

Attachment A: Turning Movement Counts



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230
800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

LOCATION Buena Vista Dr @ SR46

LATITUDE 35.6445

COUNTY San Luis Obispo

LONGITUDE -120.6722

COLLECTION DATE Thursday, October 5, 2023

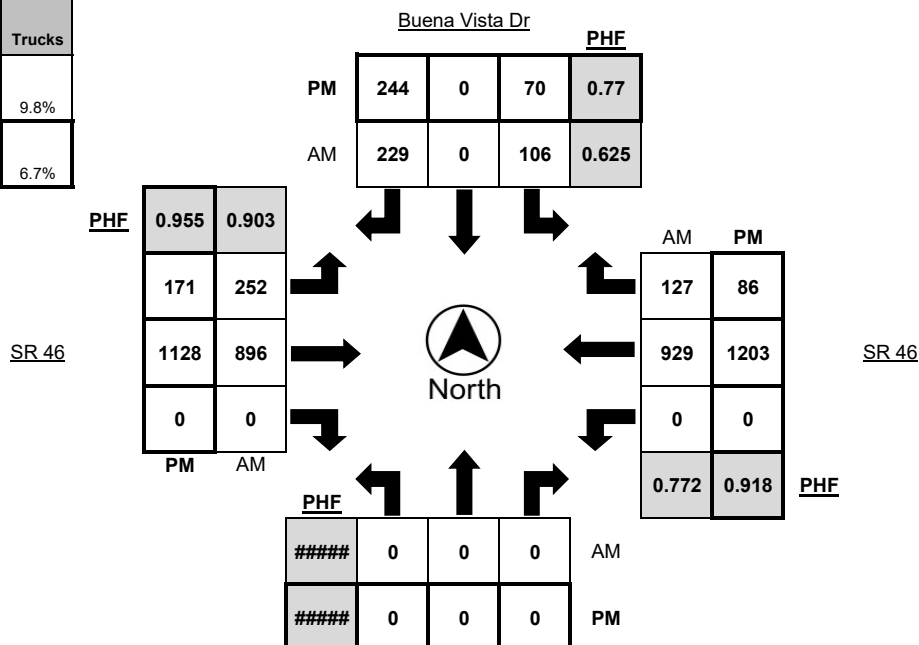
WEATHER Clear

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	0	0	0	0	11	0	27	0	16	152	0	18	0	156	13	32
7:15 AM - 7:30 AM	0	0	0	0	8	0	28	0	28	182	0	20	0	214	7	28
7:30 AM - 7:45 AM	0	0	0	0	9	0	52	2	58	202	0	26	0	231	37	24
7:45 AM - 8:00 AM	0	0	0	0	43	0	91	3	62	237	0	30	0	284	58	39
8:00 AM - 8:15 AM	0	0	0	0	35	0	48	2	54	217	0	21	0	210	16	41
8:15 AM - 8:30 AM	0	0	0	0	19	0	38	1	78	240	0	27	0	204	16	32
8:30 AM - 8:45 AM	0	0	0	0	16	0	30	0	58	196	0	27	0	181	8	28
8:45 AM - 9:00 AM	0	0	0	0	15	0	38	4	70	213	0	38	0	202	14	30
TOTAL	0	0	0	0	156	0	352	12	424	1639	0	207	0	1682	169	254

