratio	0.14	0.14						0.48	0.48	0.21	0.77	
v/c Ratio	0.40	0.09						0.47	0.12	0.69	0.25	
Control Delay	29.8	15.6						15.3	3.3	28.7	1.3	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	29.8	15.6						15.3	3.3	28.7	1.3	
LOS	C	B						B	A	C	A	
Approach Delay		27.2						13.1			12.7	
Approach LOS		C						B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 64 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp





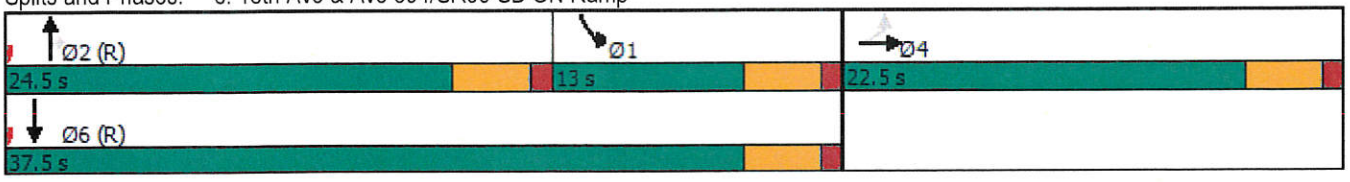
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	13	5	0	0	0	0	441	100	148	250	0
Future Volume (vph)	81	13	5	0	0	0	0	441	100	148	250	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1790	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1790	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5							109			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	14	5	0	0	0	0	479	109	161	272	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	19	0	0	0	0	0	479	109	161	272	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

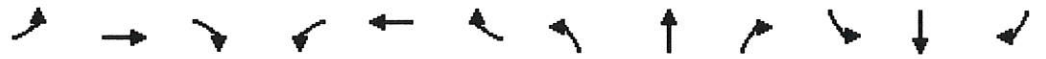
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						24.5	24.5	13.0	37.5	
Total Split (%)	37.5%	37.5%						40.8%	40.8%	21.7%	62.5%	
Maximum Green (s)	18.0	18.0						20.0	20.0	8.5	33.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	8.4	8.4						35.1	35.1	8.2	45.5	
Actuated g/C Ratio	0.14	0.14						0.58	0.58	0.14	0.76	
v/c Ratio	0.36	0.07						0.44	0.11	0.67	0.19	
Control Delay	26.7	18.8						11.9	2.8	33.4	1.8	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	26.7	18.8						11.9	2.8	33.4	1.8	
LOS	C	B						B	A	C	A	
Approach Delay		25.3						10.2			13.5	
Approach LOS		C						B			B	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 12.9 Intersection LOS: B
Intersection Capacity Utilization 47.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



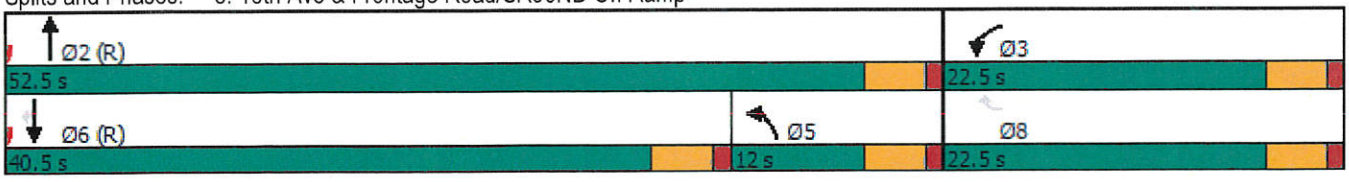


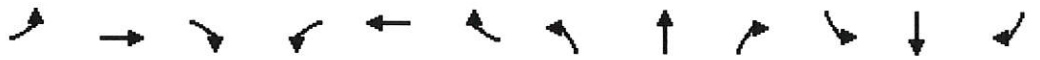
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	62	0	206	81	511	0	0	633	158
Future Volume (vph)	0	0	0	62	0	206	81	511	0	0	633	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						224						115
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	67	0	224	88	555	0	0	688	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	67	0	224	88	555	0	0	688	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	12.0	52.5			40.5	40.5
Total Split (%)				30.0%		30.0%	16.0%	70.0%			54.0%	54.0%
Maximum Green (s)				18.0		18.0	7.5	48.0			36.0	36.0
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				8.5		8.5	7.1	57.5			47.9	47.9
Actuated g/C Ratio				0.11		0.11	0.09	0.77			0.64	0.64
v/c Ratio				0.33		0.59	0.52	0.39			0.58	0.16
Control Delay				34.1		11.5	32.1	0.8			11.8	3.3
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				34.1		11.5	32.1	0.8			11.8	3.3
LOS				C		B	C	A			B	A
Approach Delay					16.7			5.1			10.1	
Approach LOS					B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 72 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp



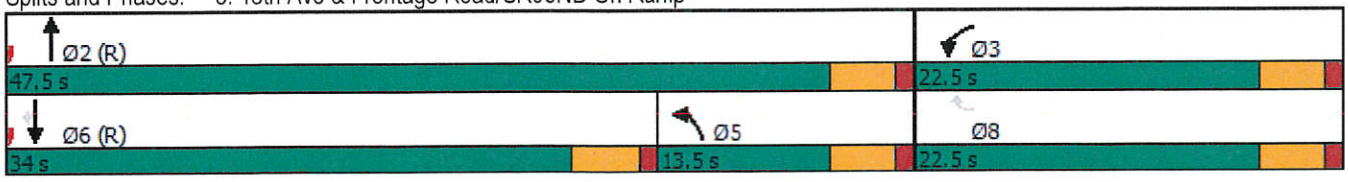


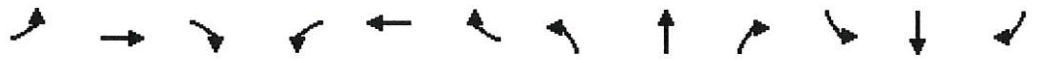
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	52	0	278	81	568	0	0	443	106
Future Volume (vph)	0	0	0	52	0	278	81	568	0	0	443	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						296						106
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	57	0	302	88	617	0	0	482	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	57	0	302	88	617	0	0	482	115
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	13.5	47.5			34.0	34.0
Total Split (%)				32.1%		32.1%	19.3%	67.9%			48.6%	48.6%
Maximum Green (s)				18.0		18.0	9.0	43.0			29.5	29.5
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				8.6		8.4	8.3	52.6			41.8	41.8
Actuated g/C Ratio				0.12		0.12	0.12	0.75			0.60	0.60
v/c Ratio				0.26		0.67	0.42	0.44			0.43	0.12
Control Delay				29.3		12.0	23.5	1.1			11.1	2.9
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				29.3		12.0	23.5	1.1			11.1	2.9
LOS				C		B	C	A			B	A
Approach Delay					14.7			3.9			9.5	
Approach LOS					B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 16 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp



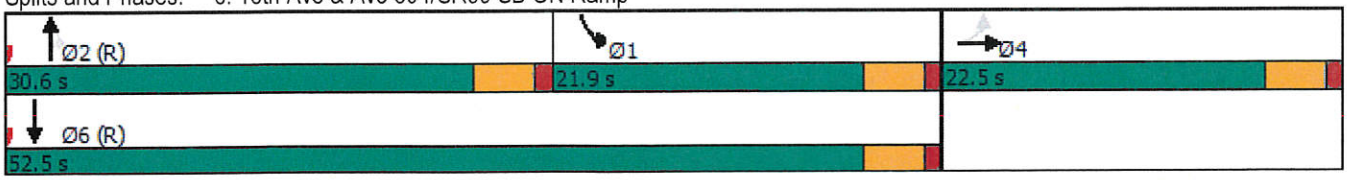


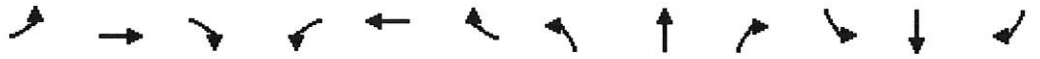
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	9	16	0	0	0	0	481	108	288	407	0
Future Volume (vph)	111	9	16	0	0	0	0	481	108	288	407	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.906							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1688	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1688	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17							115			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	121	10	17	0	0	0	0	523	117	313	442	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	27	0	0	0	0	0	523	117	313	442	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						30.6	30.6	21.9	52.5	
Total Split (%)	30.0%	30.0%						40.8%	40.8%	29.2%	70.0%	
Maximum Green (s)	18.0	18.0						26.1	26.1	17.4	48.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	10.4	10.4						35.9	35.9	17.4	58.7	
Actuated g/C Ratio	0.14	0.14						0.48	0.48	0.23	0.78	
v/c Ratio	0.49	0.11						0.59	0.14	0.76	0.30	
Control Delay	36.0	17.0						19.4	3.8	32.0	0.8	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	36.0	17.0						19.4	3.8	32.0	0.8	
LOS	D	B						B	A	C	A	
Approach Delay		32.5						16.6			13.7	
Approach LOS		C						B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp





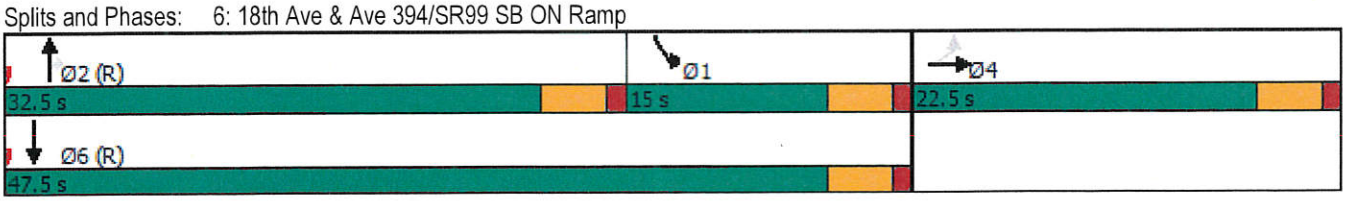
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	16	6	0	0	0	0	548	124	184	311	0
Future Volume (vph)	101	16	6	0	0	0	0	548	124	184	311	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7							135			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	17	7	0	0	0	0	596	135	200	338	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	24	0	0	0	0	0	596	135	200	338	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

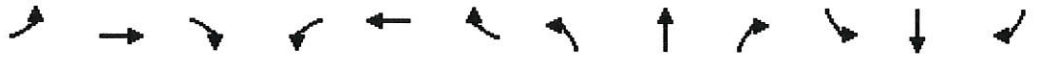
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						32.5	32.5	15.0	47.5	
Total Split (%)	32.1%	32.1%						46.4%	46.4%	21.4%	67.9%	
Maximum Green (s)	18.0	18.0						28.0	28.0	10.5	43.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	9.7	9.7						38.4	38.4	10.5	54.3	
Actuated g/C Ratio	0.14	0.14						0.55	0.55	0.15	0.78	
v/c Ratio	0.45	0.10						0.58	0.15	0.75	0.23	
Control Delay	32.9	20.6						15.0	2.6	40.5	0.8	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	32.9	20.6						15.0	2.6	40.5	0.8	
LOS	C	C						B	A	D	A	
Approach Delay		30.7						12.8			15.5	
Approach LOS		C						B			B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 16 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 15.5 Intersection LOS: B
Intersection Capacity Utilization 55.9% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



