

Refer to background information and supporting data and analysis related to Transportation, attached.

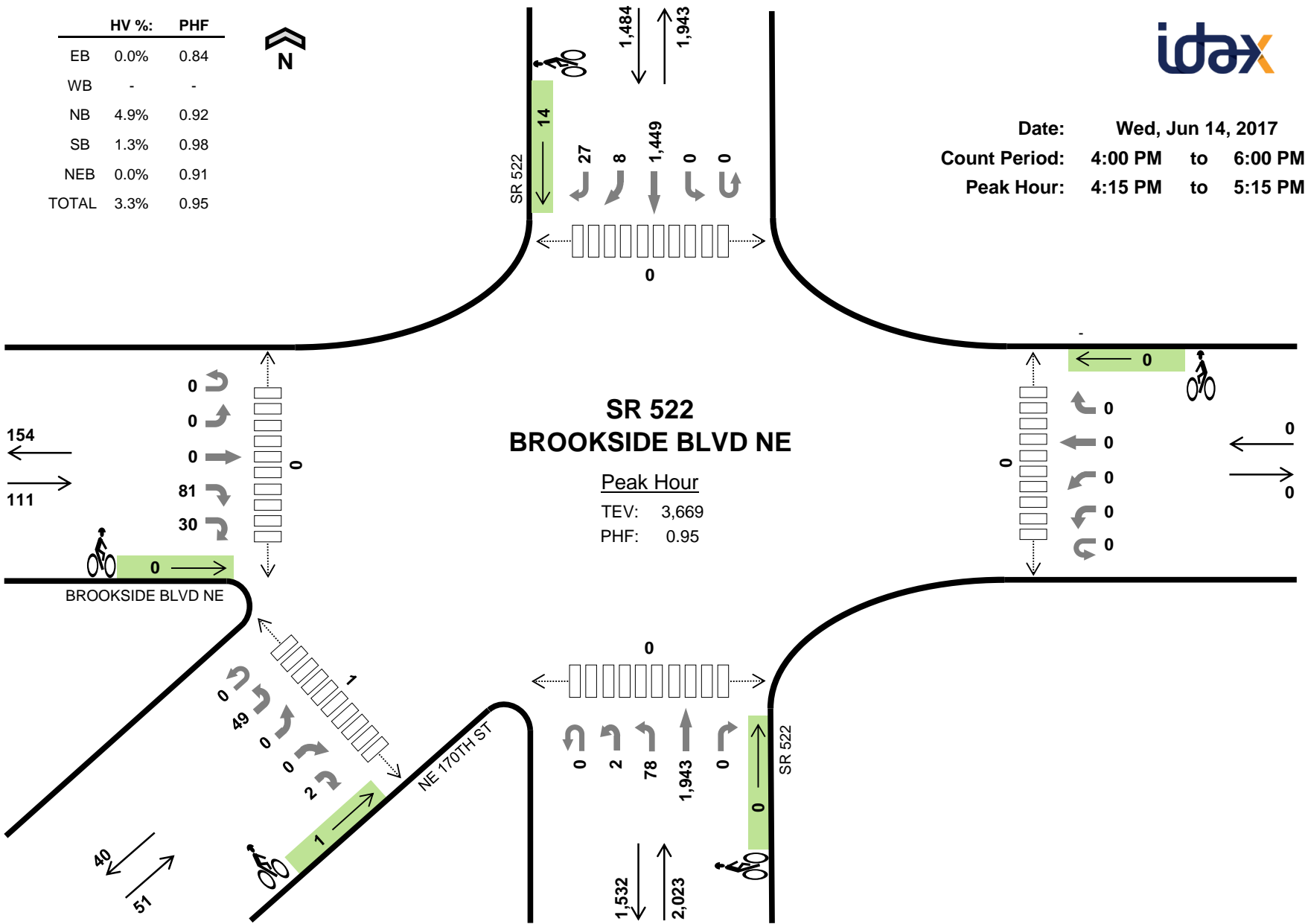
	HV %:	PHF
EB	0.0%	0.84
WB	-	-
NB	4.9%	0.92
SB	1.3%	0.98
NEB	0.0%	0.91
TOTAL	3.3%	0.95



Date: Wed, Jun 14, 2017
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:15 PM to 5:15 PM

**SR 522
 BROOKSIDE BLVD NE**

Peak Hour
 TEV: 3,669
 PHF: 0.95

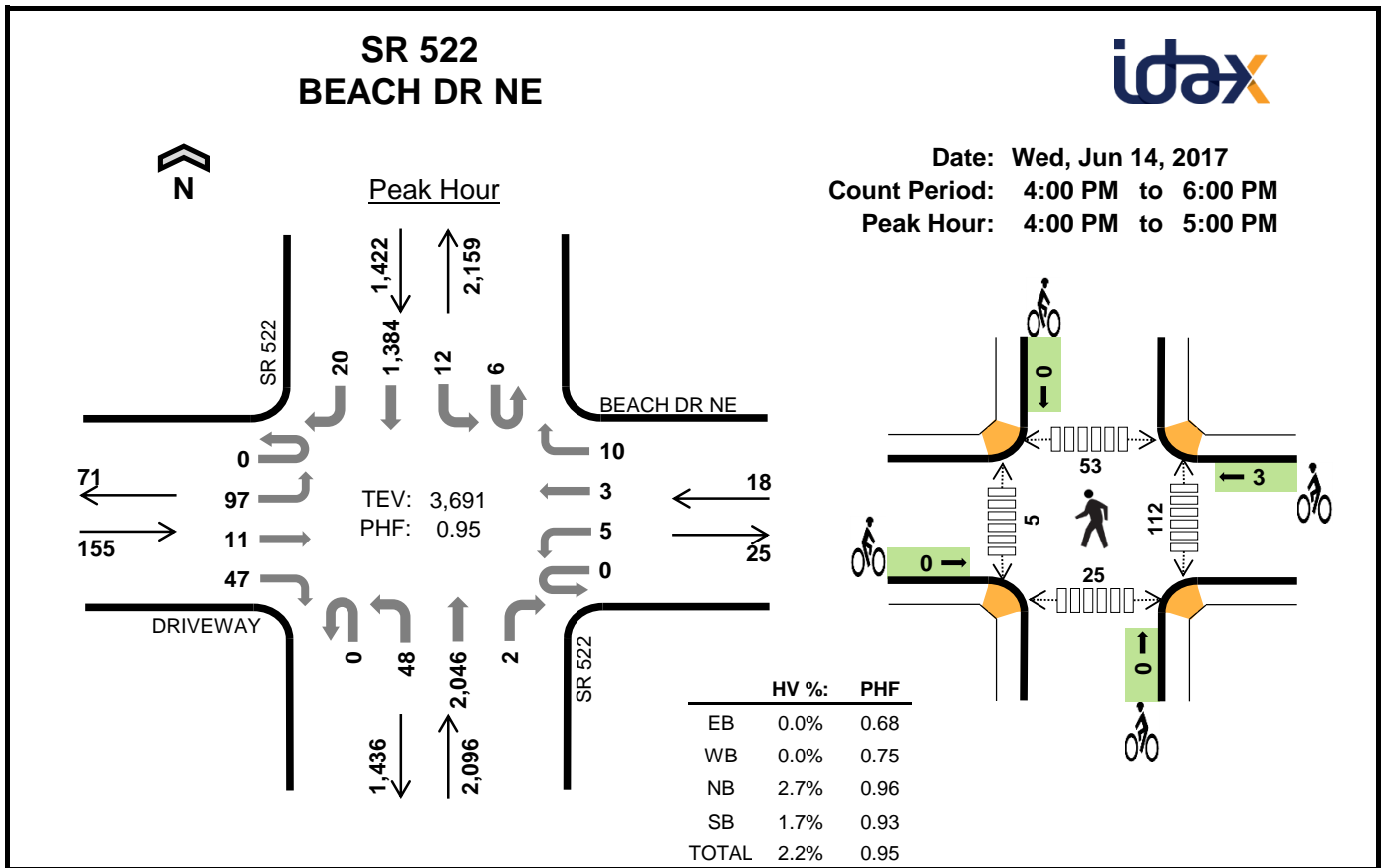


Two-Hour Count Summaries

Interval Start	BROOKSIDE BLVD NE					-					SR 522					SR 522					NE 170TH ST					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northeastbound						
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	9	6	0	0	0	0	0	0	0	23	523	0	0	0	323	1	3	0	13	0	0	1	902	0
4:15 PM	0	0	0	17	5	0	0	0	0	0	0	2	25	524	0	0	0	371	3	3	0	13	0	0	1	964	0
4:30 PM	0	0	0	17	7	0	0	0	0	0	0	0	18	500	0	0	0	348	1	9	0	9	0	0	1	910	0
4:45 PM	0	0	0	24	9	0	0	0	0	0	0	0	20	455	0	0	0	365	0	4	0	14	0	0	0	891	3,667
5:00 PM	0	0	0	23	9	0	0	0	0	0	0	0	15	464	0	0	0	365	4	11	0	13	0	0	0	904	3,669
5:15 PM	0	0	0	18	9	0	0	0	0	0	0	2	27	503	0	0	0	352	2	13	0	22	1	0	1	950	3,655
5:30 PM	0	0	0	16	10	0	0	0	0	0	0	0	11	452	0	0	0	317	0	10	0	17	0	0	0	833	3,578
5:45 PM	0	0	0	16	5	0	0	0	0	0	0	0	19	453	0	0	0	378	0	3	0	14	0	0	0	888	3,575
Count Total	0	0	0	140	60	0	0	0	0	0	0	4	158	3,874	0	0	0	2,819	11	56	0	115	1	0	4	7,242	0
Peak Hour	0	0	0	81	30	0	0	0	0	0	0	2	78	1,943	0	0	0	1,449	8	27	0	49	0	0	2	3,669	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles					Pedestrians (Crossing Leg)						
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North	South	Southwest	Total
4:00 PM	0	0	20	9	0	29	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	19	8	0	27	0	0	0	2	0	2	0	0	0	0	0	0
4:30 PM	0	0	38	3	0	41	0	0	0	6	1	7	0	0	0	0	0	0
4:45 PM	0	0	30	4	0	34	0	0	0	3	0	3	0	0	0	0	0	0
5:00 PM	0	0	13	5	0	18	0	0	0	3	0	3	0	0	0	0	0	1
5:15 PM	0	0	16	11	1	28	0	0	0	3	0	3	0	1	0	0	0	1
5:30 PM	0	0	12	8	0	20	0	0	0	2	1	3	0	0	0	0	0	0
5:45 PM	0	0	13	6	0	19	1	0	0	4	0	5	0	0	0	0	0	0
Count Total	0	0	161	54	1	216	1	0	0	23	2	26	0	1	0	0	1	2
Peak Hr	0	0	100	20	0	120	0	0	0	14	1	15	0	0	0	0	1	1



Two-Hour Count Summaries

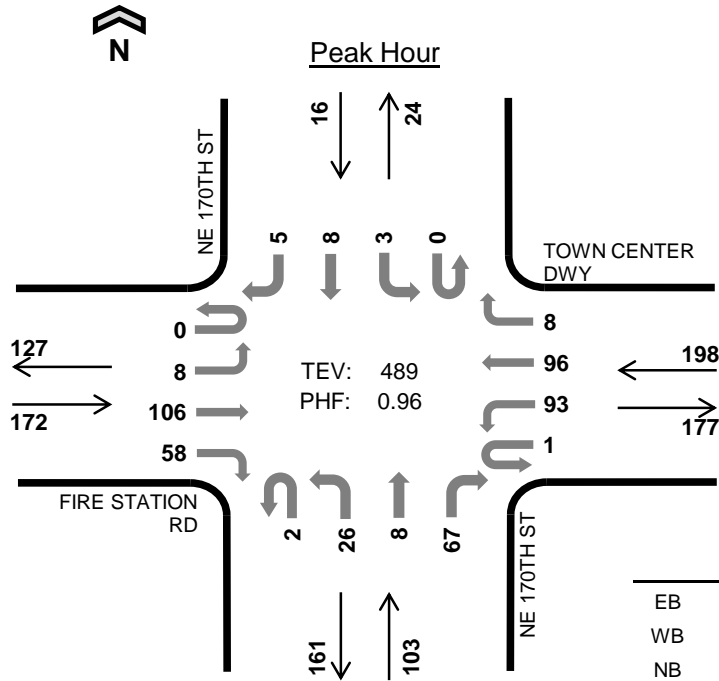
Interval Start	DRIVEWAY				BEACH DR NE				SR 522				SR 522				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	26	3	11	0	2	1	3	0	13	531	0	4	4	311	2	911	0
4:15 PM	0	30	2	25	0	1	0	5	0	9	531	1	1	2	357	6	970	0
4:30 PM	0	31	2	7	0	1	2	2	0	16	511	0	0	3	346	4	925	0
4:45 PM	0	10	4	4	0	1	0	0	0	10	473	1	1	3	370	8	885	3,691
5:00 PM	0	30	4	8	0	4	0	3	0	8	475	1	0	5	358	4	900	3,680
5:15 PM	0	37	1	8	0	1	3	4	0	8	530	0	0	6	357	6	961	3,671
5:30 PM	0	28	10	10	0	2	1	2	0	16	476	0	0	5	326	3	879	3,625
5:45 PM	0	39	2	10	0	3	5	7	0	9	470	1	6	9	370	3	934	3,674
Count Total	0	231	28	83	0	15	12	26	0	89	3,997	4	12	37	2,795	36	7,365	0
Peak Hour	0	97	11	47	0	5	3	10	0	48	2,046	2	6	12	1,384	20	3,691	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	13	10	23	0	0	0	0	0	17	0	8	3	28
4:15 PM	0	0	10	8	18	0	0	0	0	0	27	3	8	5	43
4:30 PM	0	0	17	3	20	0	1	0	0	1	33	1	30	13	77
4:45 PM	0	0	17	3	20	0	2	0	0	2	35	1	7	4	47
5:00 PM	0	1	14	5	20	0	0	0	0	0	44	1	17	7	69
5:15 PM	0	0	18	11	29	0	0	0	0	0	69	1	36	8	114
5:30 PM	0	0	13	8	21	0	0	1	0	1	37	2	10	5	54
5:45 PM	0	0	12	9	21	0	0	0	0	0	55	2	37	7	101
Count Total	0	1	114	57	172	0	3	1	0	4	317	11	153	52	533
Peak Hour	0	0	57	24	81	0	3	0	0	3	112	5	53	25	195