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
2:00 PM - 2:15 PM	0	0	0	0	15	0	47	2	35	225	0	37	0	260	16	18
2:15 PM - 2:30 PM	0	0	0	0	11	0	45	2	32	211	0	42	0	298	13	24
2:30 PM - 2:45 PM	0	0	0	0	15	0	50	2	32	238	0	32	0	325	18	31
2:45 PM - 3:00 PM	0	0	0	0	12	0	53	4	35	221	0	30	0	324	16	27
3:00 PM - 3:15 PM	0	0	0	0	19	0	56	4	37	290	0	36	0	276	19	19
3:15 PM - 3:30 PM	0	0	0	0	14	0	36	1	28	287	0	33	0	293	8	33
3:30 PM - 3:45 PM	0	0	0	0	25	0	47	1	34	261	0	27	0	319	19	20
3:45 PM - 4:00 PM	0	0	0	0	18	0	58	4	51	274	0	43	0	285	12	23
4:00 PM - 4:15 PM	0	0	0	0	18	0	53	3	39	250	0	43	0	339	21	24
4:15 PM - 4:30 PM	0	0	0	0	18	0	32	1	37	265	0	24	0	269	16	20
4:30 PM - 4:45 PM	0	0	0	0	17	0	74	2	45	295	0	27	0	335	16	19
4:45 PM - 5:00 PM	0	0	0	0	21	0	50	2	39	275	0	33	0	311	28	28
5:00 PM - 5:15 PM	0	0	0	0	20	0	82	0	44	268	0	25	0	306	26	24
5:15 PM - 5:30 PM	0	0	0	0	12	0	38	2	43	290	0	20	0	251	16	13
5:30 PM - 5:45 PM	0	0	0	0	14	0	32	1	45	242	0	17	0	240	9	20
5:45 PM - 6:00 PM	0	0	0	0	15	0	44	2	54	286	0	20	0	205	17	14
TOTAL	0	0	0	0	264	0	797	33	630	4178	0	489	0	4636	270	357

PEAK HOUR	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:30 AM - 8:30 AM	0	0	0	0	106	0	229	8	252	896	0	104	0	929	127	136
4:30 PM - 5:30 PM	0	0	0	0	70	0	244	6	171	1128	0	105	0	1203	86	84

	PHF	Trucks
AM	0.819	9.8%
PM	0.928	6.7%





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COUNTY San Luis Obispo
COLLECTION DATE Thursday, October 5, 2023

LATITUDE 35.6445
LONGITUDE -120.6722
WEATHER Clear

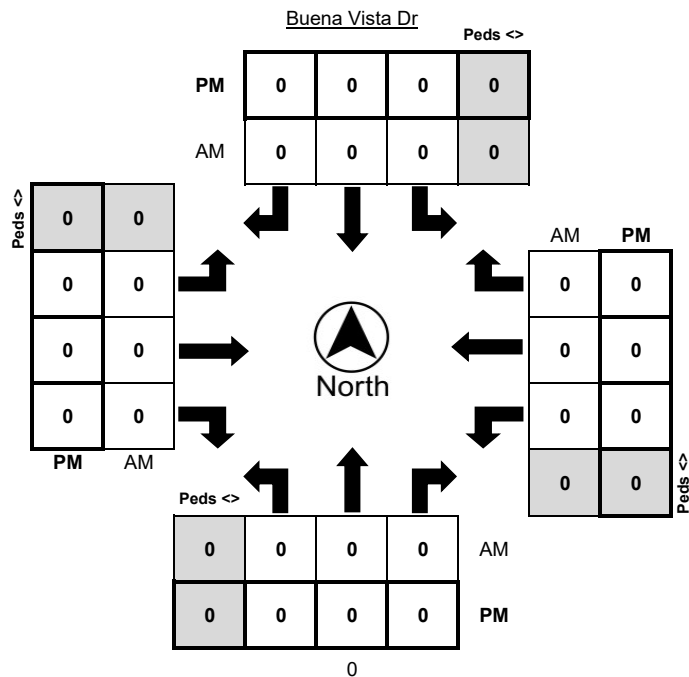
Time	Northbound Bikes			N.Leg Peds	Southbound Bikes			S.Leg Peds	Eastbound Bikes			E.Leg Peds	Westbound Bikes			W.Leg Peds
	Left	Thru	Right		Left	Thru	Right		Left	Thru	Right		Left	Thru	Right	
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	Northbound Bikes			N.Leg Peds	Southbound Bikes			S.Leg Peds	Eastbound Bikes			E.Leg Peds	Westbound Bikes			W.Leg Peds
	Left	Thru	Right		Left	Thru	Right		Left	Thru	Right		Left	Thru	Right	
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM - 3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM - 3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

PEAK HOUR	Northbound Bikes			N.Leg Peds	Southbound Bikes			S.Leg Peds	Eastbound Bikes			E.Leg Peds	Westbound Bikes			W.Leg Peds
	Left	Thru	Right		Left	Thru	Right		Left	Thru	Right		Left	Thru	Right	
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	0	0