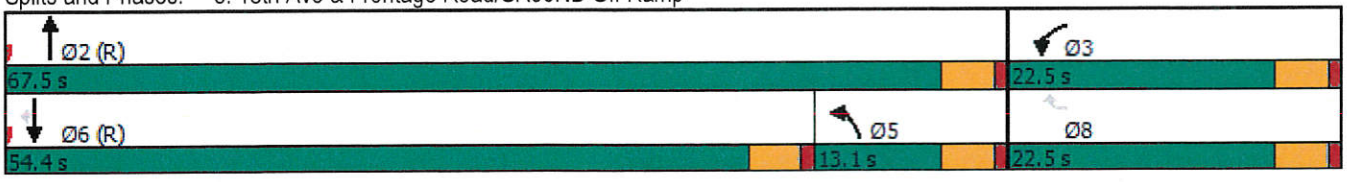


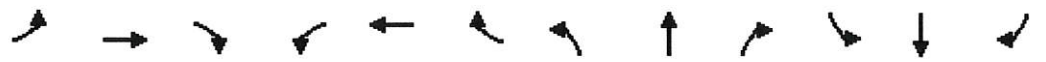
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	77	0	257	100	635	0	0	787	186
Future Volume (vph)	0	0	0	77	0	257	100	635	0	0	787	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						279						106
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	84	0	279	109	690	0	0	855	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	84	0	279	109	690	0	0	855	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	13.1	67.5			54.4	54.4
Total Split (%)				25.0%		25.0%	14.6%	75.0%			60.4%	60.4%
Maximum Green (s)				18.0		18.0	8.6	63.0			49.9	49.9
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				9.8		9.8	8.6	71.2			58.1	58.1
Actuated g/C Ratio				0.11		0.11	0.10	0.79			0.65	0.65
v/c Ratio				0.44		0.66	0.64	0.47			0.71	0.19
Control Delay				43.5		12.9	46.5	0.8			15.4	4.0
Queue Delay				0.0		0.0	0.0	0.2			0.0	0.0
Total Delay				43.5		12.9	46.5	1.0			15.4	4.0
LOS				D		B	D	A			B	A
Approach Delay					20.0			7.2			13.3	
Approach LOS					B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, 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 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp





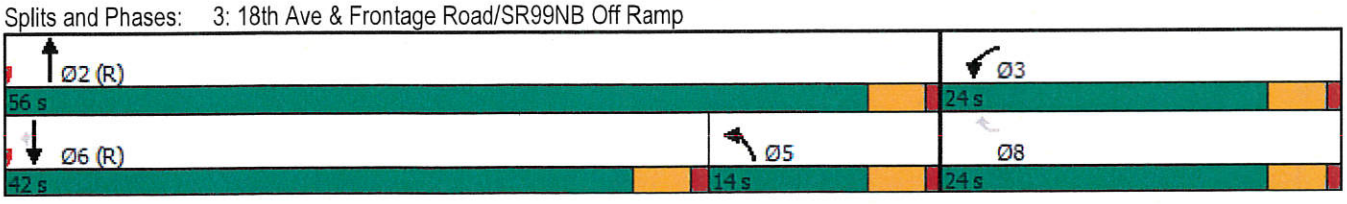
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	65	0	346	100	706	0	0	550	131
Future Volume (vph)	0	0	0	65	0	346	100	706	0	0	550	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						230						101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	71	0	376	109	767	0	0	598	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	71	0	376	109	767	0	0	598	142
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

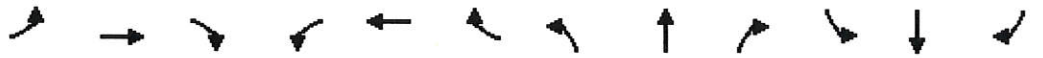
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				24.0		24.0	14.0	56.0			42.0	42.0
Total Split (%)				30.0%		30.0%	17.5%	70.0%			52.5%	52.5%
Maximum Green (s)				19.5		19.5	9.5	51.5			37.5	37.5
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				13.3		13.3	8.9	57.7			46.5	46.5
Actuated g/C Ratio				0.17		0.17	0.11	0.72			0.58	0.58
v/c Ratio				0.24		0.83	0.56	0.57			0.55	0.15
Control Delay				28.5		27.8	29.9	1.6			15.5	4.6
Queue Delay				0.0		0.0	0.0	0.1			0.0	0.0
Total Delay				28.5		27.8	29.9	1.7			15.5	4.6
LOS				C		C	C	A			B	A
Approach Delay					27.9			5.2			13.4	
Approach LOS					C			A			B	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 16 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 66.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp





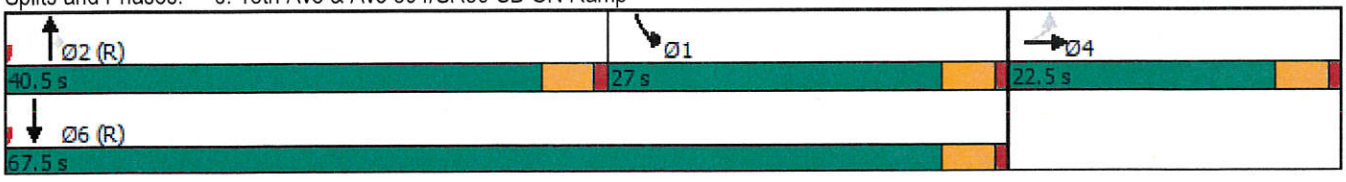
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	11	20	0	0	0	0	597	134	359	505	0
Future Volume (vph)	138	11	20	0	0	0	0	597	134	359	505	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.903							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1682	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1682	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22							105			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	12	22	0	0	0	0	649	146	390	549	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	34	0	0	0	0	0	649	146	390	549	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						40.5	40.5	27.0	67.5	
Total Split (%)	25.0%	25.0%						45.0%	45.0%	30.0%	75.0%	
Maximum Green (s)	18.0	18.0						36.0	36.0	22.5	63.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	12.9	12.9						41.1	41.1	22.5	68.1	
Actuated g/C Ratio	0.14	0.14						0.46	0.46	0.25	0.76	
v/c Ratio	0.59	0.13						0.76	0.19	0.88	0.39	
Control Delay	45.3	18.3						28.9	6.4	43.1	1.0	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	45.3	18.3						28.9	6.4	43.1	1.0	
LOS	D	B						C	A	D	A	
Approach Delay		40.3						24.8			18.5	
Approach LOS		D						C			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 23.2 Intersection LOS: C
Intersection Capacity Utilization 70.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



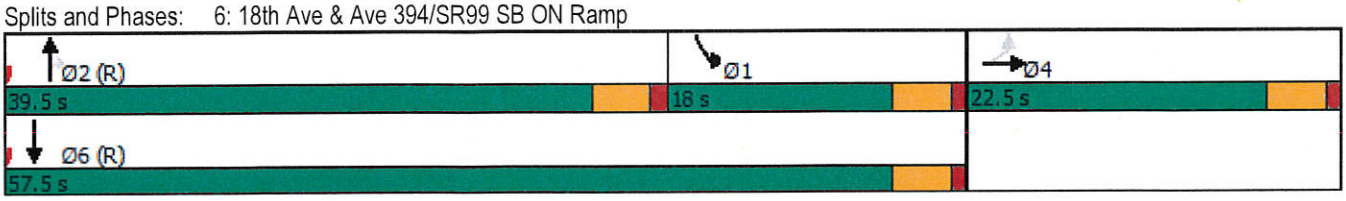
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	20	8	0	0	0	0	681	155	229	386	0
Future Volume (vph)	125	20	8	0	0	0	0	681	155	229	386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9							127			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	22	9	0	0	0	0	740	168	249	420	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	31	0	0	0	0	0	740	168	249	420	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						39.5	39.5	18.0	57.5	
Total Split (%)	28.1%	28.1%						49.4%	49.4%	22.5%	71.9%	
Maximum Green (s)	18.0	18.0						35.0	35.0	13.5	53.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	11.4	11.4						41.6	41.6	13.5	59.6	
Actuated g/C Ratio	0.14	0.14						0.52	0.52	0.17	0.74	
v/c Ratio	0.54	0.12						0.76	0.19	0.84	0.30	
Control Delay	39.2	23.0						23.2	4.4	45.7	0.9	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	39.2	23.0						23.2	4.4	45.7	0.9	
LOS	D	C						C	A	D	A	
Approach Delay		36.2						19.8			17.6	
Approach LOS		D						B			B	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 16 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 66.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



Mendocino Avenue Intersections

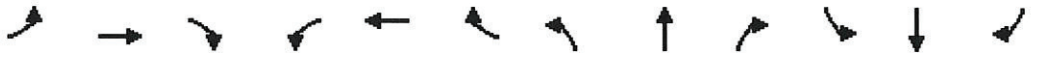
Alternative 5

Cul-de-sac Avenue 394/SB off-ramp and frontage Road/ NB on-ramp and Signalized intersections at SB on and NB off Ramps Terminals

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

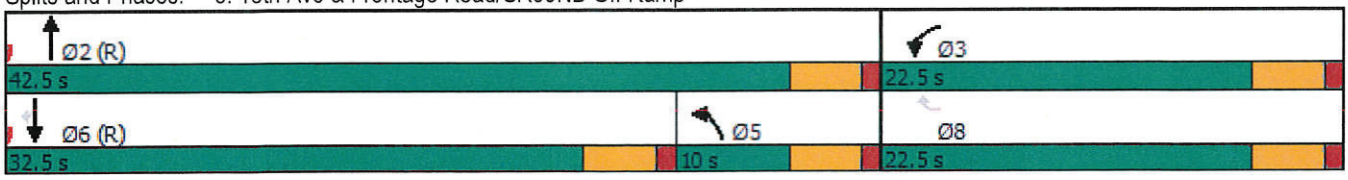


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	50	0	166	65	411	0	0	509	127
Future Volume (vph)	0	0	0	50	0	166	65	411	0	0	509	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						180						121
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	54	0	180	71	447	0	0	553	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	54	0	180	71	447	0	0	553	138
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	10.0	42.5			32.5	32.5
Total Split (%)				34.6%		34.6%	15.4%	65.4%			50.0%	50.0%
Maximum Green (s)				18.0		18.0	5.5	38.0			28.0	28.0
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				7.8		7.6	5.5	48.4			42.4	42.4
Actuated g/C Ratio				0.12		0.12	0.08	0.74			0.65	0.65
v/c Ratio				0.26		0.52	0.48	0.32			0.46	0.13
Control Delay				28.1		10.6	28.0	0.7			8.8	2.4
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				28.1		10.6	28.0	0.7			8.8	2.4
LOS				C		B	C	A			A	A
Approach Delay					14.6			4.5			7.5	
Approach LOS					B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 61 (94%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.6		Intersection LOS: A	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp