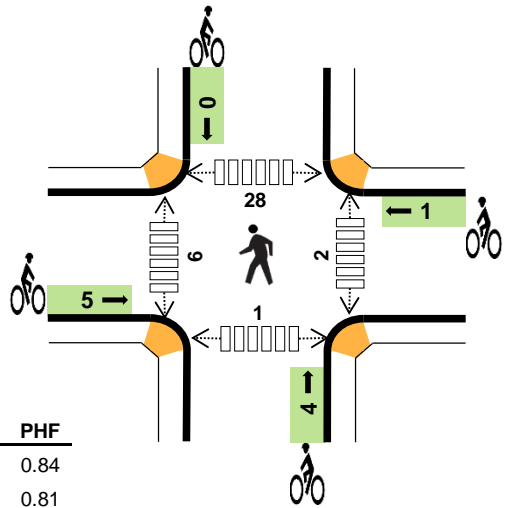


NE 170TH ST FIRE STATION RD



Date: Thu, Oct 04, 2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

	HV %:	PHF
EB	0.6%	0.84
WB	0.5%	0.81
NB	1.0%	0.76
SB	0.0%	0.80
TOTAL	0.6%	0.96



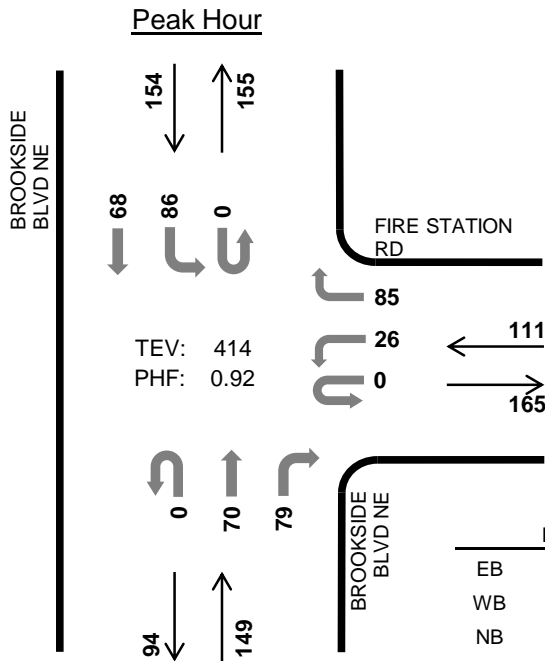
Two-Hour Count Summaries

Interval Start	FIRE STATION RD				TOWN CENTER DWY				NE 170TH ST				NE 170TH ST				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	26	11	0	19	24	1	1	4	0	12	0	1	2	0	105	0
4:15 PM	0	4	27	13	0	21	22	1	1	2	0	15	0	3	3	3	115	0
4:30 PM	0	3	26	13	0	30	22	4	0	4	2	15	0	1	3	1	124	0
4:45 PM	0	1	26	12	0	18	19	1	2	8	2	22	0	0	2	1	114	458
5:00 PM	0	1	22	17	0	27	32	2	0	5	2	14	0	1	2	2	127	480
5:15 PM	0	3	32	16	1	18	23	1	0	9	2	16	0	1	1	1	124	489
5:30 PM	0	2	23	13	1	19	23	1	1	5	0	20	0	1	4	1	114	479
5:45 PM	0	5	31	9	0	27	14	4	0	2	0	23	0	2	2	2	121	486
Count Total	0	23	213	104	2	179	179	15	5	39	8	137	0	10	19	11	944	0
Peak Hour	0	8	106	58	1	93	96	8	2	26	8	67	0	3	8	5	489	0

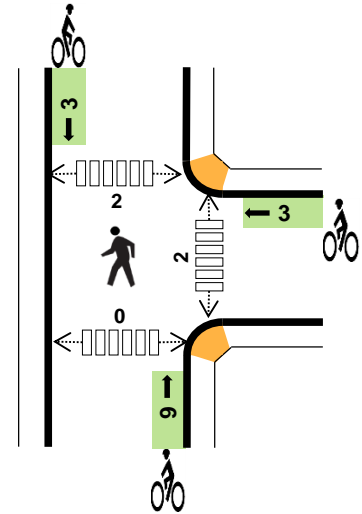
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	1	1	1	0	1	1	3	1	1	3	0	5
4:15 PM	0	0	0	0	0	0	0	2	0	2	1	1	9	1	12
4:30 PM	0	0	0	0	0	3	0	1	0	4	0	1	8	0	9
4:45 PM	1	1	1	0	3	0	0	1	0	1	1	0	2	0	3
5:00 PM	0	0	0	0	0	1	0	2	0	3	1	5	5	1	12
5:15 PM	0	0	0	0	0	1	1	0	0	2	0	0	13	0	13
5:30 PM	0	0	0	0	0	1	0	1	0	2	1	1	6	0	8
5:45 PM	1	1	0	0	2	1	1	0	1	3	0	1	13	0	14
Count Total	2	2	1	1	6	8	2	8	2	20	5	10	59	2	76
Peak Hour	1	1	1	0	3	5	1	4	0	10	2	6	28	1	37

BROOKSIDE BLVD NE FIRE STATION RD



Date: Thu, Oct 04, 2018
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	-	-
WB	0.0%	0.96
NB	0.0%	0.81
SB	1.9%	0.84
TOTAL	0.7%	0.92

Two-Hour Count Summaries

Interval Start	0				FIRE STATION RD				BROOKSIDE BLVD NE				BROOKSIDE BLVD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	6	0	21	0	0	19	24	0	16	21	0	107	0
4:15 PM	0	0	0	0	0	9	0	20	0	0	24	22	0	23	14	0	112	0
4:30 PM	0	0	0	0	0	7	0	20	0	0	19	16	0	27	19	0	108	0
4:45 PM	0	0	0	0	0	4	0	24	0	0	8	17	0	20	14	0	87	414
5:00 PM	0	0	0	0	0	12	0	25	0	0	8	13	0	26	12	0	96	403
5:15 PM	0	0	0	0	0	4	0	30	0	0	13	21	0	31	10	0	109	400
5:30 PM	0	0	0	0	0	6	0	22	0	0	15	11	0	28	18	0	100	392
5:45 PM	0	0	0	0	0	3	0	15	0	0	14	23	0	20	10	0	85	390
Count Total	0	0	0	0	0	51	0	177	0	0	120	147	0	191	118	0	804	0
Peak Hour	0	0	0	0	0	26	0	85	0	0	70	79	0	86	68	0	414	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

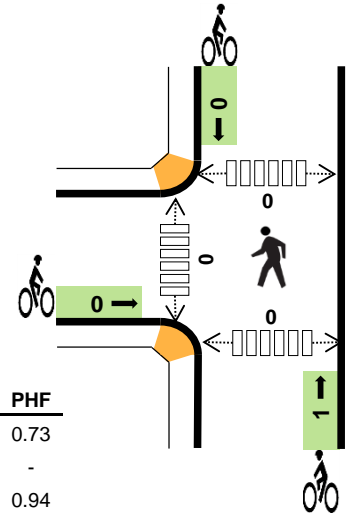
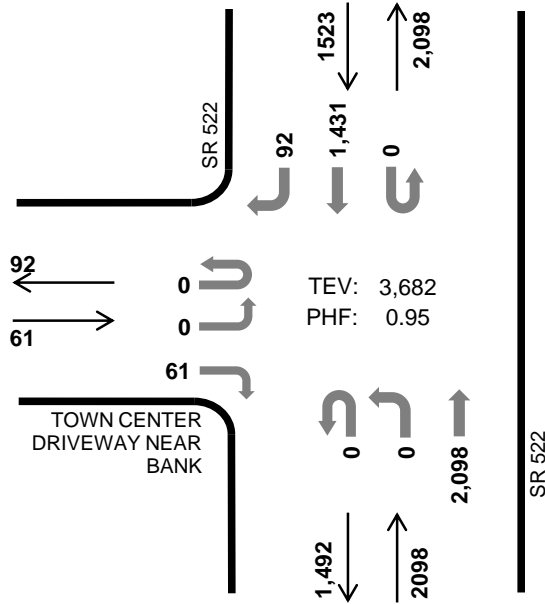
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	1	1	0	0	0	1	1	0	0	1	0	1
4:15 PM	0	0	0	1	1	0	2	0	0	2	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	6	2	9	1	0	0	0	1
4:45 PM	0	0	0	1	1	0	0	3	0	3	1	0	1	0	2
5:00 PM	0	0	0	0	0	0	1	0	1	2	0	0	1	0	1
5:15 PM	0	0	0	1	1	0	1	2	1	4	0	0	4	0	4
5:30 PM	0	0	0	0	0	0	0	1	1	2	1	0	7	0	8
5:45 PM	0	0	0	0	0	0	0	4	1	5	2	0	3	0	5
Count Total	0	0	0	4	4	0	5	16	7	28	5	0	17	0	22
Peak Hr	0	0	0	3	3	0	3	9	3	15	2	0	2	0	4

SR 522 TOWN CENTER DRIVEWAY NEAR BANK



Peak Hour

Date: Wed, Jun 14, 2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



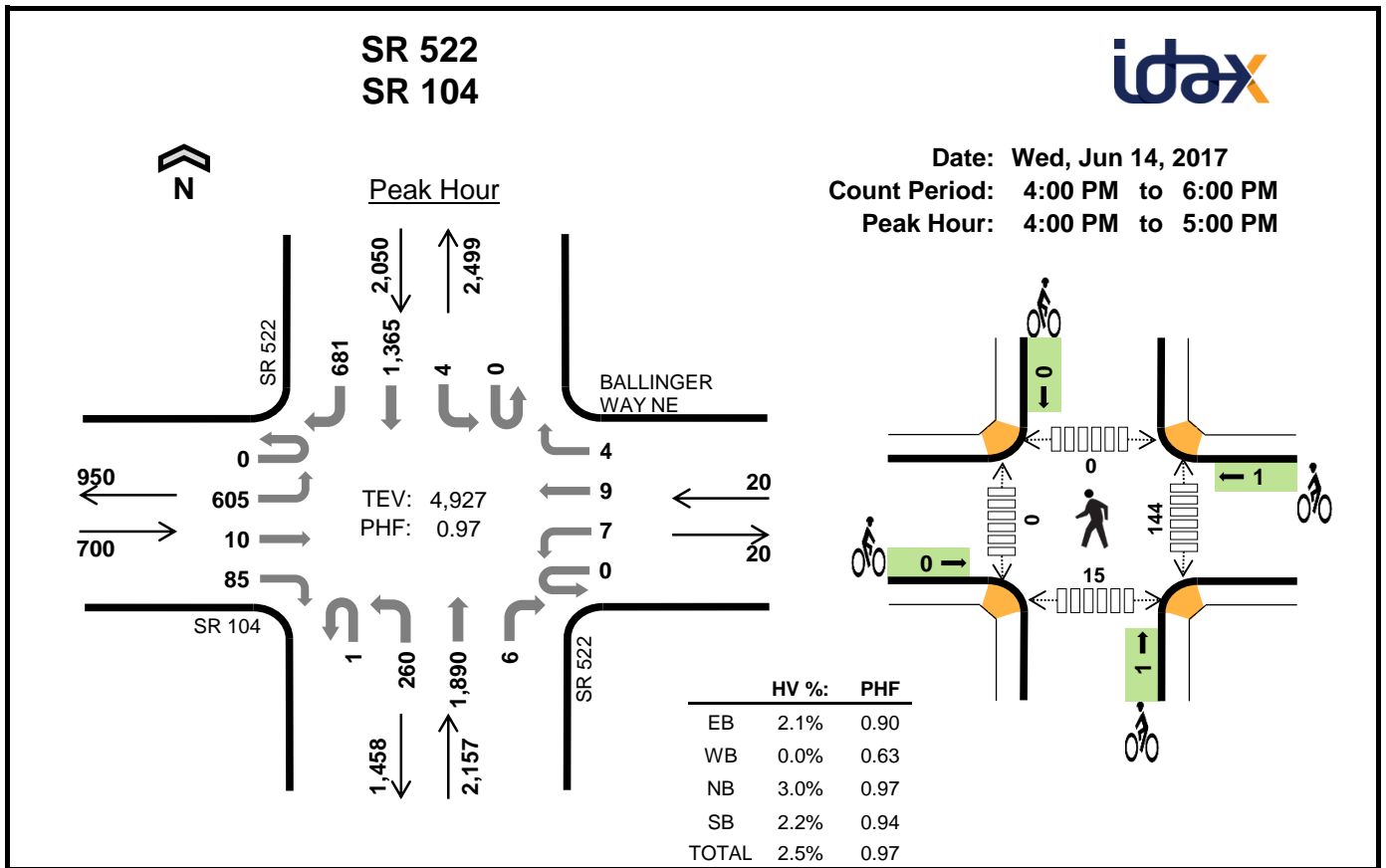
	HV %:	PHF
EB	0.0%	0.73
WB	-	-
NB	3.5%	0.94
SB	1.4%	0.94
TOTAL	2.6%	0.95

Two-Hour Count Summaries

Interval Start	TOWN CENTER DRIVEWAY NEAR BANK				0				SR 522				SR 522				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT			
4:00 PM	0	0	0	12	0	0	0	0	0	0	569	0	0	0	316	29	926	0
4:15 PM	0	0	0	17	0	0	0	0	0	0	557	0	0	0	332	23	929	0
4:30 PM	0	0	0	12	0	0	0	0	0	0	556	0	0	0	358	27	953	0
4:45 PM	0	0	0	21	0	0	0	0	0	0	476	0	0	0	347	25	869	3,677
5:00 PM	0	0	0	21	0	0	0	0	0	0	507	0	0	0	341	18	887	3,638
5:15 PM	0	0	0	7	0	0	0	0	0	0	559	0	0	0	385	22	973	3,682
5:30 PM	0	0	0	16	0	0	0	0	0	0	506	0	0	0	312	25	859	3,588
5:45 PM	0	0	0	21	0	0	0	0	0	0	526	0	0	0	367	25	939	3,658
Count Total	0	0	0	127	0	0	0	0	0	0	4,256	0	0	0	2,758	194	7,335	0
Peak Hour	0	0	0	61	0	0	0	0	0	0	2,098	0	0	0	1,431	92	3,682	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	12	8	20	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	10	7	17	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	17	3	20	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	20	4	24	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	20	3	23	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	17	12	29	0	0	1	0	1	0	0	0	0	0
5:30 PM	0	0	13	9	22	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	12	6	18	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	121	52	173	0	0	1	0	1	0	2	0	0	2
Peak Hr	0	0	74	22	96	0	0	1	0	1	0	0	0	0	0



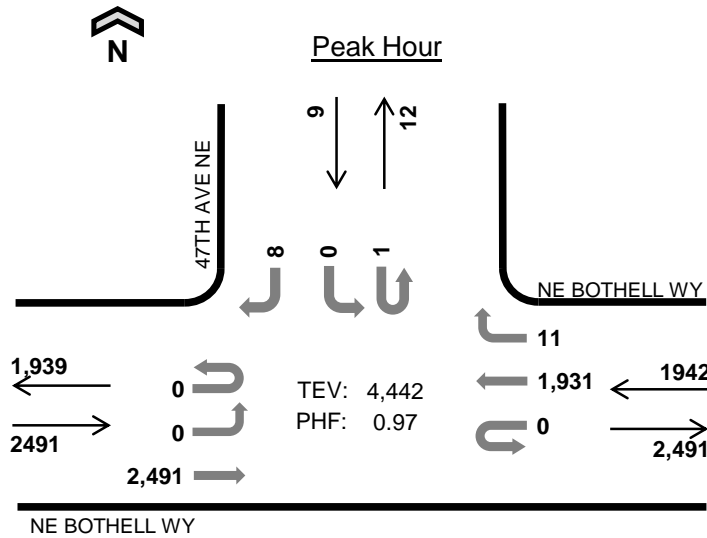
Two-Hour Count Summaries

Interval Start	SR 104				BALLINGER WAY NE				SR 522				SR 522				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	161	2	23	0	2	3	1	0	57	499	2	0	1	326	144	1,221	0
4:15 PM	0	164	6	25	0	1	1	2	0	76	479	3	0	2	335	172	1,266	0
4:30 PM	0	141	1	18	0	4	4	0	1	64	474	0	0	0	347	177	1,231	0
4:45 PM	0	139	1	19	0	0	1	1	0	63	438	1	0	1	357	188	1,209	4,927
5:00 PM	0	170	3	27	0	2	1	1	1	62	447	0	0	3	331	157	1,205	4,911
5:15 PM	0	141	0	33	0	0	0	1	0	55	477	2	0	3	362	152	1,226	4,871
5:30 PM	0	156	3	17	0	3	1	2	0	46	472	2	0	4	327	161	1,194	4,834
5:45 PM	0	160	1	29	0	2	4	1	0	63	434	0	0	1	338	146	1,179	4,804
Count Total	0	1,232	17	191	0	14	15	9	2	486	3,720	10	0	15	2,723	1,297	9,731	0
Peak Hour	0	605	10	85	0	7	9	4	1	260	1,890	6	0	4	1,365	681	4,927	0