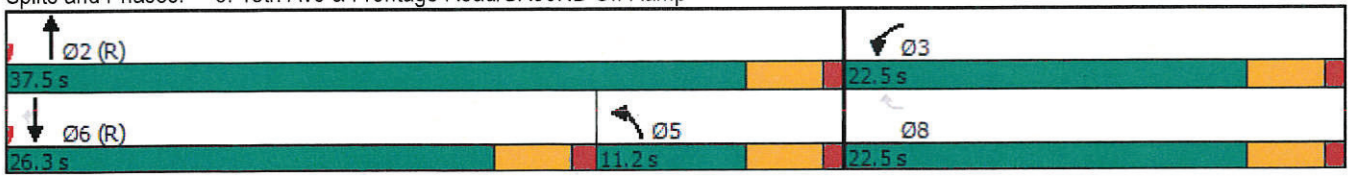
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	42	0	224	65	457	0	0	356	85
Future Volume (vph)	0	0	0	42	0	224	65	457	0	0	356	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						243						109
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	46	0	243	71	497	0	0	387	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	46	0	243	71	497	0	0	387	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	11.2	37.5			26.3	26.3
Total Split (%)				37.5%		37.5%	18.7%	62.5%			43.8%	43.8%
Maximum Green (s)				18.0		18.0	6.7	33.0			21.8	21.8
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				7.7		7.4	6.4	43.6			36.9	36.9
Actuated g/C Ratio				0.13		0.12	0.11	0.73			0.62	0.62
v/c Ratio				0.20		0.60	0.38	0.37			0.34	0.09
Control Delay				24.2		10.3	21.6	1.1			8.7	2.0
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				24.2		10.3	21.6	1.1			8.7	2.0
LOS				C		B	C	A			A	A
Approach Delay					12.5			3.7			7.4	
Approach LOS					B			A			A	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 18 (30%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 6.9 Intersection LOS: A
Intersection Capacity Utilization 47.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp



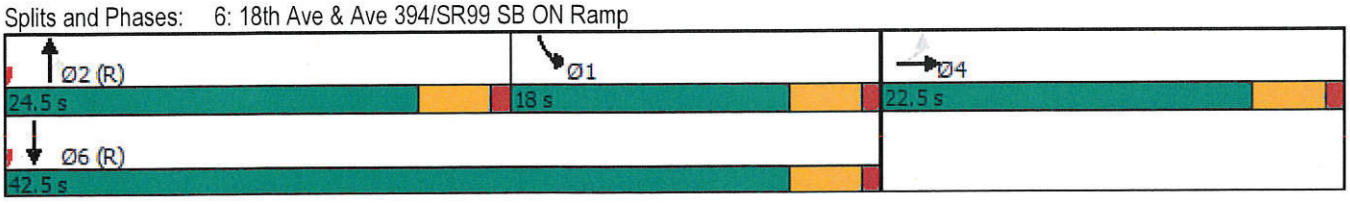
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	7	13	0	0	0	0	387	87	232	327	0
Future Volume (vph)	89	7	13	0	0	0	0	387	87	232	327	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.905							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1686	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1686	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14							101			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	8	14	0	0	0	0	421	95	252	355	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	22	0	0	0	0	0	421	95	252	355	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						24.5	24.5	18.0	42.5	
Total Split (%)	34.6%	34.6%						37.7%	37.7%	27.7%	65.4%	
Maximum Green (s)	18.0	18.0						20.0	20.0	13.5	38.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	8.9	8.9						31.1	31.1	13.5	50.0	
Actuated g/C Ratio	0.14	0.14						0.48	0.48	0.21	0.77	
v/c Ratio	0.40	0.09						0.47	0.12	0.69	0.25	
Control Delay	29.8	15.6						15.3	3.3	28.7	1.3	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	29.8	15.6						15.3	3.3	28.7	1.3	
LOS	C	B						B	A	C	A	
Approach Delay		27.2						13.1			12.7	
Approach LOS		C						B			B	

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 65
Offset: 64 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 49.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp





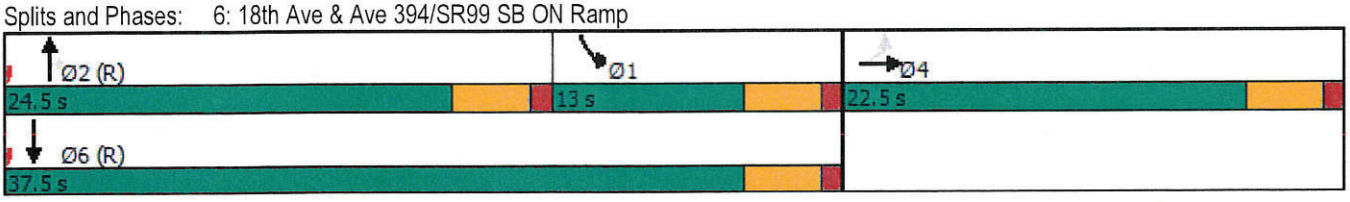
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	13	5	0	0	0	0	441	100	148	250	0
Future Volume (vph)	81	13	5	0	0	0	0	441	100	148	250	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1790	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1790	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5							109			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	14	5	0	0	0	0	479	109	161	272	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	19	0	0	0	0	0	479	109	161	272	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						24.5	24.5	13.0	37.5	
Total Split (%)	37.5%	37.5%						40.8%	40.8%	21.7%	62.5%	
Maximum Green (s)	18.0	18.0						20.0	20.0	8.5	33.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	8.4	8.4						35.1	35.1	8.2	45.5	
Actuated g/C Ratio	0.14	0.14						0.58	0.58	0.14	0.76	
v/c Ratio	0.36	0.07						0.44	0.11	0.67	0.19	
Control Delay	26.7	18.8						11.9	2.8	33.4	1.8	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	26.7	18.8						11.9	2.8	33.4	1.8	
LOS	C	B						B	A	C	A	
Approach Delay		25.3						10.2			13.5	
Approach LOS		C						B			B	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 12.9 Intersection LOS: B
Intersection Capacity Utilization 47.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



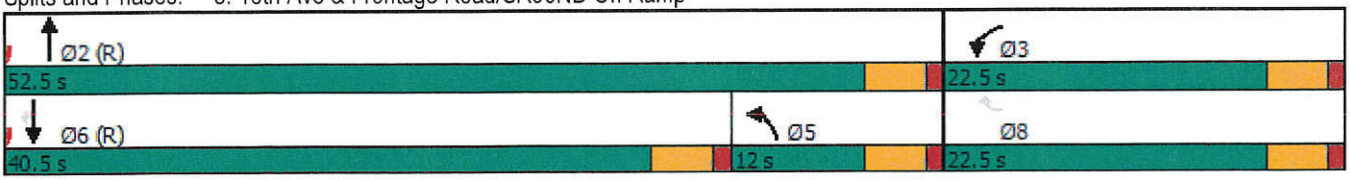


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	62	0	206	81	511	0	0	633	158
Future Volume (vph)	0	0	0	62	0	206	81	511	0	0	633	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						224						115
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	67	0	224	88	555	0	0	688	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	67	0	224	88	555	0	0	688	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	12.0	52.5			40.5	40.5
Total Split (%)				30.0%		30.0%	16.0%	70.0%			54.0%	54.0%
Maximum Green (s)				18.0		18.0	7.5	48.0			36.0	36.0
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				8.5		8.5	7.1	57.5			47.9	47.9
Actuated g/C Ratio				0.11		0.11	0.09	0.77			0.64	0.64
v/c Ratio				0.33		0.59	0.52	0.39			0.58	0.16
Control Delay				34.1		11.5	32.1	0.8			11.8	3.3
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				34.1		11.5	32.1	0.8			11.8	3.3
LOS				C		B	C	A			B	A
Approach Delay					16.7			5.1			10.1	
Approach LOS					B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 72 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp

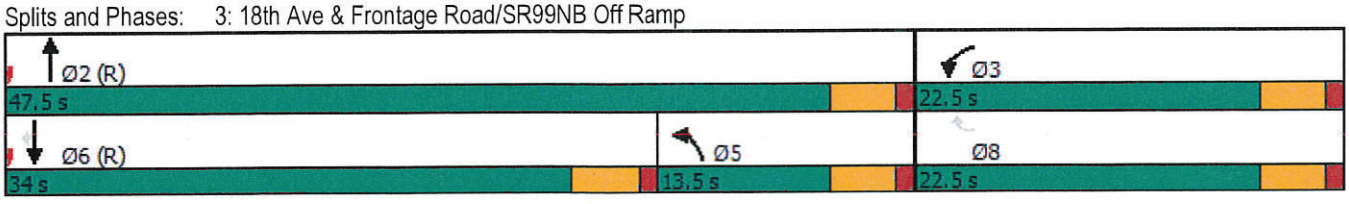


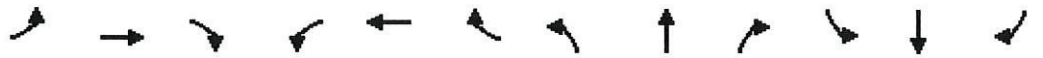
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	52	0	278	81	568	0	0	443	106
Future Volume (vph)	0	0	0	52	0	278	81	568	0	0	443	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						296						106
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	57	0	302	88	617	0	0	482	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	57	0	302	88	617	0	0	482	115
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	13.5	47.5			34.0	34.0
Total Split (%)				32.1%		32.1%	19.3%	67.9%			48.6%	48.6%
Maximum Green (s)				18.0		18.0	9.0	43.0			29.5	29.5
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				8.6		8.4	8.3	52.6			41.8	41.8
Actuated g/C Ratio				0.12		0.12	0.12	0.75			0.60	0.60
v/c Ratio				0.26		0.67	0.42	0.44			0.43	0.12
Control Delay				29.3		12.0	23.5	1.1			11.1	2.9
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				29.3		12.0	23.5	1.1			11.1	2.9
LOS				C		B	C	A			B	A
Approach Delay					14.7			3.9			9.5	
Approach LOS					B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 16 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp



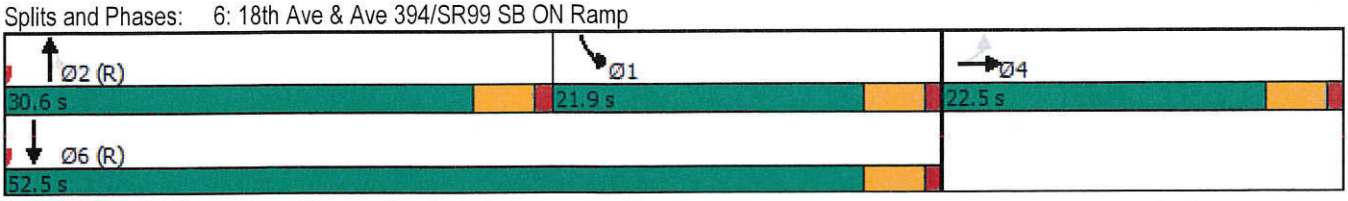


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	9	16	0	0	0	0	481	108	288	407	0
Future Volume (vph)	111	9	16	0	0	0	0	481	108	288	407	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.906							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1688	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1688	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17							115			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	121	10	17	0	0	0	0	523	117	313	442	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	27	0	0	0	0	0	523	117	313	442	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						30.6	30.6	21.9	52.5	
Total Split (%)	30.0%	30.0%						40.8%	40.8%	29.2%	70.0%	
Maximum Green (s)	18.0	18.0						26.1	26.1	17.4	48.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	10.4	10.4						35.9	35.9	17.4	58.7	
Actuated g/C Ratio	0.14	0.14						0.48	0.48	0.23	0.78	
v/c Ratio	0.49	0.11						0.59	0.14	0.76	0.30	
Control Delay	36.0	17.0						19.4	3.8	32.0	0.8	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	36.0	17.0						19.4	3.8	32.0	0.8	
LOS	D	B						B	A	C	A	
Approach Delay		32.5						16.6			13.7	
Approach LOS		C						B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



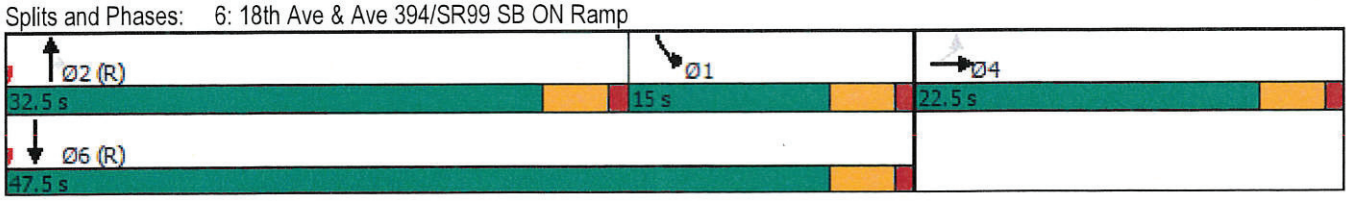
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	16	6	0	0	0	0	548	124	184	311	0
Future Volume (vph)	101	16	6	0	0	0	0	548	124	184	311	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7							135			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	17	7	0	0	0	0	596	135	200	338	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	24	0	0	0	0	0	596	135	200	338	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						32.5	32.5	15.0	47.5	
Total Split (%)	32.1%	32.1%						46.4%	46.4%	21.4%	67.9%	
Maximum Green (s)	18.0	18.0						28.0	28.0	10.5	43.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	9.7	9.7						38.4	38.4	10.5	54.3	
Actuated g/C Ratio	0.14	0.14						0.55	0.55	0.15	0.78	
v/c Ratio	0.45	0.10						0.58	0.15	0.75	0.23	
Control Delay	32.9	20.6						15.0	2.6	40.5	0.8	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	32.9	20.6						15.0	2.6	40.5	0.8	
LOS	C	C						B	A	D	A	
Approach Delay		30.7						12.8			15.5	
Approach LOS		C						B			B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 16 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 15.5 Intersection LOS: B
Intersection Capacity Utilization 55.9% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp

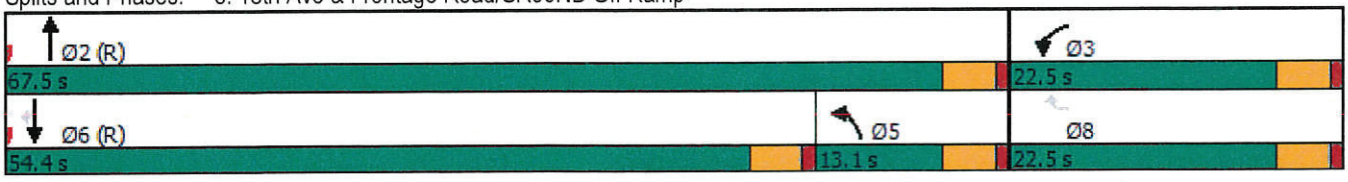


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	77	0	257	100	635	0	0	787	186
Future Volume (vph)	0	0	0	77	0	257	100	635	0	0	787	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						279						106
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	84	0	279	109	690	0	0	855	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	84	0	279	109	690	0	0	855	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				22.5		22.5	13.1	67.5			54.4	54.4
Total Split (%)				25.0%		25.0%	14.6%	75.0%			60.4%	60.4%
Maximum Green (s)				18.0		18.0	8.6	63.0			49.9	49.9
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				9.8		9.8	8.6	71.2			58.1	58.1
Actuated g/C Ratio				0.11		0.11	0.10	0.79			0.65	0.65
v/c Ratio				0.44		0.66	0.64	0.47			0.71	0.19
Control Delay				43.5		12.9	46.5	0.8			15.4	4.0
Queue Delay				0.0		0.0	0.0	0.2			0.0	0.0
Total Delay				43.5		12.9	46.5	1.0			15.4	4.0
LOS				D		B	D	A			B	A
Approach Delay					20.0			7.2			13.3	
Approach LOS					B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, 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 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp



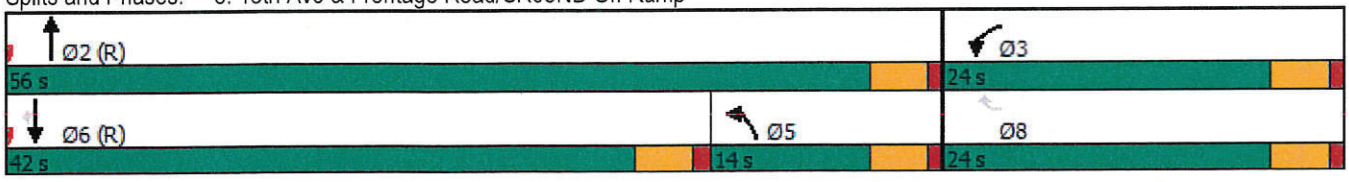
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	65	0	346	100	706	0	0	550	131
Future Volume (vph)	0	0	0	65	0	346	100	706	0	0	550	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	100		0	100		0	0		100
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	1770	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						230						101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		700			1631			671			641	
Travel Time (s)		15.9			37.1			15.3			14.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	71	0	376	109	767	0	0	598	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	71	0	376	109	767	0	0	598	142
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1		1	1	2			2	1
Detector Template				Left		Right	Left	Thru			Thru	Right
Leading Detector (ft)				20		20	20	100			100	20
Trailing Detector (ft)				0		0	0	0			0	0
Detector 1 Position(ft)				0		0	0	0			0	0
Detector 1 Size(ft)				20		20	20	6			6	20
Detector 1 Type				Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0		0.0	0.0	0.0			0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type				Prot		Perm	Prot	NA			NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases						8						6

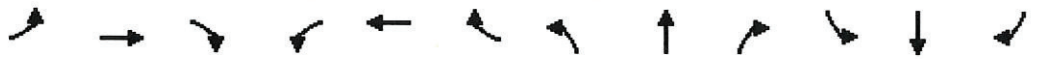
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				3		8	5	2			6	6
Switch Phase												
Minimum Initial (s)				5.0		5.0	5.0	5.0			5.0	5.0
Minimum Split (s)				9.5		22.5	9.5	22.5			22.5	22.5
Total Split (s)				24.0		24.0	14.0	56.0			42.0	42.0
Total Split (%)				30.0%		30.0%	17.5%	70.0%			52.5%	52.5%
Maximum Green (s)				19.5		19.5	9.5	51.5			37.5	37.5
Yellow Time (s)				3.5		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)				1.0		1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)				4.5		4.5	4.5	4.5			4.5	4.5
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Recall Mode				None		None	None	C-Max			C-Max	C-Max
Walk Time (s)						7.0		7.0			7.0	7.0
Flash Dont Walk (s)						11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)						0		0			0	0
Act Effct Green (s)				13.3		13.3	8.9	57.7			46.5	46.5
Actuated g/C Ratio				0.17		0.17	0.11	0.72			0.58	0.58
v/c Ratio				0.24		0.83	0.56	0.57			0.55	0.15
Control Delay				28.5		27.8	29.9	1.6			15.5	4.6
Queue Delay				0.0		0.0	0.0	0.1			0.0	0.0
Total Delay				28.5		27.8	29.9	1.7			15.5	4.6
LOS				C		C	C	A			B	A
Approach Delay					27.9			5.2			13.4	
Approach LOS					C			A			B	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 16 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 66.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: 18th Ave & Frontage Road/SR99NB Off Ramp





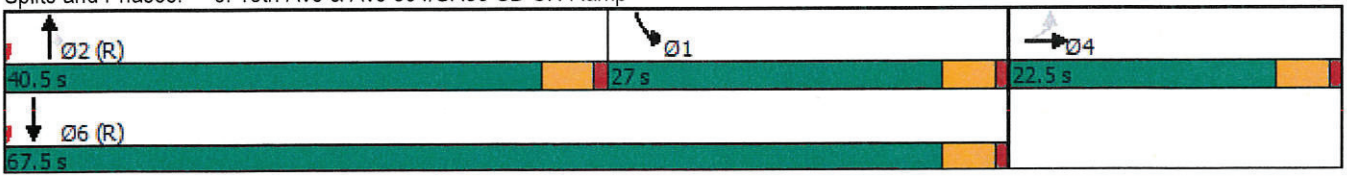
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	11	20	0	0	0	0	597	134	359	505	0
Future Volume (vph)	138	11	20	0	0	0	0	597	134	359	505	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.903							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1682	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1682	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22							105			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	12	22	0	0	0	0	649	146	390	549	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	34	0	0	0	0	0	649	146	390	549	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

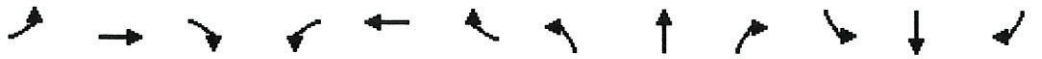
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						40.5	40.5	27.0	67.5	
Total Split (%)	25.0%	25.0%						45.0%	45.0%	30.0%	75.0%	
Maximum Green (s)	18.0	18.0						36.0	36.0	22.5	63.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	12.9	12.9						41.1	41.1	22.5	68.1	
Actuated g/C Ratio	0.14	0.14						0.46	0.46	0.25	0.76	
v/c Ratio	0.59	0.13						0.76	0.19	0.88	0.39	
Control Delay	45.3	18.3						28.9	6.4	43.1	1.0	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	45.3	18.3						28.9	6.4	43.1	1.0	
LOS	D	B						C	A	D	A	
Approach Delay		40.3						24.8			18.5	
Approach LOS		D						C			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 23.2 Intersection LOS: C
Intersection Capacity Utilization 70.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp





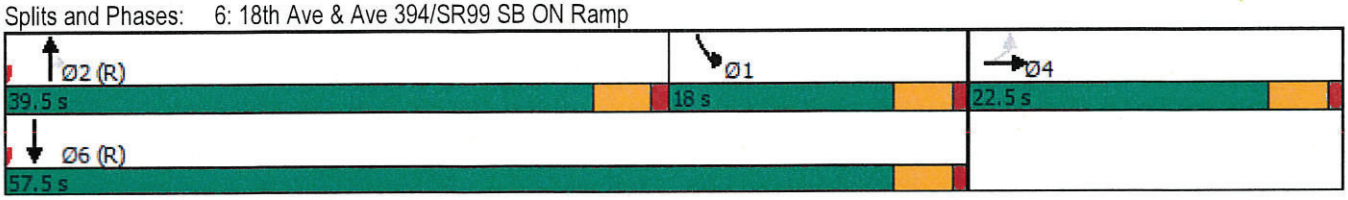
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	20	8	0	0	0	0	681	155	229	386	0
Future Volume (vph)	125	20	8	0	0	0	0	681	155	229	386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	100		150	100		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	1781	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9							127			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1706			1221			671	
Travel Time (s)		35.3			38.8			27.8			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	22	9	0	0	0	0	740	168	249	420	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	31	0	0	0	0	0	740	168	249	420	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5						22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5						39.5	39.5	18.0	57.5	
Total Split (%)	28.1%	28.1%						49.4%	49.4%	22.5%	71.9%	
Maximum Green (s)	18.0	18.0						35.0	35.0	13.5	53.0	
Yellow Time (s)	3.5	3.5						3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5						4.5	4.5	4.5	4.5	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Recall Mode	None	None						C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0						11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)	11.4	11.4						41.6	41.6	13.5	59.6	
Actuated g/C Ratio	0.14	0.14						0.52	0.52	0.17	0.74	
v/c Ratio	0.54	0.12						0.76	0.19	0.84	0.30	
Control Delay	39.2	23.0						23.2	4.4	45.7	0.9	
Queue Delay	0.0	0.0						0.0	0.0	0.0	0.0	
Total Delay	39.2	23.0						23.2	4.4	45.7	0.9	
LOS	D	C						C	A	D	A	
Approach Delay		36.2						19.8			17.6	
Approach LOS		D						B			B	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 16 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 66.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: 18th Ave & Ave 394/SR99 SB ON Ramp