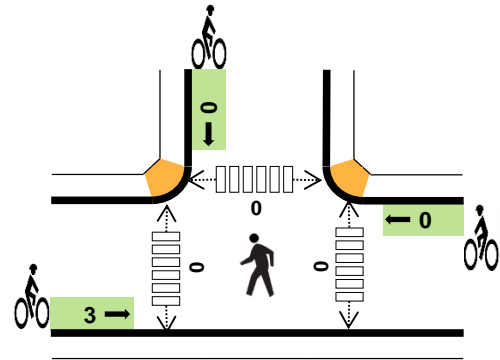
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	0	16	12	33	0	0	0	0	0	29	0	0	1	30
4:15 PM	2	0	10	14	26	0	0	0	0	0	42	0	0	7	49
4:30 PM	7	0	20	11	38	0	0	1	0	1	32	0	0	3	35
4:45 PM	1	0	18	9	28	0	1	0	0	1	41	0	0	4	45
5:00 PM	5	0	17	5	27	0	0	0	0	0	56	0	0	13	69
5:15 PM	2	0	13	14	29	0	0	0	0	0	61	0	0	12	73
5:30 PM	5	0	15	15	35	0	0	0	0	0	50	0	0	11	61
5:45 PM	3	0	11	10	24	0	0	0	0	0	52	0	0	8	60
Count Total	30	0	120	90	240	0	1	1	0	2	363	0	0	59	422
Peak Hour	15	0	64	46	125	0	1	1	0	2	144	0	0	15	159

47TH AVE NE NE BOTHELL WY



Date: Thu, Oct 04, 2018
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:00 PM to 5:00 PM



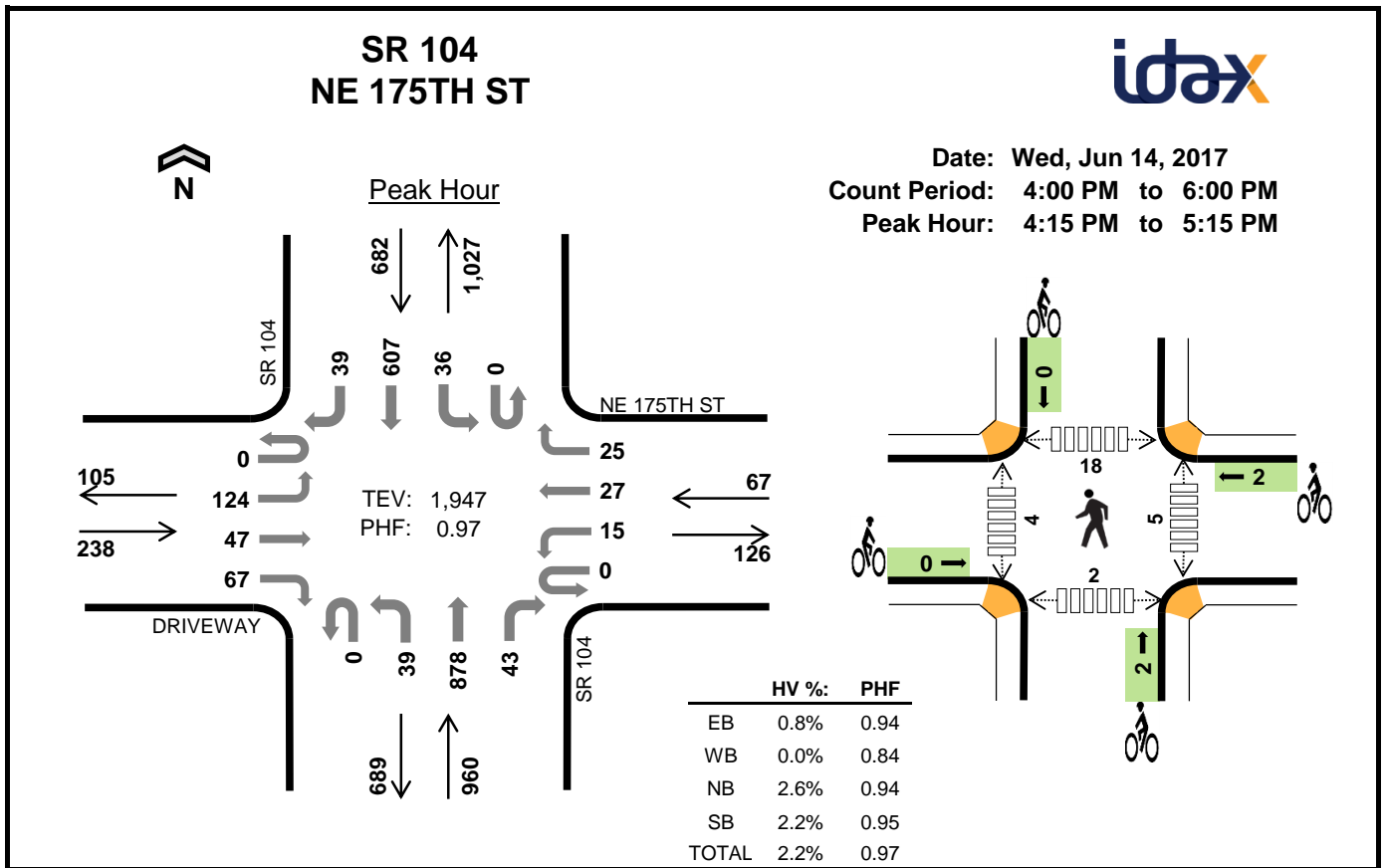
	HV %:	PHF
EB	2.6%	0.95
WB	1.4%	0.94
NB	-	-
SB	0.0%	0.56
TOTAL	2.1%	0.97

Two-Hour Count Summaries

Interval Start	NE BOTHELL WY				NE BOTHELL WY				0				47TH AVE NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	657	0	0	0	451	2	0	0	0	0	0	0	0	2	1,112	0
4:15 PM	0	0	619	0	0	0	508	6	0	0	0	0	0	0	0	4	1,137	0
4:30 PM	0	0	648	0	0	0	499	1	0	0	0	0	0	0	0	0	1,148	0
4:45 PM	0	0	567	0	0	0	473	2	0	0	0	0	1	0	0	2	1,045	4,442
5:00 PM	0	0	589	0	0	0	500	2	0	0	0	0	0	0	0	3	1,094	4,424
5:15 PM	0	0	616	0	0	0	505	2	0	0	0	0	0	0	0	2	1,125	4,412
5:30 PM	0	0	600	0	0	0	509	4	0	0	0	0	0	0	0	1	1,114	4,378
5:45 PM	0	0	604	0	0	0	493	0	0	0	0	0	0	0	0	2	1,099	4,432
Count Total	0	0	4,900	0	0	0	3,938	19	0	0	0	0	1	0	0	16	8,874	0
Peak Hour	0	0	2,491	0	0	0	1,931	11	0	0	0	0	1	0	0	8	4,442	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	14	7	0	0	21	2	0	0	0	2	0	0	0	0	0
4:15 PM	18	11	0	0	29	1	0	0	0	1	0	0	0	0	0
4:30 PM	17	5	0	0	22	0	0	0	0	0	0	0	0	0	0
4:45 PM	16	5	0	0	21	0	0	0	0	0	0	0	0	0	0
5:00 PM	15	6	0	0	21	0	0	0	0	0	0	0	0	0	0
5:15 PM	10	5	0	0	15	0	0	0	0	0	0	0	0	0	0
5:30 PM	11	8	0	0	19	0	0	0	0	0	0	0	0	0	0
5:45 PM	12	5	0	0	17	0	0	0	0	0	0	0	0	0	0
Count Total	113	52	0	0	165	3	0	0	0	3	0	0	0	0	0
Peak Hr	65	28	0	0	93	3	0	0	0	3	0	0	0	0	0



Two-Hour Count Summaries

Interval Start	DRIVEWAY				NE 175TH ST				SR 104				SR 104				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	25	10	19	0	2	5	8	0	13	191	3	0	11	163	22	472	0
4:15 PM	0	24	12	27	0	7	2	4	0	17	216	11	0	4	167	9	500	0
4:30 PM	0	31	10	13	0	4	7	5	0	7	236	11	0	8	139	12	483	0
4:45 PM	0	38	9	12	0	2	7	9	0	5	219	8	0	8	159	3	479	1,934
5:00 PM	0	31	16	15	0	2	11	7	0	10	207	13	0	16	142	15	485	1,947
5:15 PM	0	22	16	21	0	7	7	5	0	8	194	8	0	17	170	13	488	1,935
5:30 PM	0	30	22	21	0	0	13	3	0	11	171	10	0	14	157	9	461	1,913
5:45 PM	0	26	19	16	0	4	15	11	0	10	199	17	0	16	141	21	495	1,929
Count Total	0	227	114	144	0	28	67	52	0	81	1,633	81	0	94	1,238	104	3,863	0
Peak Hour	0	124	47	67	0	15	27	25	0	39	878	43	0	36	607	39	1,947	0

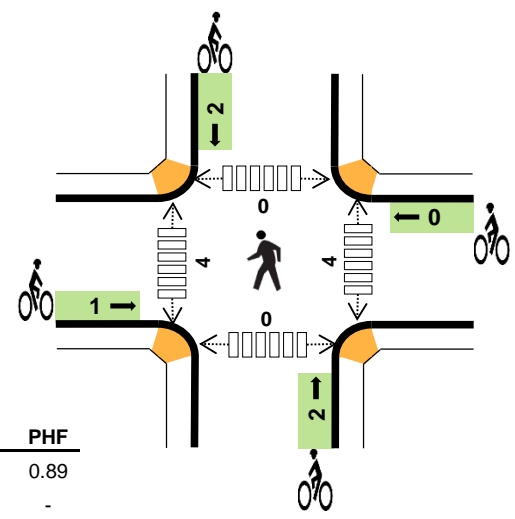
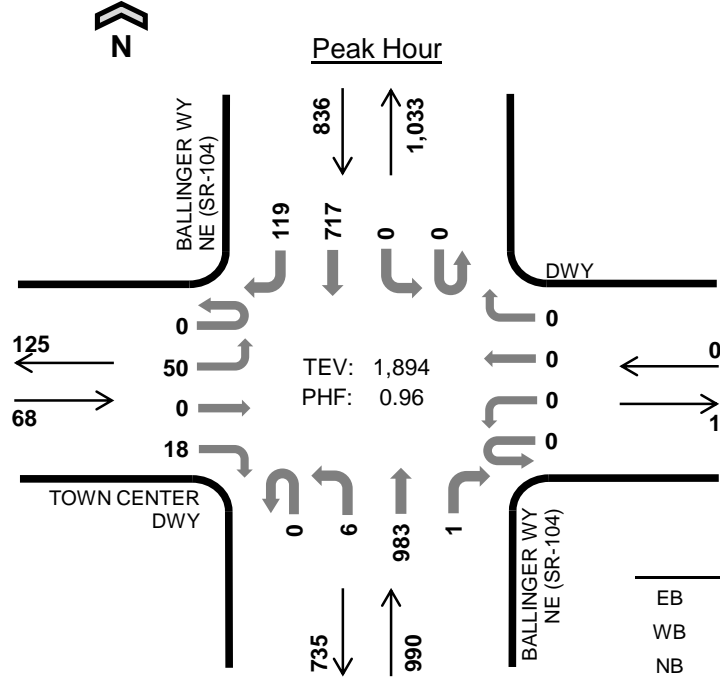
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	2	2	6	10	0	0	0	0	0	0	3	6	0	9
4:15 PM	1	0	6	3	10	0	0	0	0	0	2	0	5	0	7
4:30 PM	0	0	11	7	18	0	2	1	0	3	1	1	3	0	5
4:45 PM	1	0	5	2	8	0	0	1	0	1	2	0	7	2	11
5:00 PM	0	0	3	3	6	0	0	0	0	0	0	3	3	0	6
5:15 PM	0	1	3	2	6	2	0	1	2	5	0	0	9	0	9
5:30 PM	1	0	3	3	7	0	0	0	0	0	0	4	12	1	17
5:45 PM	0	1	4	0	5	0	0	0	1	1	0	1	8	0	9
Count Total	3	4	37	26	70	2	2	3	3	10	5	12	53	3	73
Peak Hour	2	0	25	15	42	0	2	2	0	4	5	4	18	2	29

BALLINGER WY NE (SR-104) TOWN CENTER DWY



Date: Thu, Oct 04, 2018
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 5:00 PM to 6:00 PM



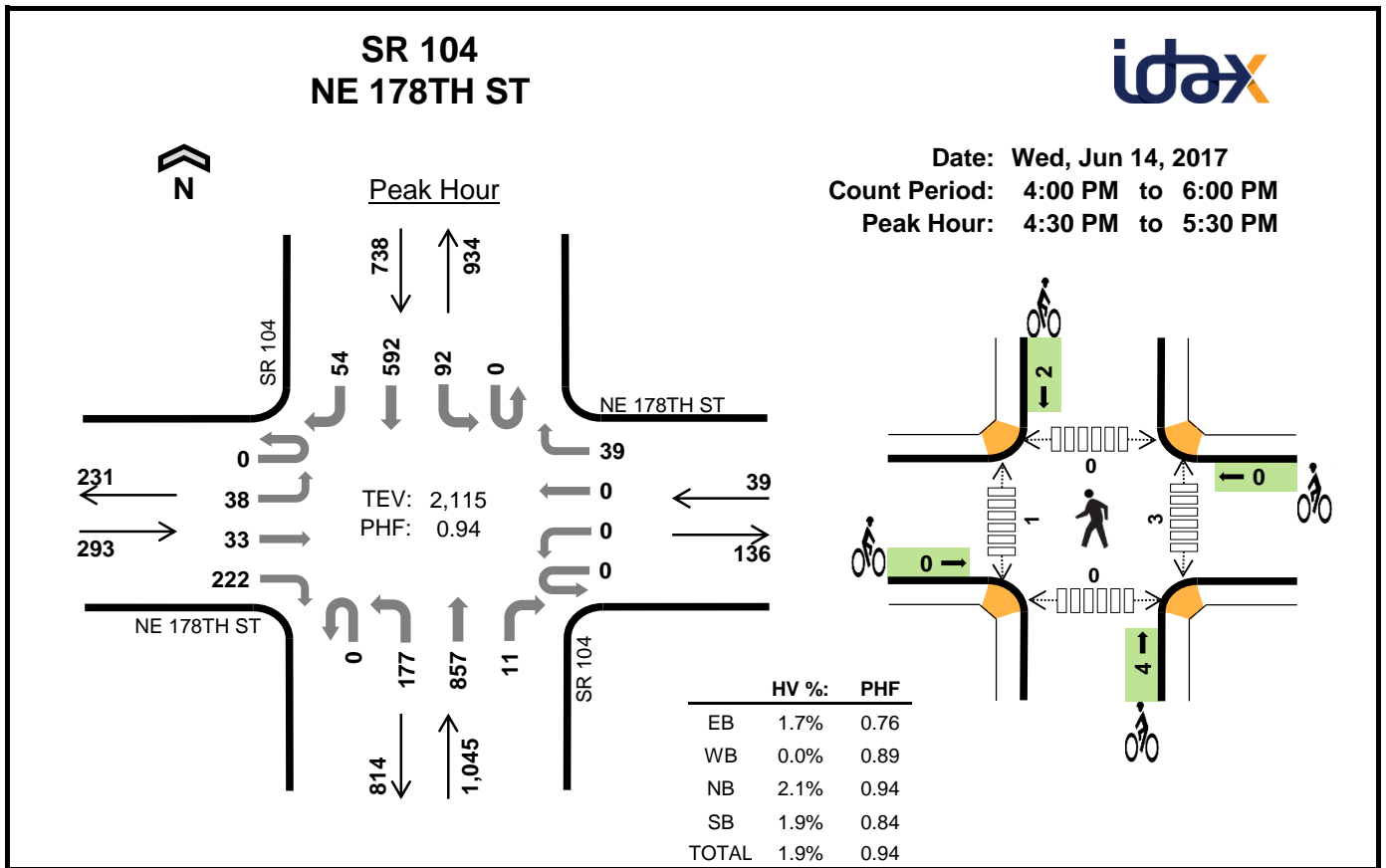
	HV %:	PHF
EB	0.0%	0.89
WB	-	-
NB	1.8%	0.99
SB	1.0%	0.91
TOTAL	1.4%	0.96