Mendocino Avenue Intersections

Alternative 6

Cul-de-sac Avenue 394 to eliminate access to SB off-ramp and cul-de-sac frontage Road to eliminate access to NB on-ramp and construct Roundabouts at the intersections SB on and NB off Ramps Terminals

2025 Level of Service Reports

2035 Level of Service Reports

2045 Level of Service Reports

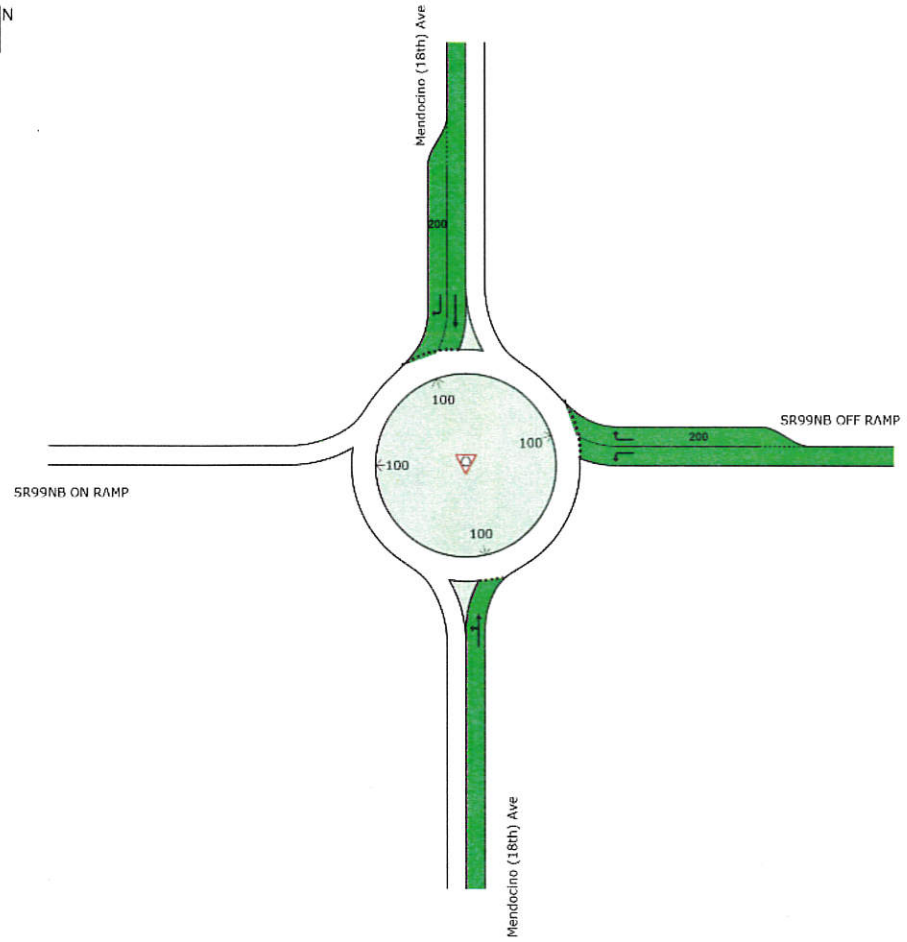
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99NB-2025-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	North	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99NB-2025-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	517	3.0	1340	0.386	100	6.3	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	517	3.0		0.386		6.3	LOS A	0.0	0.0				
East: SR99NB OFF RAMP													
Lane 1	54	3.0	849	0.064	100	4.9	LOS A	0.2	6.0	Full	1600	0.0	0.0
Lane 2[d]	180	3.0	849	0.213	100	6.4	LOS A	0.9	21.9	Short	200	0.0	NA
Approach	235	3.0		0.213		6.1	LOS A	0.9	21.9				
North: Mendocino (18th) Ave													
Lane 1[d]	553	3.0	1226	0.451	100	7.6	LOS A	2.7	69.8	Full	700	0.0	0.0
Lane 2	138	3.0	1226	0.113	100	3.9	LOS A	0.5	11.8	Short	200	0.0	NA
Approach	691	3.0		0.451		6.8	LOS A	2.7	69.8				
Intersection	1443	3.0		0.451		6.5	LOS A	2.7	69.8				

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

d Dominant lane on roundabout approach

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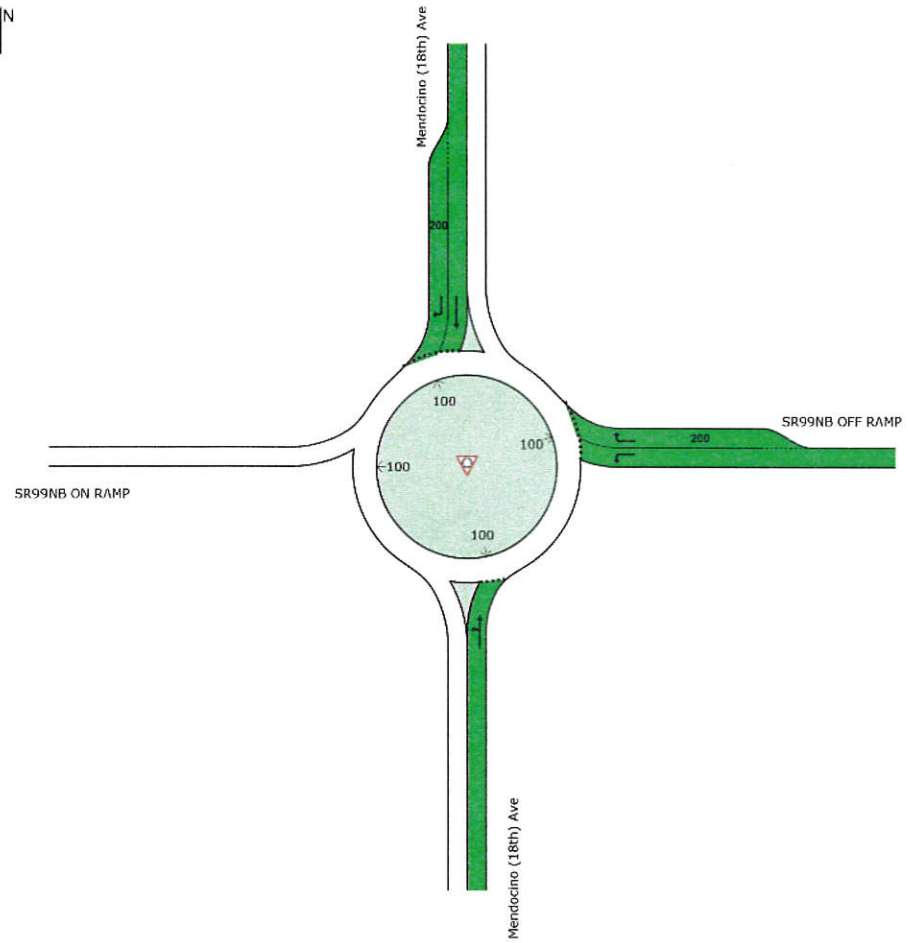
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99NB-2025-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	North	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99NB-2025-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	567	3.0	1340	0.423	100	6.8	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	567	3.0		0.423		6.8	LOS A	0.0	0.0				
East: SR99NB OFF RAMP													
Lane 1	46	3.0	810	0.056	100	5.0	LOS A	0.2	5.2	Full	1600	0.0	0.0
Lane 2[d]	243	3.0	810	0.301	100	7.8	LOS A	1.3	32.5	Short	200	0.0	NA
Approach	289	3.0		0.301		7.4	LOS A	1.3	32.5				
North: Mendocino (18th) Ave													
Lane 1[d]	387	3.0	1236	0.313	100	5.8	LOS A	1.6	40.7	Full	700	0.0	0.0
Lane 2	92	3.0	1236	0.075	100	3.5	LOS A	0.3	7.6	Short	200	0.0	NA
Approach	479	3.0		0.313		5.4	LOS A	1.6	40.7				
Intersection	1336	3.0		0.423		6.4	LOS A	1.6	40.7				

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

d Dominant lane on roundabout approach

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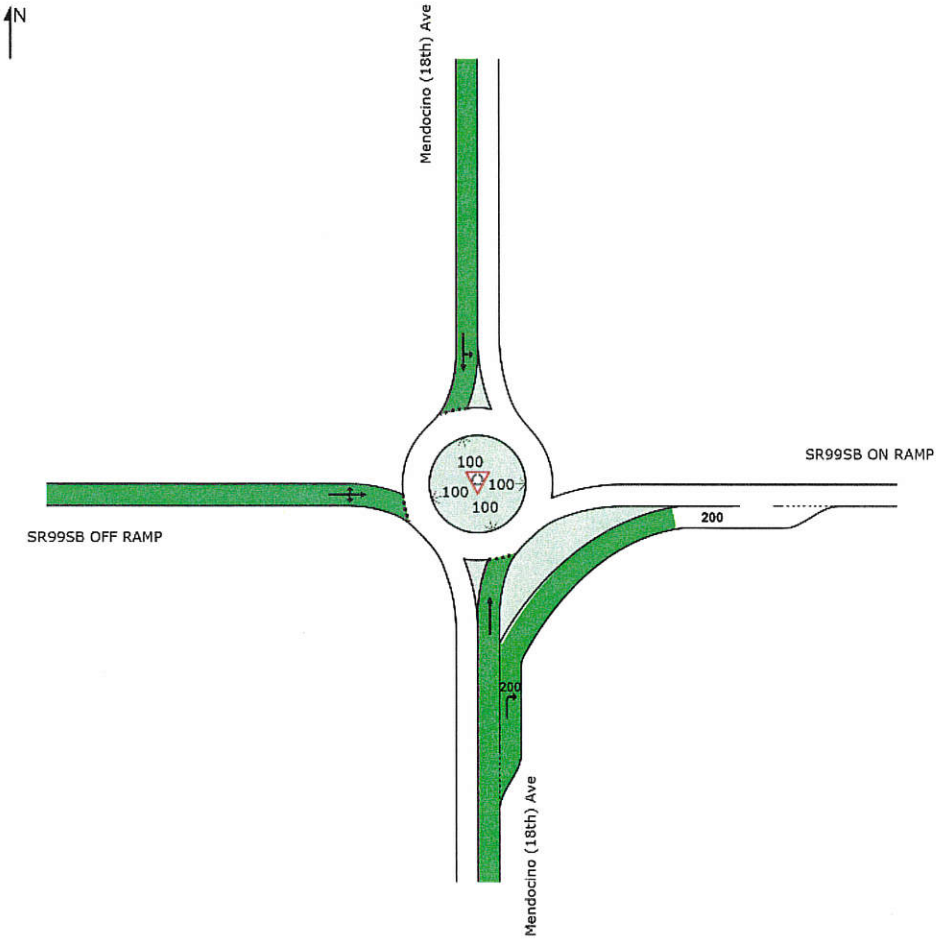
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99SB-2025-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99SB-2025-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	421	3.0	987	0.426	100	8.5	LOS A	2.2	55.7	Full	700	0.0	0.0
Lane 2	95	3.0	1626	0.058	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	515	3.0		0.426		6.9	LOS A	2.2	55.7				
North: Mendocino (18th) Ave													
Lane 1[d]	608	3.0	1340	0.454	100	7.2	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	608	3.0		0.454		7.2	LOS A	0.0	0.0				
West: SR99SB OFF RAMP													
Lane 1[d]	118	3.0	708	0.167	100	6.9	LOS A	0.7	17.3	Full	1600	0.0	0.0
Approach	118	3.0		0.167		6.9	LOS A	0.7	17.3				
Intersection	1241	3.0		0.454		7.0	LOS A	2.2	55.7				

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

d Dominant lane on roundabout approach

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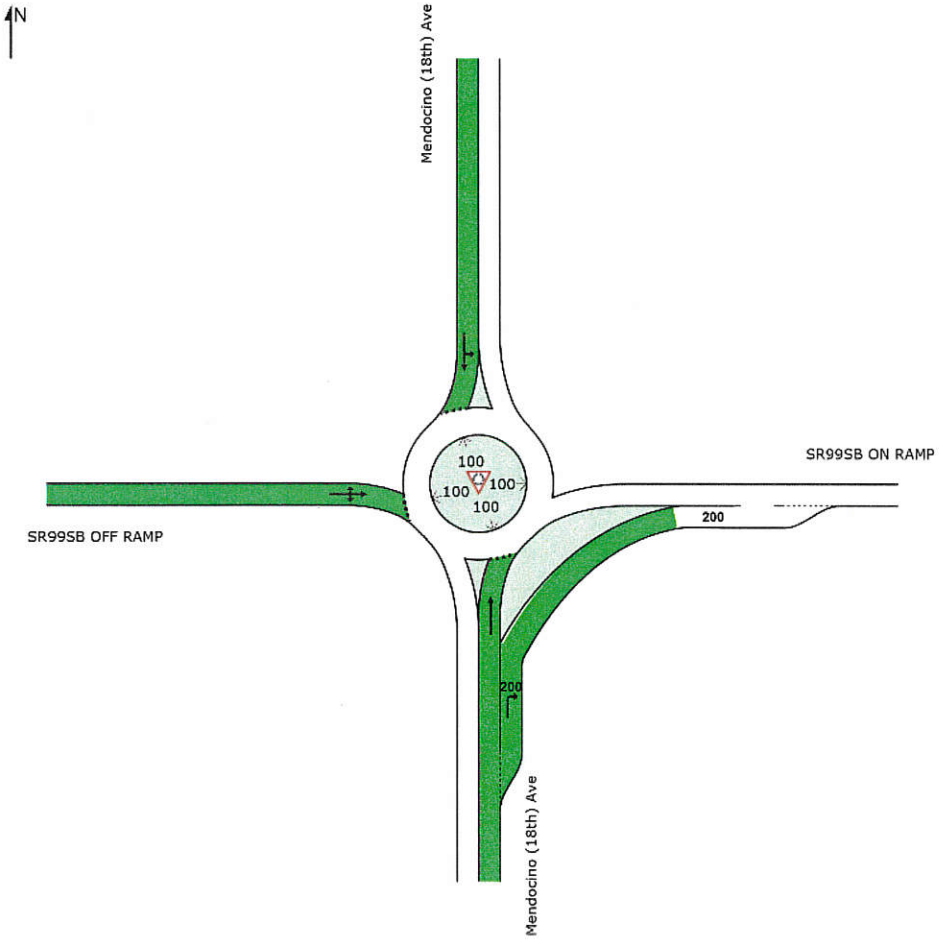
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99SB-2025-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99SB-2025-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	479	3.0	1077	0.445	100	8.2	LOS A	2.4	62.5	Full	700	0.0	0.0
Lane 2	109	3.0	1626	0.067	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	588	3.0		0.445		6.7	LOS A	2.4	62.5				
North: Mendocino (18th) Ave													
Lane 1[d]	433	3.0	1340	0.323	100	5.6	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	433	3.0		0.323		5.6	LOS A	0.0	0.0				
West: SR99SB OFF RAMP													
Lane 1[d]	108	3.0	850	0.127	100	5.5	LOS A	0.5	13.4	Full	1600	0.0	0.0
Approach	108	3.0		0.127		5.5	LOS A	0.5	13.4				
Intersection	1128	3.0		0.445		6.2	LOS A	2.4	62.5				

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

d Dominant lane on roundabout approach

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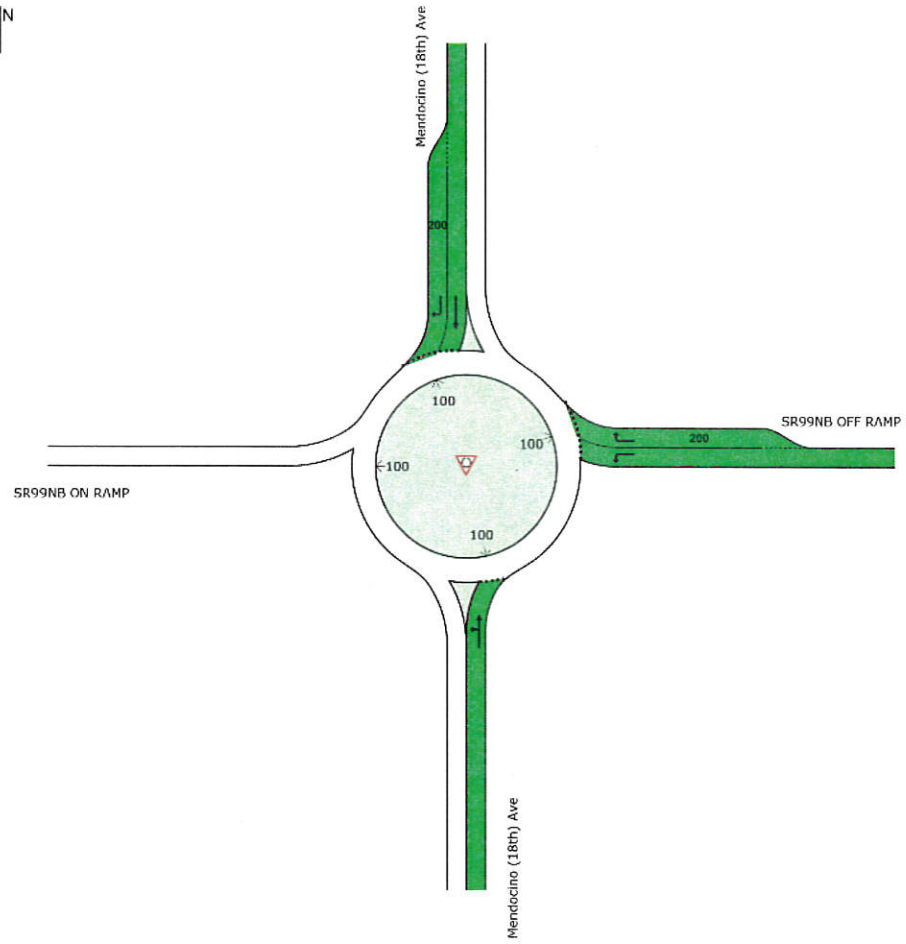
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99NB-2035-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	North	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99NB-2035-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	643	3.0	1340	0.480	100	7.5	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	643	3.0		0.480		7.5	LOS A	0.0	0.0				
East: SR99NB OFF RAMP													
Lane 1	67	3.0	754	0.089	100	5.7	LOS A	0.3	8.3	Full	1600	0.0	0.0
Lane 2[d]	224	3.0	754	0.297	100	8.3	LOS A	1.2	31.3	Short	200	0.0	NA
Approach	291	3.0		0.297		7.7	LOS A	1.2	31.3				
North: Mendocino (18th) Ave													
Lane 1[d]	688	3.0	1192	0.577	100	9.9	LOS A	4.1	105.5	Full	700	0.0	0.0
Lane 2	172	3.0	1192	0.144	100	4.2	LOS A	0.6	15.4	Short	200	0.0	NA
Approach	860	3.0		0.577		8.8	LOS A	4.1	105.5				
Intersection	1795	3.0		0.577		8.2	LOS A	4.1	105.5				

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

d Dominant lane on roundabout approach

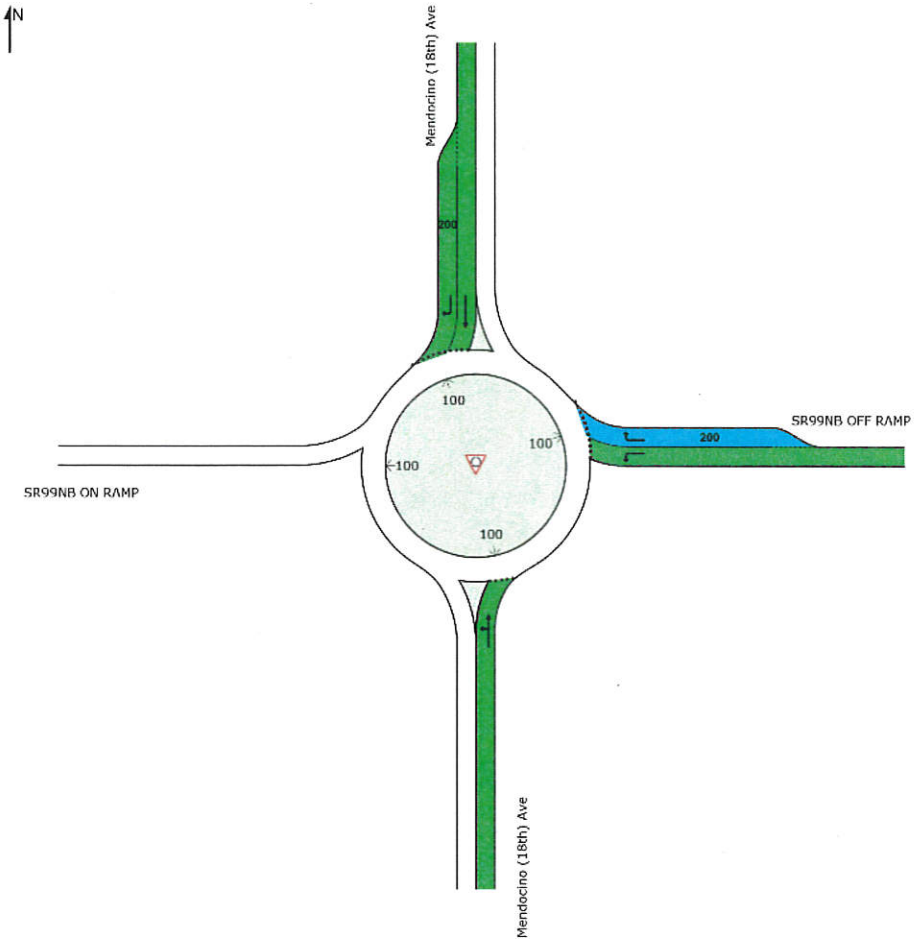
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99NB-2035-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	North	
LOS	A	B	A	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99NB-2035-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	705	3.0	1340	0.527	100	8.3	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	705	3.0		0.527		8.3	LOS A	0.0	0.0				
East: SR99NB OFF RAMP													
Lane 1	57	3.0	712	0.079	100	5.9	LOS A	0.3	7.3	Full	1600	0.0	0.0
Lane 2[d]	302	3.0	712	0.425	100	10.9	LOS B	2.2	57.2	Short	200	0.0	NA
Approach	359	3.0		0.425		10.1	LOS B	2.2	57.2				
North: Mendocino (18th) Ave													
Lane 1[d]	482	3.0	1204	0.400	100	7.0	LOS A	2.2	57.1	Full	700	0.0	0.0
Lane 2	115	3.0	1204	0.096	100	3.8	LOS A	0.4	9.8	Short	200	0.0	NA
Approach	597	3.0		0.400		6.4	LOS A	2.2	57.1				
Intersection	1661	3.0		0.527		8.0	LOS A	2.2	57.2				