Two-Hour Count Summaries

Interval Start	TOWN CENTER DWY				DWY				BALLINGER WY NE (SR-104)				BALLINGER WY NE (SR-104)				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT			
4:00 PM	0	9	0	2	0	0	0	0	1	0	259	0	0	0	190	18	479	0
4:15 PM	0	11	0	8	0	0	0	0	0	1	250	0	0	0	171	26	467	0
4:30 PM	0	1	0	4	0	0	0	0	0	2	247	0	0	0	189	17	460	0
4:45 PM	0	8	0	5	0	0	0	0	0	2	228	0	0	0	190	27	460	1,866
5:00 PM	0	11	0	8	0	0	0	0	0	1	249	0	0	0	165	33	467	1,854
5:15 PM	0	12	0	3	0	0	0	0	0	1	244	0	0	0	176	35	471	1,858
5:30 PM	0	13	0	4	0	0	0	0	0	2	243	0	0	0	196	33	491	1,889
5:45 PM	0	14	0	3	0	0	0	0	0	2	247	1	0	0	180	18	465	1,894
Count Total	0	79	0	37	0	0	0	0	1	11	1,967	1	0	0	1,457	207	3,760	0
Peak Hour	0	50	0	18	0	0	0	0	0	6	983	1	0	0	717	119	1,894	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	3	6	9	0	0	1	0	1	0	0	0	0	0
4:15 PM	0	0	6	5	11	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	2	6	8	0	0	1	0	1	0	1	0	0	1
4:45 PM	0	0	7	6	13	0	0	1	0	1	0	0	0	0	0
5:00 PM	0	0	3	2	5	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	4	1	5	1	0	2	0	3	0	2	0	0	2
5:30 PM	0	0	3	3	6	0	0	0	0	0	2	0	0	0	2
5:45 PM	0	0	8	2	10	0	0	0	2	2	2	1	0	0	3
Count Total	0	0	36	31	67	1	0	5	2	8	4	6	0	0	10
Peak Hour	0	0	18	8	26	1	0	2	2	5	4	4	0	0	8



Two-Hour Count Summaries

Interval Start	NE 178TH ST Eastbound				NE 178TH ST Westbound				SR 104 Northbound				SR 104 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	1	55	0	0	0	4	0	40	194	0	0	10	152	4	464	0
4:15 PM	0	6	3	61	0	0	0	8	0	44	213	1	0	13	142	9	500	0
4:30 PM	0	7	7	56	0	0	0	8	0	43	230	3	0	14	143	12	523	0
4:45 PM	0	10	9	43	0	0	0	10	0	49	227	2	0	25	150	17	542	2,029
5:00 PM	0	6	7	51	0	0	0	10	0	49	208	2	0	20	127	10	490	2,055
5:15 PM	0	15	10	72	0	0	0	11	0	36	192	4	0	33	172	15	560	2,115
5:30 PM	0	11	11	64	0	0	0	12	0	46	176	2	0	19	143	6	490	2,082
5:45 PM	0	1	11	61	0	0	0	9	0	52	187	0	0	22	138	9	490	2,030
Count Total	0	60	59	463	0	0	0	72	0	359	1,627	14	0	156	1,167	82	4,059	0
Peak Hour	0	38	33	222	0	0	0	39	0	177	857	11	0	92	592	54	2,115	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	4	6	10	0	0	0	0	0	1	0	0	0	1
4:15 PM	1	0	5	3	9	0	0	1	0	1	0	0	0	0	0
4:30 PM	1	0	7	7	15	0	0	1	0	1	0	0	0	0	
4:45 PM	1	0	7	3	11	0	0	1	0	1	2	1	0	0	3
5:00 PM	2	0	3	0	5	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	5	4	10	0	0	2	2	4	1	0	0	0	1
5:30 PM	1	0	5	2	8	0	0	1	0	1	0	0	0	0	0
5:45 PM	0	0	3	1	4	1	0	0	1	2	0	0	0	0	0
Count Total	7	0	39	26	72	1	0	6	3	10	4	1	0	0	5
Peak Hour	5	0	22	14	41	0	0	4	2	6	3	1	0	0	4

HCM Unsignalized Intersection Capacity Analysis

1: SR 522 & Brookside Blvd

11/30/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		4↑↑↑			↑↑	↑						↑	
Traffic Volume (veh/h)	90	2100	0	0	1415	25	0	0	0	0	0	70	
Future Volume (Veh/h)	90	2100	0	0	1415	25	0	0	0	0	0	70	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
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	
Hourly flow rate (vph)	98	2283	0	0	1538	27	0	0	0	0	0	76	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	TWLTL				None								
Median storage veh	2												
Upstream signal (ft)					184								
pX, platoon unblocked	0.76						0.76	0.76			0.76	0.76	0.76
vC, conflicting volume	1565				2283			3324	4044	571	2305	4017	769
vC1, stage 1 conf vol							2479	2479			1538	1538	
vC2, stage 2 conf vol							845	1565			767	2479	
vCu, unblocked vol	1121				2283			3424	4367	571	2090	4332	78
tC, single (s)	4.1				4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5			6.5	5.5	
tF (s)	2.2				2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	79				100			100	100	100	100	100	90
cM capacity (veh/h)	473				219			23	41	464	145	44	738
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1					
Volume Total	424	652	652	652	769	769	27	76					
Volume Left	98	0	0	0	0	0	0	0					
Volume Right	0	0	0	0	0	0	27	76					
cSH	473	1700	1700	1700	1700	1700	1700	738					
Volume to Capacity	0.21	0.38	0.38	0.38	0.45	0.45	0.02	0.10					
Queue Length 95th (ft)	19	0	0	0	0	0	0	9					
Control Delay (s)	6.3	0.0	0.0	0.0	0.0	0.0	0.0	10.4					
Lane LOS	A							B					
Approach Delay (s)	1.1					0.0		10.4					
Approach LOS								B					
Intersection Summary													
Average Delay				0.9									
Intersection Capacity Utilization				77.6%				ICU Level of Service			D		
Analysis Period (min)				15									

HCM 6th Signalized Intersection Summary
 2: Beach Drive NE/NE 170th St & SR 522

12/03/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	2045	5	20	1385	20	5	5	10	100	10	50
Future Volume (veh/h)	50	2045	5	20	1385	20	5	5	10	100	10	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		1.00	0.98		0.91	0.95		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	2223	4	22	1505	14	5	5	1	109	11	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	2508	1030	51	2442	1085	76	68	11	220	18	288
Arrive On Green	0.10	1.00	1.00	0.06	1.00	1.00	0.19	0.19	0.18	0.19	0.19	0.19
Sat Flow, veh/h	1781	3554	1459	1781	3554	1579	226	358	58	936	94	1522
Grp Volume(v), veh/h	54	2223	4	22	1505	14	11	0	0	120	0	5
Grp Sat Flow(s),veh/h/ln	1781	1777	1459	1781	1777	1579	642	0	0	1030	0	1522
Q Serve(g_s), s	4.7	0.0	0.0	1.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s	4.7	0.0	0.0	1.9	0.0	0.0	20.8	0.0	0.0	20.6	0.0	0.4
Prop In Lane	1.00		1.00	1.00		1.00	0.45		0.09	0.91		1.00
Lane Grp Cap(c), veh/h	85	2508	1030	51	2442	1085	154	0	0	238	0	288
V/C Ratio(X)	0.64	0.89	0.00	0.43	0.62	0.01	0.07	0.00	0.00	0.50	0.00	0.02
Avail Cap(c_a), veh/h	234	2508	1030	178	2442	1085	210	0	0	287	0	342
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	71.1	0.0	0.0	74.1	0.0	0.0	54.0	0.0	0.0	61.0	0.0	52.8
Incr Delay (d2), s/veh	5.8	5.1	0.0	4.1	1.2	0.0	0.2	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.8	0.0	0.9	0.4	0.0	0.4	0.0	0.0	4.7	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.8	5.1	0.0	78.2	1.2	0.0	54.2	0.0	0.0	62.6	0.0	52.8
LnGrp LOS	E	A	A	E	A	A	D	A	A	E	A	D
Approach Vol, veh/h		2281			1541			11			125	
Approach Delay, s/veh		6.8			2.3			54.2			62.2	
Approach LOS		A			A			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	117.1		34.3	11.6	114.1		34.3				
Change Period (Y+Rc), s	5.5	6.1		5.5	5.5	6.1		5.5				
Max Green Setting (Gmax), s	14.5	93.9		34.5	19.5	88.9		34.5				
Max Q Clear Time (g_c+I1), s	3.9	2.0		22.6	6.7	2.0		22.8				
Green Ext Time (p_c), s	0.0	68.0		0.4	0.1	32.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay	6.9
HCM 6th LOS	A

Intersection												
Int Delay, s/veh	9.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	106	58	94	96	8	28	8	67	3	8	5
Future Vol, veh/h	8	106	58	94	96	8	28	8	67	3	8	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	115	63	102	104	9	30	9	73	3	9	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	180	160	12	213	126	46	14	0	0	82	0	0
Stage 1	18	18	-	106	106	-	-	-	-	-	-	-
Stage 2	162	142	-	107	20	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	782	732	1069	744	764	1023	1604	-	-	1515	-	-
Stage 1	1001	880	-	900	807	-	-	-	-	-	-	-
Stage 2	840	779	-	898	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	681	716	1069	603	747	1023	1604	-	-	1515	-	-
Mov Cap-2 Maneuver	681	716	-	603	747	-	-	-	-	-	-	-
Stage 1	981	878	-	882	791	-	-	-	-	-	-	-
Stage 2	709	763	-	733	877	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.8		12.8		2		1.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	804	678	1515	-	-
HCM Lane V/C Ratio	0.019	-	-	0.233	0.317	0.002	-	-
HCM Control Delay (s)	7.3	0	-	10.8	12.8	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	1.4	0	-	-

HCM 6th TWSC
4: Brookside Blvd & Fire Station Rd

12/03/2018

Intersection						
Int Delay, s/veh	4.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	95	75	79	86	69
Future Vol, veh/h	26	95	75	79	86	69
Conflicting Peds, #/hr	0	2	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	81	81	84	84
Heavy Vehicles, %	0	0	0	0	2	2
Mvmt Flow	27	99	93	98	102	82

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	430	146	0	0	193
Stage 1	144	-	-	-	-
Stage 2	286	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218
Pot Cap-1 Maneuver	586	906	-	-	1380
Stage 1	888	-	-	-	-
Stage 2	767	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	539	903	-	-	1377
Mov Cap-2 Maneuver	539	-	-	-	-
Stage 1	886	-	-	-	-
Stage 2	707	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	4.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	789	1377
HCM Lane V/C Ratio	-	-	0.16	0.074
HCM Control Delay (s)	-	-	10.4	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.2

HCM 6th TWSC
5: SR 522 & Town Center Driveway

12/03/2018

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	2155	1345	105	0	60
Future Vol, veh/h	0	2155	1345	105	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2342	1462	114	0	65

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	788
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	287
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	287
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	287
HCM Lane V/C Ratio	-	-	-	0.227
HCM Control Delay (s)	-	-	-	21.2
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.9

HCM Signalized Intersection Capacity Analysis

6: SR 104 & SR 522

12/06/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	1890	5	5	1365	680	10	10	5	605	5	75
Future Volume (vph)	260	1890	5	5	1365	680	10	10	5	605	5	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.3	4.3	4.0	4.3	4.3		4.0		4.1	4.1	4.1
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.55	1.00	1.00	1.00		1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539	864	1770	3539	1583		1780		1681	1687	1528
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (perm)	1770	3539	864	1770	3539	1583		1780		1681	1687	1528
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	2054	5	5	1484	739	11	11	5	658	5	82
RTOR Reduction (vph)	0	0	2	0	0	212	0	5	0	0	0	65
Lane Group Flow (vph)	283	2054	3	5	1484	527	0	22	0	336	327	17
Confl. Peds. (#/hr)			144									15
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	29.8	99.3	99.3	1.3	70.8	70.8		5.2		31.4	31.4	31.4
Effective Green, g (s)	31.3	101.2	101.2	2.8	72.7	72.7		6.7		32.9	32.9	32.9
Actuated g/C Ratio	0.20	0.63	0.63	0.02	0.45	0.45		0.04		0.21	0.21	0.21
Clearance Time (s)	5.5	6.2	6.2	5.5	6.2	6.2		5.5		5.6	5.6	5.6
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	346	2238	546	30	1608	719		74		345	346	314
v/s Ratio Prot	c0.16	c0.58		0.00	0.42			c0.01		c0.20	0.19	
v/s Ratio Perm			0.00			0.33						0.01
v/c Ratio	0.82	0.92	0.01	0.17	0.92	0.73		0.30		0.97	0.95	0.05
Uniform Delay, d1	61.6	25.8	10.8	77.5	41.0	35.7		74.4		63.1	62.7	51.0
Progression Factor	1.28	0.83	1.00	1.00	1.00	1.00		1.00		1.07	1.07	17.80
Incremental Delay, d2	7.4	4.1	0.0	1.9	10.3	6.5		2.3		38.8	31.8	0.1
Delay (s)	86.1	25.6	10.9	79.4	51.3	42.2		76.7		106.2	98.8	908.6
Level of Service	F	C	B	E	D	D		E		F	F	F
Approach Delay (s)		32.9			48.4			76.7			191.3	
Approach LOS		C			D			E			F	

Intersection Summary

HCM 2000 Control Delay	61.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	2500	2042	11	0	8
Future Vol, veh/h	0	2500	2042	11	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	94	94	92	75
Heavy Vehicles, %	2	3	1	1	0	0
Mvmt Flow	0	2632	2172	12	0	11

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	22.8
HCM LOS			C

Minor Lane/Major Mvmt

	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	213
HCM Lane V/C Ratio	-	-	-	0.05
HCM Control Delay (s)	-	-	-	22.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.2

HCM 6th Signalized Intersection Summary
 8: SR 104 & Town Center Driveway/NE 175th St

12/03/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	
Traffic Volume (veh/h)	125	50	60	15	30	25	30	875	40	50	610	45
Future Volume (veh/h)	125	50	60	15	30	25	30	875	40	50	610	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	54	41	16	33	0	33	951	42	54	663	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	60	417	40	70	417	385	1187	52	207	1153	82
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.00	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	572	227	1581	39	264	1585	739	1777	78	567	1726	122
Grp Volume(v), veh/h	190	0	41	49	0	0	33	0	993	54	0	710
Grp Sat Flow(s),veh/h/ln	798	0	1581	304	0	1585	739	0	1856	567	0	1848
Q Serve(g_s), s	0.0	0.0	3.1	1.1	0.0	0.0	4.0	0.0	61.2	12.0	0.0	33.1
Cycle Q Clear(g_c), s	39.0	0.0	3.1	40.1	0.0	0.0	37.2	0.0	61.2	73.2	0.0	33.1
Prop In Lane	0.72		1.00	0.33		1.00	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	249	0	417	110	0	417	385	0	1239	207	0	1234
V/C Ratio(X)	0.76	0.00	0.10	0.45	0.00	0.00	0.09	0.00	0.80	0.26	0.00	0.58
Avail Cap(c_a), veh/h	271	0	440	134	0	441	385	0	1239	207	0	1234
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.54	0.00	0.54	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.8	0.0	44.6	48.5	0.0	0.0	24.4	0.0	19.0	45.1	0.0	14.3
Incr Delay (d2), s/veh	11.2	0.0	0.1	2.8	0.0	0.0	0.2	0.0	3.1	3.0	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.0	1.3	1.6	0.0	0.0	0.8	0.0	26.4	1.9	0.0	14.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.0	0.0	44.7	51.3	0.0	0.0	24.6	0.0	22.0	48.2	0.0	16.3
LnGrp LOS	E	A	D	D	A	A	C	A	C	D	A	B
Approach Vol, veh/h		231			49			1026			764	
Approach Delay, s/veh		64.7			51.3			22.1			18.5	
Approach LOS		E			D			C			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		112.4		47.6		112.4		47.6				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		104.5		44.5		104.5		44.5				
Max Q Clear Time (g_c+I1), s		63.2		41.0		75.2		42.1				
Green Ext Time (p_c), s		11.3		0.4		6.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				26.2								
HCM 6th LOS				C								

HCM 6th TWSC
 9: SR 104 & Town Center Driveway

12/03/2018

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	18	6	995	691	119
Future Vol, veh/h	50	18	6	995	691	119
Conflicting Peds, #/hr	1	1	9	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	99	99	91	91
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	56	20	6	1005	759	131

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1852	835	899	0	-	0
Stage 1	834	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	82	371	756	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	80	367	750	-	-	-
Mov Cap-2 Maneuver	211	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	349	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.7	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	750	-	211	367	-	-
HCM Lane V/C Ratio	0.008	-	0.266	0.055	-	-
HCM Control Delay (s)	9.8	-	28.1	15.4	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0	-	1	0.2	-	-

Intersection

Int Delay, s/veh 18

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑	↗	
Traffic Vol, veh/h	70	220	175	870	590	55
Future Vol, veh/h	70	220	175	870	590	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	75	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	239	190	946	641	60

Major/Minor

	Minor2	Major1	Major2			
Conflicting Flow All	1997	671	701	0	-	0
Stage 1	671	-	-	-	-	-
Stage 2	1326	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 66	456	896	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	248	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 52	456	896	-	-	-
Mov Cap-2 Maneuver	~ 52	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	248	-	-	-	-	-

Approach

	EB	NB	SB
HCM Control Delay, s	116.6	1.7	0
HCM LOS	F		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	896	-	52	456	-	-
HCM Lane V/C Ratio	0.212	-	1.463	0.524	-	-
HCM Control Delay (s)	10.1	-	\$ 416	21.3	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.8	-	7.1	3	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↘		↖	↗
Traffic Vol, veh/h	0	40	900	40	90	645
Future Vol, veh/h	0	40	900	40	90	645
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	978	43	98	701

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	- 1000	0	0 1021
Stage 1	- -	-	- -
Stage 2	- -	-	- -
Critical Hdwy	- 6.22	-	- 4.12
Critical Hdwy Stg 1	- -	-	- -
Critical Hdwy Stg 2	- -	-	- -
Follow-up Hdwy	- 3.318	-	- 2.218
Pot Cap-1 Maneuver	0 295	-	- 680
Stage 1	0 -	-	- -
Stage 2	0 -	-	- -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	- 295	-	- 680
Mov Cap-2 Maneuver	- -	-	- -
Stage 1	- -	-	- -
Stage 2	- -	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	19.3	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 295	680	-
HCM Lane V/C Ratio	-	- 0.147	0.144	-
HCM Control Delay (s)	-	- 19.3	11.2	-
HCM Lane LOS	-	- C	B	-
HCM 95th %tile Q(veh)	-	- 0.5	0.5	-

HCM Unsignalized Intersection Capacity Analysis

1: SR 522 & Brookside Blvd

12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4111			↑↑	↑						↑
Traffic Volume (veh/h)	105	2320	0	0	1560	30	0	0	0	0	0	80
Future Volume (Veh/h)	105	2320	0	0	1560	30	0	0	0	0	0	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	114	2522	0	0	1696	33	0	0	0	0	0	87
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)					184							
pX, platoon unblocked	0.61						0.61	0.61		0.61	0.61	0.61
vC, conflicting volume	1729			2522			3685	4479	630	2554	4446	848
vC1, stage 1 conf vol							2750	2750		1696	1696	
vC2, stage 2 conf vol							935	1729		858	2750	
vCu, unblocked vol	917			2522			4123	5424	630	2270	5370	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	75			100			100	100	100	100	100	87
cM capacity (veh/h)	451			176			15	28	424	141	30	662
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1				
Volume Total	474	721	721	721	848	848	33	87				
Volume Left	114	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	0	33	87				
cSH	451	1700	1700	1700	1700	1700	1700	662				
Volume to Capacity	0.25	0.42	0.42	0.42	0.50	0.50	0.02	0.13				
Queue Length 95th (ft)	25	0	0	0	0	0	0	11				
Control Delay (s)	7.6	0.0	0.0	0.0	0.0	0.0	0.0	11.3				
Lane LOS	A							B				
Approach Delay (s)	1.4				0.0				11.3			
Approach LOS									B			
Intersection Summary												
Average Delay					1.0							
Intersection Capacity Utilization					85.0%				ICU Level of Service			
Analysis Period (min)					15				E			

HCM 6th Signalized Intersection Summary
 2: Beach Drive NE/NE 170th St & SR 522

12/04/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↷		↷		↶	↷	↷
Traffic Volume (veh/h)	60	2250	10	25	1525	25	10	10	15	105	20	55
Future Volume (veh/h)	60	2250	10	25	1525	25	10	10	15	105	20	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		1.00	1.00		0.88	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	2368	7	26	1605	14	11	11	4	126	0	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	2305	938	55	2270	1008	108	108	39	258	0	113
Arrive On Green	0.04	0.65	0.65	0.03	0.64	0.64	0.15	0.15	0.14	0.07	0.00	0.07
Sat Flow, veh/h	1781	3554	1446	1781	3554	1579	738	738	268	3563	0	1552
Grp Volume(v), veh/h	63	2368	7	26	1605	14	26	0	0	126	0	13
Grp Sat Flow(s),veh/h/ln	1781	1777	1446	1781	1777	1579	1744	0	0	1781	0	1552
Q Serve(g_s), s	5.6	103.8	0.3	2.3	47.6	0.5	2.1	0.0	0.0	5.4	0.0	1.3
Cycle Q Clear(g_c), s	5.6	103.8	0.3	2.3	47.6	0.5	2.1	0.0	0.0	5.4	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	0.42		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	72	2305	938	55	2270	1008	256	0	0	258	0	113
V/C Ratio(X)	0.87	1.03	0.01	0.47	0.71	0.01	0.10	0.00	0.00	0.49	0.00	0.12
Avail Cap(c_a), veh/h	72	2305	938	72	2270	1008	343	0	0	701	0	306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	76.3	28.1	9.9	76.3	19.0	10.5	59.2	0.0	0.0	71.3	0.0	69.4
Incr Delay (d2), s/veh	62.9	26.2	0.0	4.7	1.9	0.0	0.2	0.0	0.0	1.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	49.4	0.1	1.1	19.6	0.2	0.9	0.0	0.0	2.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	139.3	54.3	9.9	80.9	20.9	10.6	59.4	0.0	0.0	72.8	0.0	69.8
LnGrp LOS	F	F	A	F	C	B	E	A	A	E	A	E
Approach Vol, veh/h		2438			1645			26			139	
Approach Delay, s/veh		56.4			21.8			59.4			72.5	
Approach LOS		E			C			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	108.0		15.6	10.5	106.4		27.5				
Change Period (Y+Rc), s	5.5	6.1		5.5	5.5	* 6.1		5.5				
Max Green Setting (Gmax), s	5.0	72.4		30.0	5.0	* 73		30.0				
Max Q Clear Time (g_c+I1), s	4.3	105.8		7.4	7.6	49.6		4.1				
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	11.5		0.1				

Intersection Summary

HCM 6th Ctrl Delay	43.5
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	10											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	120	65	100	110	10	30	10	75	5	10	10
Future Vol, veh/h	10	120	65	100	110	10	30	10	75	5	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	130	71	109	120	11	33	11	82	5	11	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	211	186	17	245	150	52	22	0	0	93	0	0
Stage 1	27	27	-	118	118	-	-	-	-	-	-	-
Stage 2	184	159	-	127	32	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	746	708	1062	709	742	1016	1593	-	-	1501	-	-
Stage 1	990	873	-	887	798	-	-	-	-	-	-	-
Stage 2	818	766	-	877	868	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	633	690	1062	555	723	1016	1593	-	-	1501	-	-
Mov Cap-2 Maneuver	633	690	-	555	723	-	-	-	-	-	-	-
Stage 1	968	870	-	867	780	-	-	-	-	-	-	-
Stage 2	670	749	-	694	865	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.4		13.9		1.9		1.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1593	-	-	777	643	1501	-	-
HCM Lane V/C Ratio	0.02	-	-	0.273	0.372	0.004	-	-
HCM Control Delay (s)	7.3	0	-	11.4	13.9	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	1.7	0	-	-

HCM 6th TWSC
4: Brookside Blvd & Fire Station Rd

12/04/2018

Intersection						
Int Delay, s/veh	4.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	115	90	85	100	75
Future Vol, veh/h	30	115	90	85	100	75
Conflicting Peds, #/hr	0	2	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	81	81	84	84
Heavy Vehicles, %	0	0	0	0	2	2
Mvmt Flow	31	120	111	105	119	89

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	493	168	0	0	218
Stage 1	166	-	-	-	-
Stage 2	327	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218
Pot Cap-1 Maneuver	539	881	-	-	1352
Stage 1	868	-	-	-	-
Stage 2	735	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	488	878	-	-	1349
Mov Cap-2 Maneuver	488	-	-	-	-
Stage 1	866	-	-	-	-
Stage 2	667	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	4.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	753	1349
HCM Lane V/C Ratio	-	-	0.201	0.088
HCM Control Delay (s)	-	-	11	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.7	0.3

HCM 6th TWSC
5: SR 522 & Town Center Driveway

12/04/2018

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	2370	1500	115	0	70
Future Vol, veh/h	0	2370	1500	115	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2576	1630	125	0	76

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	- 878
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	- 7.14
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	- 3.92
Pot Cap-1 Maneuver	0	-	-	-	0 250
Stage 1	0	-	-	-	0 -
Stage 2	0	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	- 250
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	25.6
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	250
HCM Lane V/C Ratio	-	-	-	0.304
HCM Control Delay (s)	-	-	-	25.6
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	1.2

HCM Signalized Intersection Capacity Analysis

6: SR 104 & SR 522

12/06/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕		↖	↗	↘
Traffic Volume (vph)	290	2070	10	10	1505	750	15	15	10	665	10	95
Future Volume (vph)	290	2070	10	10	1505	750	15	15	10	665	10	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.3	4.3	4.0	4.3	4.3		4.0		4.1	4.1	4.1
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.55	1.00	1.00	1.00		1.00		1.00	1.00	0.77
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539	864	1770	3539	1583		1767		1681	1688	1218
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (perm)	1770	3539	864	1770	3539	1583		1767		1681	1688	1218
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	299	2134	10	10	1552	773	15	15	10	686	10	98
RTOR Reduction (vph)	0	0	4	0	0	231	0	8	0	0	0	78
Lane Group Flow (vph)	299	2134	6	10	1552	542	0	32	0	350	346	20
Confl. Peds. (#/hr)			144									144
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	30.6	96.1	96.1	2.8	68.3	68.3		7.3		31.0	31.0	31.0
Effective Green, g (s)	32.1	98.0	98.0	4.3	70.2	70.2		8.8		32.5	32.5	32.5
Actuated g/C Ratio	0.20	0.61	0.61	0.03	0.44	0.44		0.06		0.20	0.20	0.20
Clearance Time (s)	5.5	6.2	6.2	5.5	6.2	6.2		5.5		5.6	5.6	5.6
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	355	2167	529	47	1552	694		97		341	342	247
v/s Ratio Prot	c0.17	c0.60		0.01	0.44			c0.02		c0.21	0.21	
v/s Ratio Perm			0.01			0.34						0.02
v/c Ratio	0.84	0.98	0.01	0.21	1.00	0.78		0.33		1.03	1.01	0.08
Uniform Delay, d1	61.5	30.3	12.1	76.2	44.9	38.3		72.8		63.8	63.8	51.6
Progression Factor	1.05	1.40	1.00	1.00	1.00	1.00		1.00		1.06	1.06	4.99
Incremental Delay, d2	1.7	3.3	0.0	1.6	22.8	8.5		2.0		55.0	51.0	0.1
Delay (s)	66.3	45.5	12.1	77.8	67.7	46.9		74.8		122.4	118.4	257.8
Level of Service	E	D	B	E	E	D		E		F	F	F
Approach Delay (s)		47.9			60.9			74.8			137.3	
Approach LOS		D			E			E			F	

Intersection Summary		
HCM 2000 Control Delay	66.2	HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio	0.96	
Actuated Cycle Length (s)	160.0	Sum of lost time (s) 16.4
Intersection Capacity Utilization	97.5%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	2745	2255	15	0	10
Future Vol, veh/h	0	2745	2255	15	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	94	94	92	75
Heavy Vehicles, %	2	3	1	1	0	0
Mvmt Flow	0	2889	2399	16	0	13

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 1208
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	- 6.9
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	- 3.3
Pot Cap-1 Maneuver	0	-	- 0 178
Stage 1	0	-	- 0
Stage 2	0	-	- 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 178
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	26.9
HCM LOS			D