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

d Dominant lane on roundabout approach

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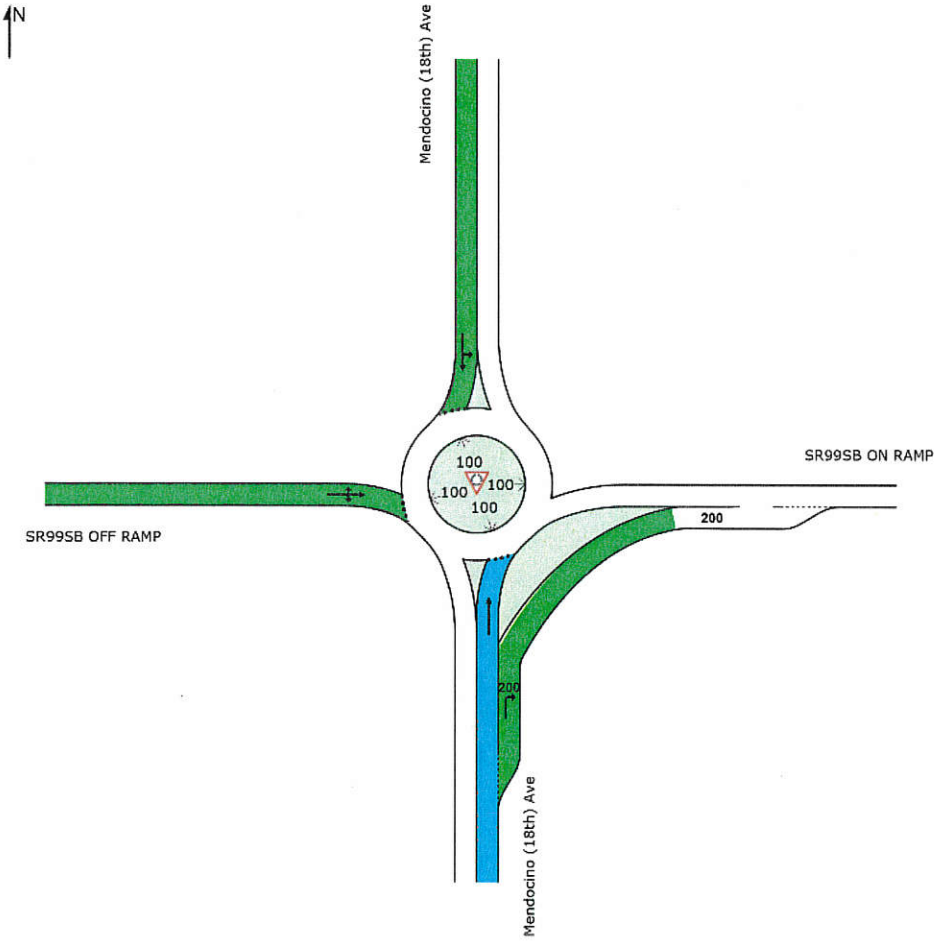
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99SB-2035-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99SB-2035-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	523	3.0	910	0.575	100	12.0	LOS B	5.0	127.1	Full	700	0.0	0.0
Lane 2	117	3.0	1626	0.072	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	640	3.0		0.575		9.8	LOS A	5.0	127.1				
North: Mendocino (18th) Ave													
Lane 1[d]	754	3.0	1340	0.563	100	8.9	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	754	3.0		0.563		8.9	LOS A	0.0	0.0				
West: SR99SB OFF RAMP													
Lane 1[d]	148	3.0	607	0.244	100	9.1	LOS A	1.0	25.2	Full	1600	0.0	0.0
Approach	148	3.0		0.244		9.1	LOS A	1.0	25.2				
Intersection	1542	3.0		0.575		9.3	LOS A	5.0	127.1				

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

d Dominant lane on roundabout approach

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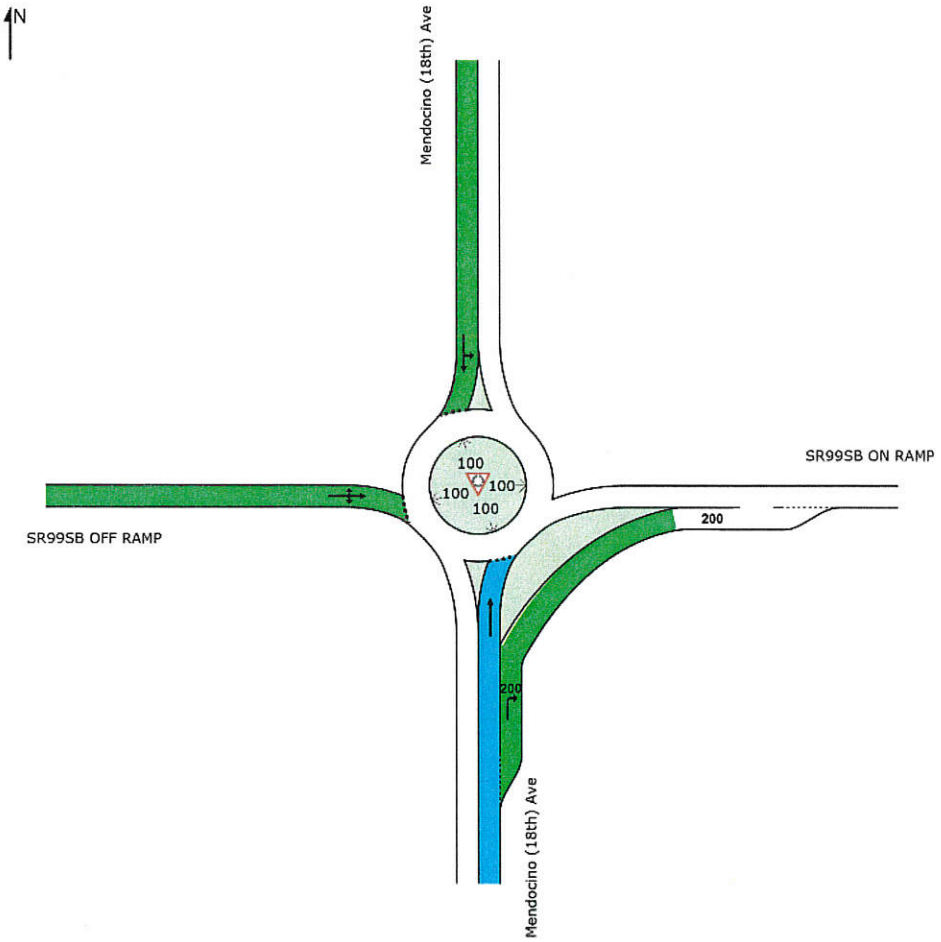
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99SB-2035-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99SB-2035-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	596	3.0	1015	0.587	100	11.4	LOS B	5.6	142.5	Full	700	0.0	0.0
Lane 2	135	3.0	1626	0.083	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	730	3.0		0.587		9.3	LOS A	5.6	142.5				
North: Mendocino (18th) Ave													
Lane 1[d]	538	3.0	1340	0.402	100	6.5	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	538	3.0		0.402		6.5	LOS A	0.0	0.0				
West: SR99SB OFF RAMP													
Lane 1[d]	134	3.0	761	0.176	100	6.6	LOS A	0.7	18.6	Full	1600	0.0	0.0
Approach	134	3.0		0.176		6.6	LOS A	0.7	18.6				
Intersection	1402	3.0		0.587		8.0	LOS A	5.6	142.5				

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

d Dominant lane on roundabout approach

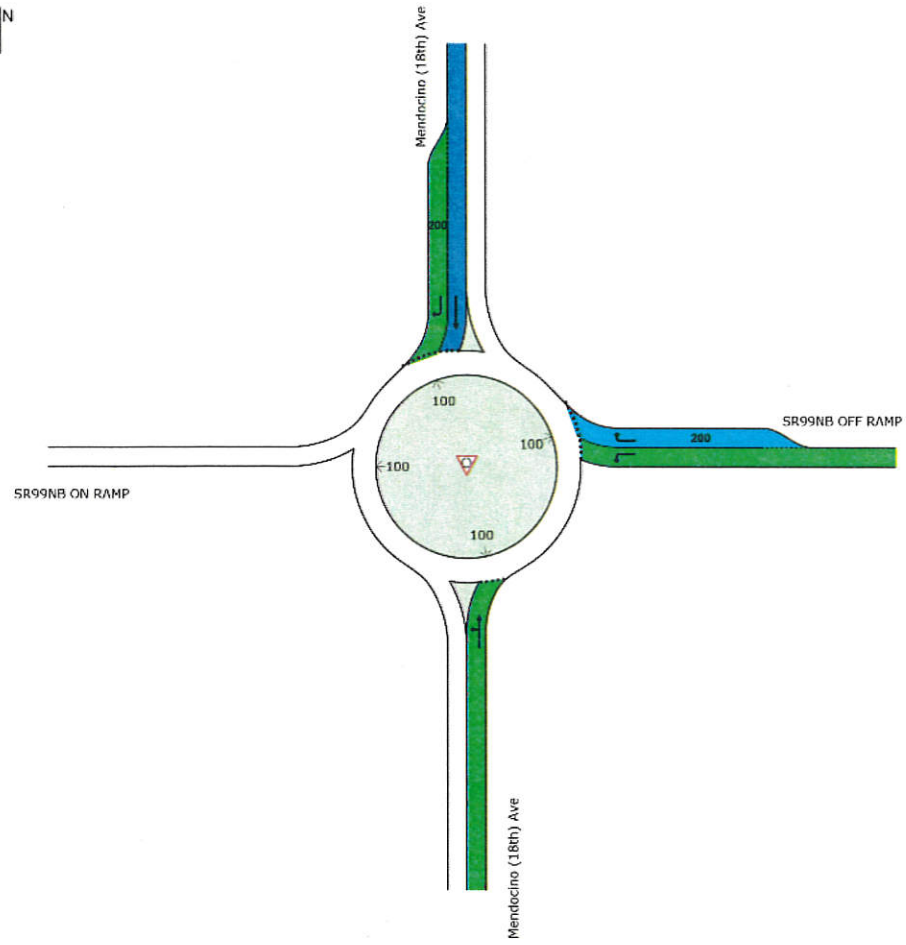
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99NB-2045-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	North	
LOS	A	B	B	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99NB-2045-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	799	3.0	1340	0.596	100	9.6	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	799	3.0		0.596		9.6	LOS A	0.0	0.0				
East: SR99NB OFF RAMP													
Lane 1	84	3.0	652	0.128	100	7.0	LOS A	0.5	11.9	Full	1600	0.0	0.0
Lane 2[d]	279	3.0	652	0.428	100	11.7	LOS B	2.2	56.1	Short	200	0.0	NA
Approach	363	3.0		0.428		10.6	LOS B	2.2	56.1				
North: Mendocino (18th) Ave													
Lane 1[d]	855	3.0	1151	0.743	100	15.3	LOS C	13.6	347.7	Full	700	0.0	0.0
Lane 2	213	3.0	1151	0.185	100	4.8	LOS A	0.8	20.4	Short	200	0.0	NA
Approach	1068	3.0		0.743		13.2	LOS B	13.6	347.7				
Intersection	2230	3.0		0.743		11.5	LOS B	13.6	347.7				