Minor Lane/Major Mvmt

	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	178
HCM Lane V/C Ratio	-	-	-	0.075
HCM Control Delay (s)	-	-	-	26.9
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	0.2

HCM 6th Signalized Intersection Summary
 8: SR 104 & Town Center Driveway/NE 175th St

12/04/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	
Traffic Volume (veh/h)	175	60	70	20	35	30	35	970	45	55	680	50
Future Volume (veh/h)	175	60	70	20	35	30	35	970	45	55	680	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	62	50	21	36	0	36	1000	45	57	701	52
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	52	390	31	40	391	513	1215	55	195	2295	170
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.00	0.68	0.68	0.68	0.91	0.91	0.91
Sat Flow, veh/h	615	212	1581	0	162	1585	710	1776	80	540	3354	249
Grp Volume(v), veh/h	242	0	50	57	0	0	36	0	1045	57	371	382
Grp Sat Flow(s),veh/h/ln	827	0	1581	162	0	1585	710	0	1856	540	1777	1826
Q Serve(g_s), s	0.0	0.0	3.9	0.0	0.0	0.0	2.9	0.0	65.1	12.4	4.2	4.2
Cycle Q Clear(g_c), s	39.5	0.0	3.9	39.5	0.0	0.0	7.1	0.0	65.1	77.5	4.2	4.2
Prop In Lane	0.74		1.00	0.37		1.00	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	243	0	390	71	0	391	513	0	1270	195	1216	1249
V/C Ratio(X)	0.99	0.00	0.13	0.80	0.00	0.00	0.07	0.00	0.82	0.29	0.31	0.31
Avail Cap(c_a), veh/h	243	0	390	71	0	391	513	0	1270	195	1216	1249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.47	0.00	0.47	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	0.0	46.9	53.4	0.0	0.0	9.8	0.0	18.2	29.6	2.5	2.5
Incr Delay (d2), s/veh	56.0	0.0	0.1	47.1	0.0	0.0	0.1	0.0	3.0	3.8	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	0.0	1.6	2.7	0.0	0.0	0.5	0.0	27.7	1.8	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	119.4	0.0	47.0	100.6	0.0	0.0	10.0	0.0	21.2	33.4	3.1	3.1
LnGrp LOS	F	A	D	F	A	A	A	A	C	C	A	A
Approach Vol, veh/h		292			57			1081				810
Approach Delay, s/veh		107.0			100.6			20.9				5.2
Approach LOS		F			F			C				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		115.0		45.0		115.0		45.0				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		109.5		39.5		109.5		39.5				
Max Q Clear Time (g_c+I1), s		67.1		41.5		79.5		41.5				
Green Ext Time (p_c), s		12.7		0.0		6.1		0.0				

Intersection Summary

HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	65	20	10	1140	765	130
Future Vol, veh/h	65	20	10	1140	765	130
Conflicting Peds, #/hr	1	1	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	99	99	91	91
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	73	22	10	1152	841	143

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2090	918	988	0	-	0
Stage 1	917	-	-	-	-	-
Stage 2	1173	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	~ 59	332	699	-	-	-
Stage 1	393	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 58	330	696	-	-	-
Mov Cap-2 Maneuver	179	-	-	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	296	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.2	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	696	-	179	330	-	-
HCM Lane V/C Ratio	0.015	-	0.408	0.068	-	-
HCM Control Delay (s)	10.2	-	38.3	16.7	-	-
HCM Lane LOS	B	-	E	C	-	-
HCM 95th %tile Q(veh)	0	-	1.8	0.2	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis

10: SR 104 & NE 178th St

12/04/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	245	220	985	650	65
Future Volume (vph)	80	245	220	985	650	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.5	5.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1517	1770	1863	1833	
Flt Permitted	0.95	1.00	0.28	1.00	1.00	
Satd. Flow (perm)	1770	1517	521	1863	1833	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	266	239	1071	707	71
RTOR Reduction (vph)	0	231	0	0	2	0
Lane Group Flow (vph)	87	35	239	1071	776	0
Confl. Peds. (#/hr)		5	5			5
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	21.0	21.0	120.1	109.8	114.2	
Effective Green, g (s)	21.0	21.0	120.1	109.8	114.2	
Actuated g/C Ratio	0.13	0.13	0.75	0.69	0.71	
Clearance Time (s)	5.5	5.5	4.5	5.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	232	199	471	1278	1308	
v/s Ratio Prot	c0.05		c0.03	c0.57	c0.42	
v/s Ratio Perm		0.02	0.35			
v/c Ratio	0.38	0.18	0.51	0.84	0.59	
Uniform Delay, d1	63.5	61.8	9.2	18.5	11.4	
Progression Factor	1.00	1.00	0.94	0.83	0.09	
Incremental Delay, d2	1.0	0.4	0.6	5.1	1.6	
Delay (s)	64.5	62.2	9.3	20.4	2.6	
Level of Service	E	E	A	C	A	
Approach Delay (s)	62.8			18.4	2.6	
Approach LOS	E			B	A	

Intersection Summary

HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

18: SR 104

12/04/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	45	1010	55	100	715
Future Volume (vph)	0	45	1010	55	100	715
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	5.5		4.5	4.5
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		0.86	0.99		1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1611	1850		1770	1863
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1611	1850		1770	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	49	1098	60	109	777
RTOR Reduction (vph)	0	42	1	0	0	0
Lane Group Flow (vph)	0	7	1157	0	109	777
Turn Type		Perm	NA		Prot	NA
Protected Phases			2 4		1	6
Permitted Phases		8				
Actuated Green, G (s)		22.0	136.3		13.7	114.2
Effective Green, g (s)		22.0	136.3		13.7	114.2
Actuated g/C Ratio		0.14	0.85		0.09	0.71
Clearance Time (s)		4.5			4.5	4.5
Vehicle Extension (s)		3.0			3.0	3.0
Lane Grp Cap (vph)		221	1575		151	1329
v/s Ratio Prot			c0.63		c0.06	c0.42
v/s Ratio Perm		0.00				
v/c Ratio		0.03	0.73		0.72	0.58
Uniform Delay, d1		59.8	4.7		71.3	11.2
Progression Factor		1.00	0.03		1.00	1.00
Incremental Delay, d2		0.1	1.0		15.6	1.9
Delay (s)		59.8	1.2		86.9	13.1
Level of Service		E	A		F	B
Approach Delay (s)	59.8		1.2			22.2
Approach LOS	E		A			C

Intersection Summary

HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

1: SR 522 & Brookside Blvd

12/04/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4TTL			2T	T						T
Traffic Volume (veh/h)	105	2325	0	0	1560	30	0	0	0	0	0	80
Future Volume (Veh/h)	105	2325	0	0	1560	30	0	0	0	0	0	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	114	2527	0	0	1696	33	0	0	0	0	0	87
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)					184							
pX, platoon unblocked	0.61					0.61	0.61			0.61	0.61	0.61
vC, conflicting volume	1729	2527				3690	4484	632	2556	4451	848	
vC1, stage 1 conf vol					2755	2755			1696	1696		
vC2, stage 2 conf vol					935	1729			860	2755		
vCu, unblocked vol	910	2527				4135	5440	632	2269	5386	0	
tC, single (s)	4.1	4.1				7.5	6.5	6.9	7.5	6.5	6.9	
tC, 2 stage (s)					6.5	5.5			6.5	5.5		
tF (s)	2.2	2.2				3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	75	100				100	100	100	100	100	87	
cM capacity (veh/h)	453	175				14	28	423	142	30	659	
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1				
Volume Total	475	722	722	722	848	848	33	87				
Volume Left	114	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	0	33	87				
cSH	453	1700	1700	1700	1700	1700	1700	659				
Volume to Capacity	0.25	0.42	0.42	0.42	0.50	0.50	0.02	0.13				
Queue Length 95th (ft)	25	0	0	0	0	0	0	11				
Control Delay (s)	7.5	0.0	0.0	0.0	0.0	0.0	0.0	11.3				
Lane LOS	A							B				
Approach Delay (s)	1.4				0.0				11.3			
Approach LOS								B				
Intersection Summary												
Average Delay	1.0											
Intersection Capacity Utilization	85.1%				ICU Level of Service				E			
Analysis Period (min)	15											

HCM 6th Signalized Intersection Summary
 2: Beach Drive NE/NE 170th St & SR 522

12/04/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕		↖	↗	↘
Traffic Volume (veh/h)	65	2250	10	25	1525	25	10	10	15	105	20	55
Future Volume (veh/h)	65	2250	10	25	1525	25	10	10	15	105	20	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		1.00	1.00		0.88	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	2368	7	26	1605	14	11	11	4	126	0	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	2305	938	55	2263	1005	108	108	39	258	0	113
Arrive On Green	0.04	0.65	0.65	0.03	0.64	0.64	0.15	0.15	0.14	0.07	0.00	0.07
Sat Flow, veh/h	1781	3554	1446	1781	3554	1579	738	738	268	3563	0	1552
Grp Volume(v), veh/h	68	2368	7	26	1605	14	26	0	0	126	0	13
Grp Sat Flow(s),veh/h/ln	1781	1777	1446	1781	1777	1579	1744	0	0	1781	0	1552
Q Serve(g_s), s	6.1	103.8	0.3	2.3	47.9	0.5	2.1	0.0	0.0	5.4	0.0	1.3
Cycle Q Clear(g_c), s	6.1	103.8	0.3	2.3	47.9	0.5	2.1	0.0	0.0	5.4	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	0.42		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	76	2305	938	55	2263	1005	256	0	0	258	0	113
V/C Ratio(X)	0.90	1.03	0.01	0.47	0.71	0.01	0.10	0.00	0.00	0.49	0.00	0.12
Avail Cap(c_a), veh/h	76	2305	938	72	2263	1005	343	0	0	701	0	306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	76.3	28.1	9.9	76.3	19.2	10.6	59.2	0.0	0.0	71.3	0.0	69.4
Incr Delay (d2), s/veh	69.3	26.2	0.0	4.7	1.9	0.0	0.2	0.0	0.0	1.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	49.4	0.1	1.1	19.7	0.2	0.9	0.0	0.0	2.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	145.5	54.3	9.9	80.9	21.2	10.7	59.4	0.0	0.0	72.8	0.0	69.8
LnGrp LOS	F	F	A	F	C	B	E	A	A	E	A	E
Approach Vol, veh/h		2443			1645			26				139
Approach Delay, s/veh		56.7			22.0			59.4				72.5
Approach LOS		E			C			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	108.0		15.6	10.8	106.1		27.5				
Change Period (Y+Rc), s	5.5	6.1		5.5	5.5	* 6.1		5.5				
Max Green Setting (Gmax), s	5.0	72.4		30.0	5.3	* 73		30.0				
Max Q Clear Time (g_c+I1), s	4.3	105.8		7.4	8.1	49.9		4.1				
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	11.4		0.1				

Intersection Summary

HCM 6th Ctrl Delay	43.8
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	130	65	100	110	10	35	10	80	5	10	10
Future Vol, veh/h	10	130	65	100	110	10	35	10	80	5	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	141	71	109	120	11	38	11	87	5	11	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	223	201	17	264	163	55	22	0	0	98	0	0
Stage 1	27	27	-	131	131	-	-	-	-	-	-	-
Stage 2	196	174	-	133	32	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	733	695	1062	689	729	1012	1593	-	-	1495	-	-
Stage 1	990	873	-	873	788	-	-	-	-	-	-	-
Stage 2	806	755	-	870	868	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	618	676	1062	528	709	1012	1593	-	-	1495	-	-
Mov Cap-2 Maneuver	618	676	-	528	709	-	-	-	-	-	-	-
Stage 1	965	870	-	851	768	-	-	-	-	-	-	-
Stage 2	656	736	-	678	865	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.7		14.4		2		1.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1593	-	-	760	621	1495	-	-
HCM Lane V/C Ratio	0.024	-	-	0.293	0.385	0.004	-	-
HCM Control Delay (s)	7.3	0	-	11.7	14.4	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	1.8	0	-	-

HCM 6th TWSC
 4: Brookside Blvd & Fire Station Rd

12/04/2018

Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	125	85	90	105	80
Future Vol, veh/h	30	125	85	90	105	80
Conflicting Peds, #/hr	0	2	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	81	81	84	84
Heavy Vehicles, %	0	0	0	0	2	2
Mvmt Flow	31	130	105	111	125	95

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	508	165	0	0	218
Stage 1	163	-	-	-	-
Stage 2	345	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218
Pot Cap-1 Maneuver	528	885	-	-	1352
Stage 1	871	-	-	-	-
Stage 2	722	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	475	882	-	-	1349
Mov Cap-2 Maneuver	475	-	-	-	-
Stage 1	869	-	-	-	-
Stage 2	651	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	4.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	757	1349
HCM Lane V/C Ratio	-	-	0.213	0.093
HCM Control Delay (s)	-	-	11	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0.3

HCM 6th TWSC
5: SR 522 & Town Center Driveway

12/04/2018

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	2370	1500	125	0	70
Future Vol, veh/h	0	2370	1500	125	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2576	1630	136	0	76

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	883
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	248
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	248
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	25.8
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	248
HCM Lane V/C Ratio	-	-	-	0.307
HCM Control Delay (s)	-	-	-	25.8
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	1.3

HCM Signalized Intersection Capacity Analysis
6: SR 104 & SR 522

12/06/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	290	2070	10	10	1515	755	15	15	10	670	10	95	
Future Volume (vph)	290	2070	10	10	1515	755	15	15	10	670	10	95	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.3	4.3	4.0	4.3	4.3		4.0		4.1	4.1	4.1	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.55	1.00	1.00	1.00		1.00		1.00	1.00	0.77	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00	
Satd. Flow (prot)	1770	3539	864	1770	3539	1583		1767		1681	1688	1218	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00	
Satd. Flow (perm)	1770	3539	864	1770	3539	1583		1767		1681	1688	1218	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	299	2134	10	10	1562	778	15	15	10	691	10	98	
RTOR Reduction (vph)	0	0	4	0	0	231	0	8	0	0	0	78	
Lane Group Flow (vph)	299	2134	6	10	1562	547	0	32	0	352	349	20	
Confl. Peds. (#/hr)			144									144	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm	
Protected Phases	5	2		1	6		8	8		4	4		
Permitted Phases			2			6						4	
Actuated Green, G (s)	30.6	96.1	96.1	2.8	68.3	68.3		7.3		31.0	31.0	31.0	
Effective Green, g (s)	32.1	98.0	98.0	4.3	70.2	70.2		8.8		32.5	32.5	32.5	
Actuated g/C Ratio	0.20	0.61	0.61	0.03	0.44	0.44		0.06		0.20	0.20	0.20	
Clearance Time (s)	5.5	6.2	6.2	5.5	6.2	6.2		5.5		5.6	5.6	5.6	
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	355	2167	529	47	1552	694		97		341	342	247	
v/s Ratio Prot	c0.17	c0.60		0.01	0.44			c0.02		c0.21	0.21		
v/s Ratio Perm			0.01			0.35						0.02	
v/c Ratio	0.84	0.98	0.01	0.21	1.01	0.79		0.33		1.03	1.02	0.08	
Uniform Delay, d1	61.5	30.3	12.1	76.2	44.9	38.5		72.8		63.8	63.8	51.6	
Progression Factor	1.04	1.41	1.00	1.00	1.00	1.00		1.00		1.02	1.02	4.97	
Incremental Delay, d2	1.7	3.3	0.0	1.6	24.4	8.9		2.0		56.7	53.3	0.1	
Delay (s)	65.7	46.0	12.1	77.8	69.3	47.4		74.8		121.4	118.1	256.8	
Level of Service	E	D	B	E	E	D		E		F	F	F	
Approach Delay (s)		48.2			62.1			74.8			136.6		
Approach LOS		D			E			E			F		
Intersection Summary													
HCM 2000 Control Delay			66.7									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.96										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	16.4
Intersection Capacity Utilization			97.6%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	2750	2270	15	0	10
Future Vol, veh/h	0	2750	2270	15	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	94	94	92	75
Heavy Vehicles, %	2	3	1	1	0	0
Mvmt Flow	0	2895	2415	16	0	13