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

d Dominant lane on roundabout approach

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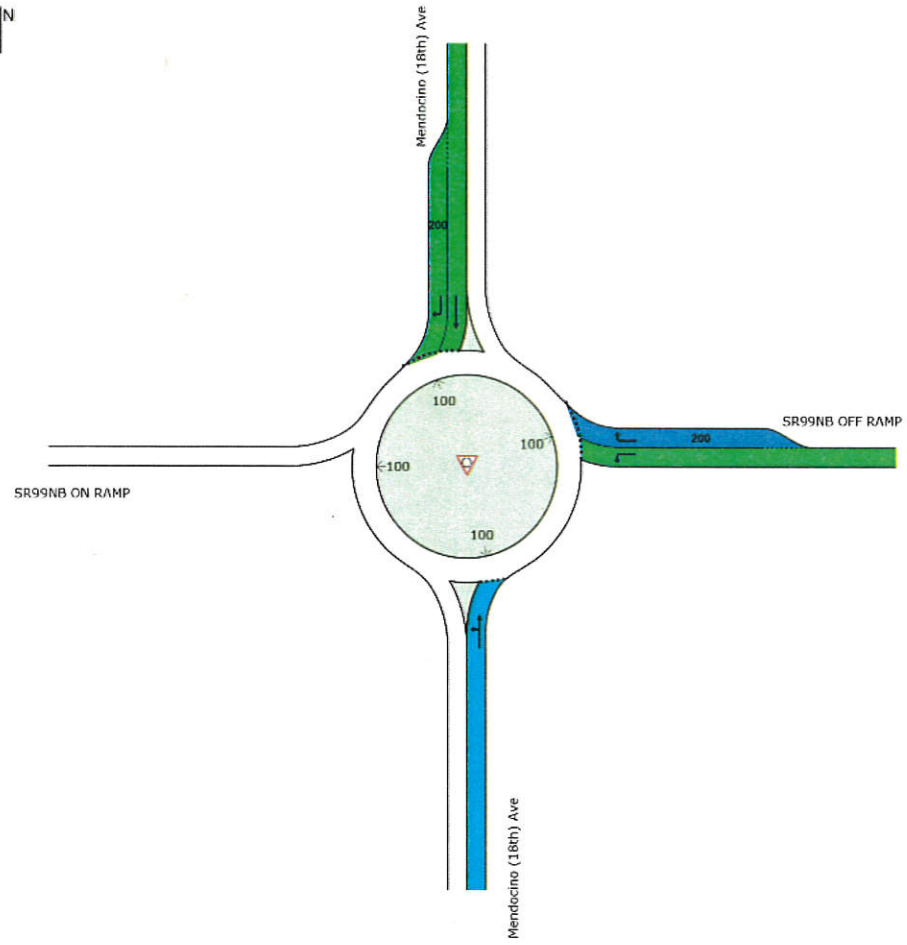
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99NB-2045-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	North	
LOS	B	C	A	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99NB-2045-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	876	3.0	1340	0.654	100	10.9	LOS B	0.0	0.0	Full	700	0.0	0.0
Approach	876	3.0		0.654		10.9	LOS B	0.0	0.0				
East: SR99NB OFF RAMP													
Lane 1	71	3.0	606	0.116	100	7.3	LOS A	0.4	10.6	Full	1600	0.0	0.0
Lane 2[d]	376	3.0	606	0.620	100	18.2	LOS C	4.3	109.2	Short	200	0.0	NA
Approach	447	3.0		0.620		16.5	LOS C	4.3	109.2				
North: Mendocino (18th) Ave													
Lane 1[d]	598	3.0	1165	0.513	100	8.9	LOS A	3.3	83.2	Full	700	0.0	0.0
Lane 2	142	3.0	1165	0.122	100	4.1	LOS A	0.5	12.8	Short	200	0.0	NA
Approach	740	3.0		0.513		8.0	LOS A	3.3	83.2				
Intersection	2063	3.0		0.654		11.0	LOS B	4.3	109.2				

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

d Dominant lane on roundabout approach

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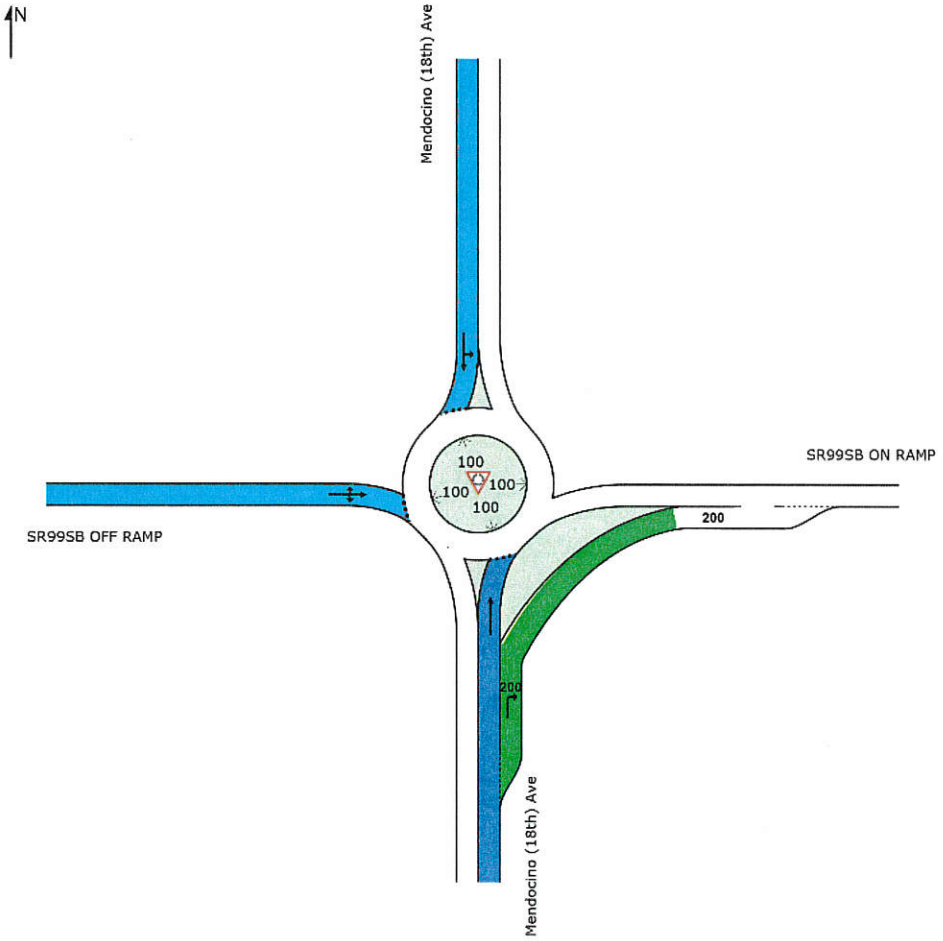
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99SB-2045-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	C	B	B	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99SB-2045-AM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	650	3.0	822	0.791	100	22.7	LOS C	11.5	294.9	Full	700	0.0	0.0
Lane 2	146	3.0	1626	0.090	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	796	3.0		0.791		18.6	LOS C	11.5	294.9				
North: Mendocino (18th) Ave													
Lane 1[d]	939	3.0	1340	0.701	100	12.2	LOS B	0.0	0.0	Full	700	0.0	0.0
Approach	939	3.0		0.701		12.2	LOS B	0.0	0.0				
West: SR99SB OFF RAMP													
Lane 1[d]	184	3.0	500	0.368	100	13.2	LOS B	1.7	42.5	Full	1600	0.0	0.0
Approach	184	3.0		0.368		13.2	LOS B	1.7	42.5				
Intersection	1918	3.0		0.791		14.9	LOS B	11.5	294.9				

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

d Dominant lane on roundabout approach

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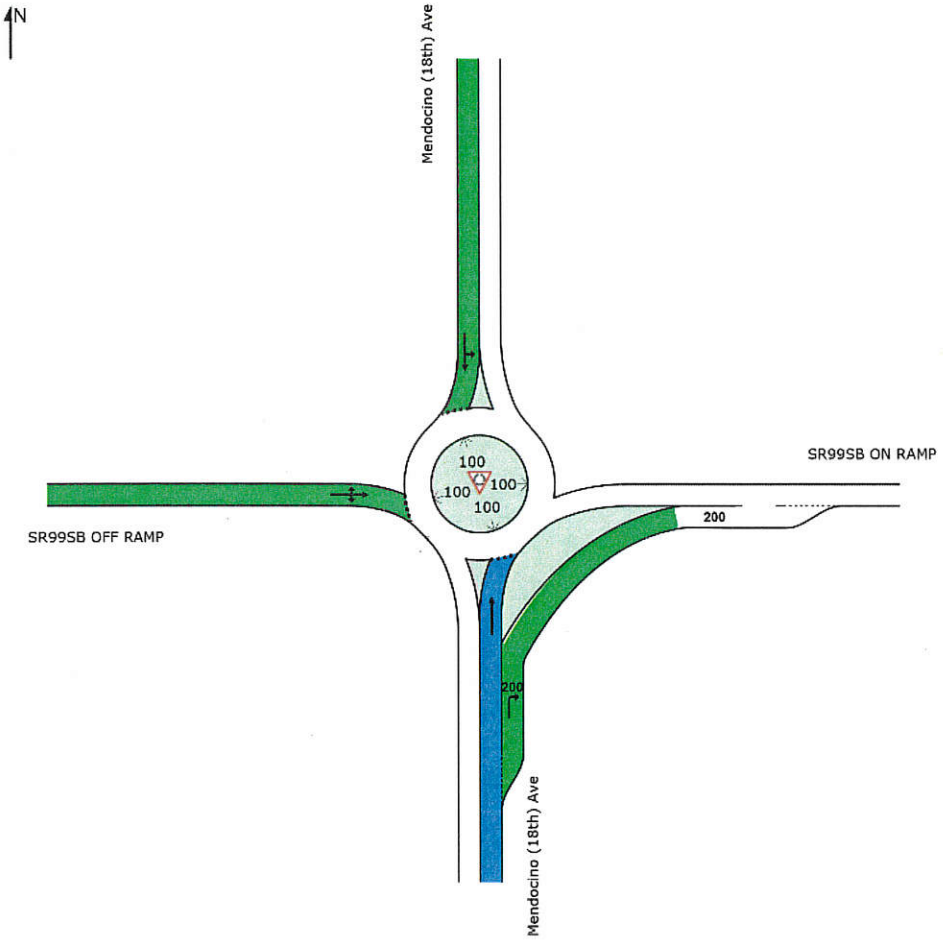
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [ALT6-SR99SB-2045-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	North	West	
LOS	C	A	A	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [ALT6-SR99SB-2045-PM-eliminte Ave394&Frontage Rd access]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Mendocino (18th) Ave													
Lane 1[d]	740	3.0	942	0.786	100	20.2	LOS C	13.9	356.3	Full	700	0.0	0.0
Lane 2	168	3.0	1626	0.104	100	0.0	LOS A	0.0	0.0	Short	200	0.0	NA
Approach	909	3.0		0.786		16.4	LOS C	13.9	356.3				
North: Mendocino (18th) Ave													
Lane 1[d]	672	3.0	1340	0.501	100	7.9	LOS A	0.0	0.0	Full	700	0.0	0.0
Approach	672	3.0		0.501		7.9	LOS A	0.0	0.0				
West: SR99SB OFF RAMP													
Lane 1[d]	166	3.0	662	0.251	100	8.5	LOS A	1.0	26.8	Full	1600	0.0	0.0
Approach	166	3.0		0.251		8.5	LOS A	1.0	26.8				
Intersection	1747	3.0		0.786		12.4	LOS B	13.9	356.3				

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

d Dominant lane on roundabout approach

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