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1216
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.9
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.3
Pot Cap-1 Maneuver	0	-	- 0 176
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 176
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	27.1
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	176
HCM Lane V/C Ratio	-	-	-	0.076
HCM Control Delay (s)	-	-	-	27.1
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	0.2

HCM 6th Signalized Intersection Summary
 8: SR 104 & Town Center Driveway/NE 175th St

12/04/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗		↖	↗	
Traffic Volume (veh/h)	175	60	75	20	40	30	35	970	55	55	680	55
Future Volume (veh/h)	175	60	75	20	40	30	35	970	55	55	680	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	62	55	21	41	0	36	1000	56	57	701	57
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	49	390	30	46	391	529	1200	67	187	2278	185
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.00	0.68	0.68	0.68	1.00	1.00	1.00
Sat Flow, veh/h	573	197	1581	0	185	1585	707	1754	98	534	3328	270
Grp Volume(v), veh/h	242	0	55	62	0	0	36	0	1056	57	374	384
Grp Sat Flow(s),veh/h/ln	770	0	1581	185	0	1585	707	0	1852	534	1777	1822
Q Serve(g_s), s	0.0	0.0	4.3	0.0	0.0	0.0	2.7	0.0	67.0	12.4	0.0	0.0
Cycle Q Clear(g_c), s	39.5	0.0	4.3	39.5	0.0	0.0	2.7	0.0	67.0	79.3	0.0	0.0
Prop In Lane	0.74		1.00	0.34		1.00	1.00		0.05	1.00		0.15
Lane Grp Cap(c), veh/h	229	0	390	76	0	391	529	0	1268	187	1216	1247
V/C Ratio(X)	1.06	0.00	0.14	0.82	0.00	0.00	0.07	0.00	0.83	0.30	0.31	0.31
Avail Cap(c_a), veh/h	229	0	390	76	0	391	529	0	1268	187	1216	1247
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.47	0.00	0.47	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.6	0.0	47.0	52.4	0.0	0.0	8.4	0.0	18.5	24.3	0.0	0.0
Incr Delay (d2), s/veh	74.7	0.0	0.2	48.2	0.0	0.0	0.1	0.0	3.2	4.2	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	0.0	1.8	3.0	0.0	0.0	0.4	0.0	28.5	1.8	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	138.3	0.0	47.2	100.6	0.0	0.0	8.5	0.0	21.7	28.4	0.7	0.6
LnGrp LOS	F	A	D	F	A	A	A	A	C	C	A	A
Approach Vol, veh/h		297			62			1092			815	
Approach Delay, s/veh		121.4			100.6			21.3			2.6	
Approach LOS		F			F			C			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		115.0		45.0		115.0		45.0				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		109.5		39.5		109.5		39.5				
Max Q Clear Time (g_c+I1), s		69.0		41.5		81.3		41.5				
Green Ext Time (p_c), s		12.8		0.0		6.1		0.0				

Intersection Summary

HCM 6th Ctrl Delay	29.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑	↗	
Traffic Vol, veh/h	65	20	10	1145	770	140
Future Vol, veh/h	65	20	10	1145	770	140
Conflicting Peds, #/hr	1	1	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	99	99	91	91
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	73	22	10	1157	846	154

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2105	928	1004	0	-	0
Stage 1	927	-	-	-	-	-
Stage 2	1178	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	~ 57	328	690	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 56	326	687	-	-	-
Mov Cap-2 Maneuver	177	-	-	-	-	-
Stage 1	382	-	-	-	-	-
Stage 2	294	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.7	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	687	-	177	326	-	-
HCM Lane V/C Ratio	0.015	-	0.413	0.069	-	-
HCM Control Delay (s)	10.3	-	38.9	16.9	-	-
HCM Lane LOS	B	-	E	C	-	-
HCM 95th %tile Q(veh)	0	-	1.8	0.2	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis

10: SR 104 & NE 178th St

12/04/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	245	220	990	665	65
Future Volume (vph)	80	245	220	990	665	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.5	5.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1517	1770	1863	1833	
Flt Permitted	0.95	1.00	0.27	1.00	1.00	
Satd. Flow (perm)	1770	1517	506	1863	1833	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	266	239	1076	723	71
RTOR Reduction (vph)	0	231	0	0	2	0
Lane Group Flow (vph)	87	35	239	1076	792	0
Confl. Peds. (#/hr)		5	5			5
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	21.0	21.0	120.1	109.8	114.2	
Effective Green, g (s)	21.0	21.0	120.1	109.8	114.2	
Actuated g/C Ratio	0.13	0.13	0.75	0.69	0.71	
Clearance Time (s)	5.5	5.5	4.5	5.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	232	199	461	1278	1308	
v/s Ratio Prot	c0.05		c0.03	c0.58	c0.43	
v/s Ratio Perm		0.02	0.36			
v/c Ratio	0.38	0.18	0.52	0.84	0.61	
Uniform Delay, d1	63.5	61.8	9.6	18.7	11.5	
Progression Factor	1.00	1.00	0.98	0.84	0.09	
Incremental Delay, d2	1.0	0.4	0.7	5.2	1.7	
Delay (s)	64.5	62.2	10.1	20.9	2.7	
Level of Service	E	E	B	C	A	
Approach Delay (s)	62.8			19.0	2.7	
Approach LOS	E			B	A	

Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

18: SR 104

12/04/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	45	1015	55	100	730
Future Volume (vph)	0	45	1015	55	100	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	5.5		4.5	4.5
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		0.86	0.99		1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1611	1850		1770	1863
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1611	1850		1770	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	49	1103	60	109	793
RTOR Reduction (vph)	0	42	1	0	0	0
Lane Group Flow (vph)	0	7	1162	0	109	793
Turn Type		Perm	NA		Prot	NA
Protected Phases			2 4		1	6
Permitted Phases		8				
Actuated Green, G (s)		22.0	136.3		13.7	114.2
Effective Green, g (s)		22.0	136.3		13.7	114.2
Actuated g/C Ratio		0.14	0.85		0.09	0.71
Clearance Time (s)		4.5			4.5	4.5
Vehicle Extension (s)		3.0			3.0	3.0
Lane Grp Cap (vph)		221	1575		151	1329
v/s Ratio Prot			c0.63		c0.06	c0.43
v/s Ratio Perm		0.00				
v/c Ratio		0.03	0.74		0.72	0.60
Uniform Delay, d1		59.8	4.7		71.3	11.4
Progression Factor		1.00	0.03		1.00	1.00
Incremental Delay, d2		0.1	1.0		15.6	2.0
Delay (s)		59.8	1.2		86.9	13.4
Level of Service		E	A		F	B
Approach Delay (s)	59.8		1.2			22.3
Approach LOS	E		A			C

Intersection Summary

HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

1: SR 522 & Brookside Blvd

12/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		4111			↑↑	↑						↑	
Traffic Volume (veh/h)	130	2345	0	0	1595	30	0	0	0	0	0	85	
Future Volume (Veh/h)	130	2345	0	0	1595	30	0	0	0	0	0	85	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
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	
Hourly flow rate (vph)	141	2549	0	0	1734	33	0	0	0	0	0	92	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	TWLTL				None								
Median storage veh	2												
Upstream signal (ft)					184								
pX, platoon unblocked	0.59					0.59	0.59			0.59	0.59	0.59	
vC, conflicting volume	1767	2549				3790	4598	637	2653	4565	867		
vC1, stage 1 conf vol					2831	2831			1734	1734			
vC2, stage 2 conf vol					959	1767			919	2831			
vCu, unblocked vol	898	2549				4347	5725	637	2409	5668	0		
tC, single (s)	4.1	4.1				7.5	6.5	6.9	7.5	6.5	6.9		
tC, 2 stage (s)					6.5	5.5			6.5	5.5			
tF (s)	2.2	2.2				3.5	4.0	3.3	3.5	4.0	3.3		
p0 queue free %	68	100				100	100	100	100	100	86		
cM capacity (veh/h)	441	172				12	23	420	129	25	636		
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1					
Volume Total	505	728	728	728	867	867	33	92					
Volume Left	141	0	0	0	0	0	0	0					
Volume Right	0	0	0	0	0	0	33	92					
cSH	441	1700	1700	1700	1700	1700	1700	636					
Volume to Capacity	0.32	0.43	0.43	0.43	0.51	0.51	0.02	0.14					
Queue Length 95th (ft)	34	0	0	0	0	0	0	13					
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	11.6					
Lane LOS	A							B					
Approach Delay (s)	1.8				0.0				11.6				
Approach LOS								B					
Intersection Summary													
Average Delay	1.3												
Intersection Capacity Utilization	86.7%				ICU Level of Service				E				
Analysis Period (min)	15												

HCM 6th Signalized Intersection Summary
 2: Beach Drive NE/NE 170th St & SR 522

12/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑	↗	↖	↑↑	↗		↕		↖	↗	↗
Traffic Volume (veh/h)	90	2250	10	25	1550	30	10	10	15	130	25	65
Future Volume (veh/h)	90	2250	10	25	1550	30	10	10	15	130	25	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		1.00	1.00		0.88	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	2368	6	26	1632	15	11	11	2	156	0	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	2138	865	55	2054	912	120	120	22	426	0	178
Arrive On Green	0.05	0.60	0.60	0.06	1.00	1.00	0.15	0.15	0.14	0.12	0.00	0.12
Sat Flow, veh/h	1781	3554	1438	1781	3554	1578	816	816	148	3563	0	1486
Grp Volume(v), veh/h	95	2368	6	26	1632	15	24	0	0	156	0	23
Grp Sat Flow(s),veh/h/ln	1781	1777	1438	1781	1777	1578	1780	0	0	1781	0	1486
Q Serve(g_s), s	8.5	96.3	0.3	2.3	0.0	0.0	1.9	0.0	0.0	6.4	0.0	2.2
Cycle Q Clear(g_c), s	8.5	96.3	0.3	2.3	0.0	0.0	1.9	0.0	0.0	6.4	0.0	2.2
Prop In Lane	1.00		1.00	1.00		1.00	0.46		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	97	2138	865	55	2054	912	261	0	0	426	0	178
V/C Ratio(X)	0.98	1.11	0.01	0.47	0.79	0.02	0.09	0.00	0.00	0.37	0.00	0.13
Avail Cap(c_a), veh/h	97	2138	865	72	2054	912	350	0	0	701	0	293
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	75.6	31.9	12.7	73.8	0.0	0.0	59.1	0.0	0.0	64.8	0.0	63.0
Incr Delay (d2), s/veh	84.9	55.9	0.0	4.7	3.3	0.0	0.2	0.0	0.0	0.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	55.8	0.1	1.1	0.9	0.0	0.9	0.0	0.0	3.0	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	160.5	87.8	12.8	78.5	3.3	0.0	59.3	0.0	0.0	65.4	0.0	63.3
LnGrp LOS	F	F	B	E	A	A	E	A	A	E	A	E
Approach Vol, veh/h		2469			1673			24			179	
Approach Delay, s/veh		90.4			4.4			59.3			65.1	
Approach LOS		F			A			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	100.5		23.2	12.7	96.7		27.5				
Change Period (Y+Rc), s	5.5	6.1		5.5	5.5	* 6.1		5.5				
Max Green Setting (Gmax), s	5.0	72.4		30.0	7.2	* 71		30.0				
Max Q Clear Time (g_c+I1), s	4.3	98.3		8.4	10.5	2.0		3.9				
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	16.6		0.1				

Intersection Summary

HCM 6th Ctrl Delay	56.1
HCM 6th LOS	E

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	13.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	175	65	140	150	10	35	10	110	5	15	10
Future Vol, veh/h	15	175	65	140	150	10	35	10	110	5	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	190	71	152	163	11	38	11	120	5	16	11

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	266	239	22	309	184	71	27	0	0	131	0	0
Stage 1	32	32	-	147	147	-	-	-	-	-	-	-
Stage 2	234	207	-	162	37	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	687	662	1055	643	710	991	1587	-	-	1454	-	-
Stage 1	984	868	-	856	775	-	-	-	-	-	-	-
Stage 2	769	731	-	840	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	544	643	1055	453	689	991	1587	-	-	1454	-	-
Mov Cap-2 Maneuver	544	643	-	453	689	-	-	-	-	-	-	-
Stage 1	958	865	-	834	755	-	-	-	-	-	-	-
Stage 2	581	712	-	610	861	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.4		20.1		1.7		1.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1587	-	-	706	559	1454	-	-
HCM Lane V/C Ratio	0.024	-	-	0.393	0.583	0.004	-	-
HCM Control Delay (s)	7.3	0	-	13.4	20.1	7.5	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.9	3.7	0	-	-

HCM 6th TWSC
4: Brookside Blvd & Fire Station Rd

12/19/2018

Intersection						
Int Delay, s/veh	5.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	160	85	115	130	80
Future Vol, veh/h	35	160	85	115	130	80
Conflicting Peds, #/hr	0	2	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	81	81	84	84
Heavy Vehicles, %	0	0	0	0	2	2
Mvmt Flow	36	167	105	142	155	95

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	583	180	0	0	249
Stage 1	178	-	-	-	-
Stage 2	405	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218
Pot Cap-1 Maneuver	478	868	-	-	1317
Stage 1	858	-	-	-	-
Stage 2	678	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	417	865	-	-	1314
Mov Cap-2 Maneuver	417	-	-	-	-
Stage 1	856	-	-	-	-
Stage 2	593	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	725	1314
HCM Lane V/C Ratio	-	-	0.28	0.118
HCM Control Delay (s)	-	-	11.9	8.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0.4

HCM 6th TWSC
5: SR 522 & Town Center Driveway

12/19/2018

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Traffic Vol, veh/h	0	2390	1505	175	0	95
Future Vol, veh/h	0	2390	1505	175	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2598	1636	190	0	103

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	- 913
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	- 7.14
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	- 3.92
Pot Cap-1 Maneuver	0	-	-	-	0 237
Stage 1	0	-	-	-	0 -
Stage 2	0	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	- 237
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	31.4
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	237
HCM Lane V/C Ratio	-	-	-	0.436
HCM Control Delay (s)	-	-	-	31.4
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	2.1

HCM Signalized Intersection Capacity Analysis
6: SR 104 & SR 522

12/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕		↖	↗	↘
Traffic Volume (vph)	290	2090	10	10	1570	770	15	15	10	705	10	95
Future Volume (vph)	290	2090	10	10	1570	770	15	15	10	705	10	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.3	4.3	4.0	4.3	4.3		4.0		4.1	4.1	4.1
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.55	1.00	1.00	1.00		1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539	864	1770	3539	1583		1767		1681	1688	1528
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	0.95	1.00
Satd. Flow (perm)	1770	3539	864	1770	3539	1583		1767		1681	1688	1528
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	299	2155	10	10	1619	794	15	15	10	727	10	98
RTOR Reduction (vph)	0	0	4	0	0	231	0	8	0	0	0	78
Lane Group Flow (vph)	299	2155	6	10	1619	563	0	32	0	371	366	20
Confl. Peds. (#/hr)			144									15
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	30.7	95.8	95.8	2.8	67.9	67.9		7.3		31.3	31.3	31.3
Effective Green, g (s)	32.2	97.7	97.7	4.3	69.8	69.8		8.8		32.8	32.8	32.8
Actuated g/C Ratio	0.20	0.61	0.61	0.03	0.44	0.44		0.06		0.20	0.20	0.20
Clearance Time (s)	5.5	6.2	6.2	5.5	6.2	6.2		5.5		5.6	5.6	5.6
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	356	2161	527	47	1543	690		97		344	346	313
v/s Ratio Prot	c0.17	c0.61		0.01	c0.46			c0.02		c0.22	0.22	
v/s Ratio Perm			0.01			0.36						0.01
v/c Ratio	0.84	1.00	0.01	0.21	1.05	0.82		0.33		1.08	1.06	0.06
Uniform Delay, d1	61.4	31.0	12.2	76.2	45.1	39.5		72.8		63.6	63.6	51.2
Progression Factor	1.31	0.85	1.00	1.00	1.00	1.00		1.00		0.95	0.95	4.66
Incremental Delay, d2	1.7	5.2	0.0	1.6	37.0	10.3		2.0		70.2	63.5	0.1
Delay (s)	82.4	31.7	12.2	77.8	82.1	49.7		74.8		130.8	124.1	239.0
Level of Service	F	C	B	E	F	D		E		F	F	F
Approach Delay (s)		37.8			71.5			74.8			140.5	
Approach LOS		D			E			E			F	

Intersection Summary

HCM 2000 Control Delay	67.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	2805	2340	15	0	10
Future Vol, veh/h	0	2805	2340	15	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	94	94	92	75
Heavy Vehicles, %	2	3	1	1	0	0
Mvmt Flow	0	2953	2489	16	0	13

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	28.6
HCM LOS			D

Minor Lane/Major Mvmt

	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	166
HCM Lane V/C Ratio	-	-	-	0.08
HCM Control Delay (s)	-	-	-	28.6
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	0.3

HCM 6th Signalized Intersection Summary
 8: SR 104 & Town Center Driveway/NE 175th St

12/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↗		↗	↕↗	
Traffic Volume (veh/h)	245	85	100	20	50	30	45	975	55	55	690	75
Future Volume (veh/h)	245	85	100	20	50	30	45	975	55	55	690	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	253	88	81	21	52	0	46	1005	56	57	711	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	50	462	29	58	463	484	1122	63	128	2067	224
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.00	0.64	0.64	0.64	1.00	1.00	1.00
Sat Flow, veh/h	495	172	1582	0	198	1585	687	1755	98	532	3233	350
Grp Volume(v), veh/h	341	0	81	73	0	0	46	0	1061	57	391	397
Grp Sat Flow(s),veh/h/ln	667	0	1582	198	0	1585	687	0	1852	532	1777	1806
Q Serve(g_s), s	0.0	0.0	6.1	0.0	0.0	0.0	4.1	0.0	77.4	15.6	0.0	0.0
Cycle Q Clear(g_c), s	46.7	0.0	6.1	46.7	0.0	0.0	4.1	0.0	77.4	92.9	0.0	0.0
Prop In Lane	0.74		1.00	0.29		1.00	1.00		0.05	1.00		0.19
Lane Grp Cap(c), veh/h	234	0	462	87	0	463	484	0	1184	128	1136	1155
V/C Ratio(X)	1.46	0.00	0.18	0.84	0.00	0.00	0.10	0.00	0.90	0.45	0.34	0.34
Avail Cap(c_a), veh/h	234	0	462	87	0	463	484	0	1184	128	1136	1155
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.44	0.00	0.44	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	0.0	42.3	47.2	0.0	0.0	11.2	0.0	24.4	35.1	0.0	0.0
Incr Delay (d2), s/veh	228.5	0.0	0.2	48.8	0.0	0.0	0.2	0.0	5.2	10.8	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.6	0.0	2.5	3.3	0.0	0.0	0.7	0.0	34.3	2.4	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	289.1	0.0	42.5	96.0	0.0	0.0	11.3	0.0	29.5	46.0	0.8	0.8
LnGrp LOS	F	A	D	F	A	A	B	A	C	D	A	A
Approach Vol, veh/h		422			73			1107			845	
Approach Delay, s/veh		241.7			96.0			28.8			3.9	
Approach LOS		F			F			C			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		107.8		52.2		107.8		52.2				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		102.3		46.7		102.3		46.7				
Max Q Clear Time (g_c+I1), s		79.4		48.7		94.9		48.7				
Green Ext Time (p_c), s		10.4		0.0		3.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay	58.9
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection

Int Delay, s/veh 1.8

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	↙	↗	↙	↑	↗	
Traffic Vol, veh/h	70	25	15	1215	795	195
Future Vol, veh/h	70	25	15	1215	795	195
Conflicting Peds, #/hr	1	1	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	99	99	91	91
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	79	28	15	1227	874	214

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	2243	986	1092	0	-	0
Stage 1	985	-	-	-	-	-
Stage 2	1258	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	~ 47	303	639	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	270	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 45	302	637	-	-	-
Mov Cap-2 Maneuver	160	-	-	-	-	-
Stage 1	355	-	-	-	-	-
Stage 2	269	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	39.8	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt NBL NBT EBLn1 EBLn2 SBT SBR

Capacity (veh/h)	637	-	160	302	-	-
HCM Lane V/C Ratio	0.024	-	0.492	0.093	-	-
HCM Control Delay (s)	10.8	-	47.5	18.1	-	-
HCM Lane LOS	B	-	E	C	-	-
HCM 95th %tile Q(veh)	0.1	-	2.4	0.3	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis

10: SR 104 & NE 178th St

12/19/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	265	230	1055	725	65
Future Volume (vph)	80	265	230	1055	725	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	4.5	5.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.96	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1517	1770	1863	1836	
Flt Permitted	0.95	1.00	0.24	1.00	1.00	
Satd. Flow (perm)	1770	1517	456	1863	1836	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	288	250	1147	788	71
RTOR Reduction (vph)	0	254	0	0	2	0
Lane Group Flow (vph)	87	34	250	1147	857	0
Confl. Peds. (#/hr)		5	5			5
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	18.7	18.7	123.2	113.0	116.6	
Effective Green, g (s)	18.7	18.7	123.2	113.0	116.6	
Actuated g/C Ratio	0.12	0.12	0.77	0.71	0.73	
Clearance Time (s)	5.5	5.5	4.5	5.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	206	177	434	1315	1337	
v/s Ratio Prot	c0.05		c0.04	c0.62	c0.47	
v/s Ratio Perm		0.02	0.41			
v/c Ratio	0.42	0.19	0.58	0.87	0.64	
Uniform Delay, d1	65.6	63.8	10.3	18.0	11.1	
Progression Factor	1.00	1.00	0.83	0.67	0.09	
Incremental Delay, d2	1.4	0.5	1.2	5.5	1.8	
Delay (s)	67.0	64.3	9.8	17.6	2.8	
Level of Service	E	E	A	B	A	
Approach Delay (s)	65.0			16.2	2.8	
Approach LOS	E			B	A	

Intersection Summary

HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

18: SR 104

12/19/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	45	1080	55	100	790
Future Volume (vph)	0	45	1080	55	100	790
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	5.5		4.5	4.5
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		0.86	0.99		1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1611	1851		1770	1863
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1611	1851		1770	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	49	1174	60	109	859
RTOR Reduction (vph)	0	43	1	0	0	0
Lane Group Flow (vph)	0	6	1233	0	109	859
Turn Type		Perm	NA		Prot	NA
Protected Phases			2 4		1	6
Permitted Phases		8				
Actuated Green, G (s)		19.7	137.2		12.8	116.6
Effective Green, g (s)		19.7	137.2		12.8	116.6
Actuated g/C Ratio		0.12	0.86		0.08	0.73
Clearance Time (s)		4.5			4.5	4.5
Vehicle Extension (s)		3.0			3.0	3.0
Lane Grp Cap (vph)		198	1587		141	1357
v/s Ratio Prot			c0.67		c0.06	c0.46
v/s Ratio Perm		0.00				
v/c Ratio		0.03	0.78		0.77	0.63
Uniform Delay, d1		61.7	4.9		72.2	10.9
Progression Factor		1.00	0.11		1.00	1.00
Incremental Delay, d2		0.1	1.3		22.7	2.3
Delay (s)		61.8	1.8		94.9	13.2
Level of Service		E	A		F	B
Approach Delay (s)	61.8		1.8			22.4
Approach LOS	E		A			C

Intersection Summary

HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: Beach Drive NE/NE 170th St & SR 522

12/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	2250	10	25	1550	30	10	10	15	130	25	65
Future Volume (veh/h)	90	2250	10	25	1550	30	10	10	15	130	25	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		1.00	1.00		0.90	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	2368	6	26	1632	15	11	11	2	137	26	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	2264	921	55	2178	968	0	257	47	210	231	204
Arrive On Green	0.05	0.64	0.64	0.06	1.00	1.00	0.00	0.17	0.16	0.06	0.26	0.26
Sat Flow, veh/h	1781	3554	1446	1781	3554	1579	0	1511	275	3456	901	797
Grp Volume(v), veh/h	95	2368	6	26	1632	15	0	0	13	137	0	49
Grp Sat Flow(s),veh/h/ln	1781	1777	1446	1781	1777	1579	0	0	1785	1728	0	1698
Q Serve(g_s), s	8.5	101.9	0.2	2.3	0.0	0.0	0.0	0.0	1.0	6.2	0.0	3.5
Cycle Q Clear(g_c), s	8.5	101.9	0.2	2.3	0.0	0.0	0.0	0.0	1.0	6.2	0.0	3.5
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.15	1.00		0.47
Lane Grp Cap(c), veh/h	98	2264	921	55	2178	968	0	0	304	210	0	435
V/C Ratio(X)	0.97	1.05	0.01	0.47	0.75	0.02	0.00	0.00	0.04	0.65	0.00	0.11
Avail Cap(c_a), veh/h	98	2264	921	72	2178	968	0	0	565	246	0	435
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	75.5	29.0	10.6	73.8	0.0	0.0	0.0	0.0	55.6	73.5	0.0	45.6
Incr Delay (d2), s/veh	80.7	32.2	0.0	4.7	2.4	0.0	0.0	0.0	0.1	4.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	50.8	0.1	1.1	0.7	0.0	0.0	0.0	0.5	2.9	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	156.1	61.3	10.6	78.5	2.4	0.0	0.0	0.0	55.7	77.5	0.0	45.7
LnGrp LOS	F	F	B	E	A	A	A	A	E	E	A	D
Approach Vol, veh/h		2469			1673			13			186	
Approach Delay, s/veh		64.8			3.6			55.7			69.1	
Approach LOS		E			A			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	106.1	0.0	44.9	12.8	102.3	13.7	31.2				
Change Period (Y+Rc), s	5.5	6.1	5.5	5.5	5.5	* 6.1	5.5	5.5				
Max Green Setting (Gmax), s	5.0	73.4	30.0	29.0	7.3	* 72	9.9	49.1				
Max Q Clear Time (g_c+I1), s	4.3	103.9	0.0	5.5	10.5	2.0	8.2	3.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.0	16.7	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	41.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

MainStreet Trip Generation

Note: the outputs shown here are lower than what is reported in Table 4.5.2 of the DEIS due to rounding and the addition of the Sound Transit Parking Garage trips, which were not included in the MainStreet analysis.

Alternative 1

Land Use	Units1	Quantity	Daily	In	Out	Total PM
Net New Uses						
(730) - Government Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	20	452	9	26	34
(820) - Shopping Center (Adj Street, 7-9A, 4-6P)	1000 Sq. Ft.	178	6,720	325	353	678
(220) - Multifamily Housing Low Rise (Adj Streets, 7-9A, 4-6P)	Dwelling Units	700	5,124	247	145	392
(710) - General Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	16	156	3	15	18
(911) - Walk-In Bank (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	5		27	34	61
(937) - Coffee/Donut Shop with Drive-Through Window (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	2.5	2,051	54	54	108
(944) - Gasoline/Service Station (Adj Streets, 7-9A, 4-6P)	Vehicle Fueling Position	10	1,720	70	70	140
Net Raw Project Trips			16,223	735	697	1,431
Reductions						
Internal Capture			-600	-123	-117	-240
External Walk, Bike, and Transit			-1,064	-59	-55	-114
Total Reductions			-1,664	-182	-172	-354
Net New Project Trips			14,559	553	525	1,077

Alternative 2

Land Use	Units1	Quantity	Daily	In	Out	Total PM
Net New Uses						
(710) - General Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	16	156	3	15	18
(720) - Medical-Dental Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	25	870	24	63	87
(730) - Government Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	32	723	14	41	55
(820) - Shopping Center (Adj Street, 7-9A, 4-6P)	1000 Sq. Ft.	125	4,719	228	248	476
(937) - Coffee/Donut Shop with Drive-Through Window (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	2.5	2,051	54	54	108
(944) - Gasoline/Service Station (Adj Streets, 7-9A, 4-6P)	Vehicle Fueling Position	10	1,720	70	70	140
(220) - Multifamily Housing Low Rise (Adj Streets, 7-9A, 4-6P)	Dwelling Units	1,200	8,784	423	249	672
Net Raw Project Trips			19,023	816	740	1,556
Reductions						
Internal Capture			-984	-127	-115	-242
External Walk, Bike, and Transit			-1,839	-86	-78	-164
Total Reductions			-2,823	-213	-193	-406
Net New Project Trips			16,200	603	547	1,150

MainStreet Trip Generation

Alternative 3

Land Use	Units1	Quantity	Daily	In	Out	Total PM
Net New Uses						
(820) - Shopping Center (Adj Street, 7-9A, 4-6P)	1000 Sq. Ft.	200	7,550	366	396	762
(720) - Medical-Dental Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	50	1,740	48	125	173
(944) - Gasoline/Service Station (Pk Hr of Generator, AM & PM)	Vehicle Fueling Position	10	1,720	72	72	144
(220) - Multifamily Housing Low Rise (Adj Streets, 7-9A, 4-6P)	Dwelling Units	1,500	10,980	529	311	840
(710) - General Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	16	156	3	15	18
(730) - Government Office Building (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	32	723	14	41	55
(937) - Coffee/Donut Shop with Drive-Through Window (Adj Streets, 7-9A, 4-6P)	1000 Sq. Ft. FLA	2.5	2,051	54	54	108
Net Raw Project Trips			24,920	1,086	1,014	2,100
Reductions						
Internal Capture			-1,260	-125	-117	-242
External Walk, Bike, and Transit			-2,568	-127	-118	-245
Total Reductions			-3,828	-252	-235	-487
Net New Project Trips			21,092	834	779	1,613