SR 46





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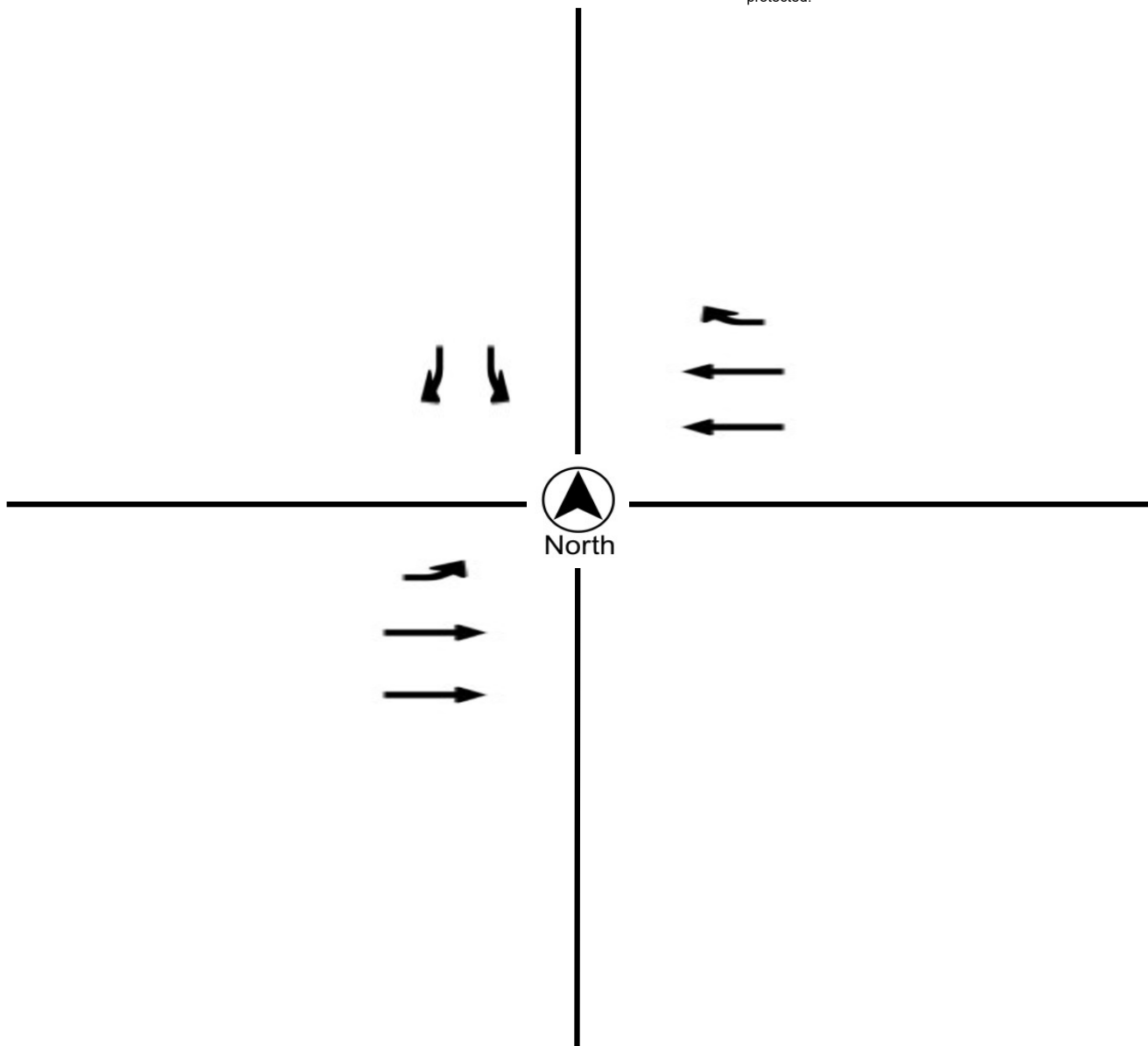
Central Coast Transportation Consulting

895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

LOCATION Buena Vista Dr @ SR46
COUNTY San Luis Obispo
COLLECTION DATE Thursday, October 5, 2023
CYCLE TIME 112 Seconds

N/S STREET Buena Vista Dr
E/W STREET SR 46
WEATHER Clear
CONTROL TYPE Signal

COMMENTS Southbound and eastbound left turns are protected.





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LOCATION Golden Hill Rd @ SR46
COUNTY San Luis Obispo
COLLECTION DATE Thursday, October 5, 2023

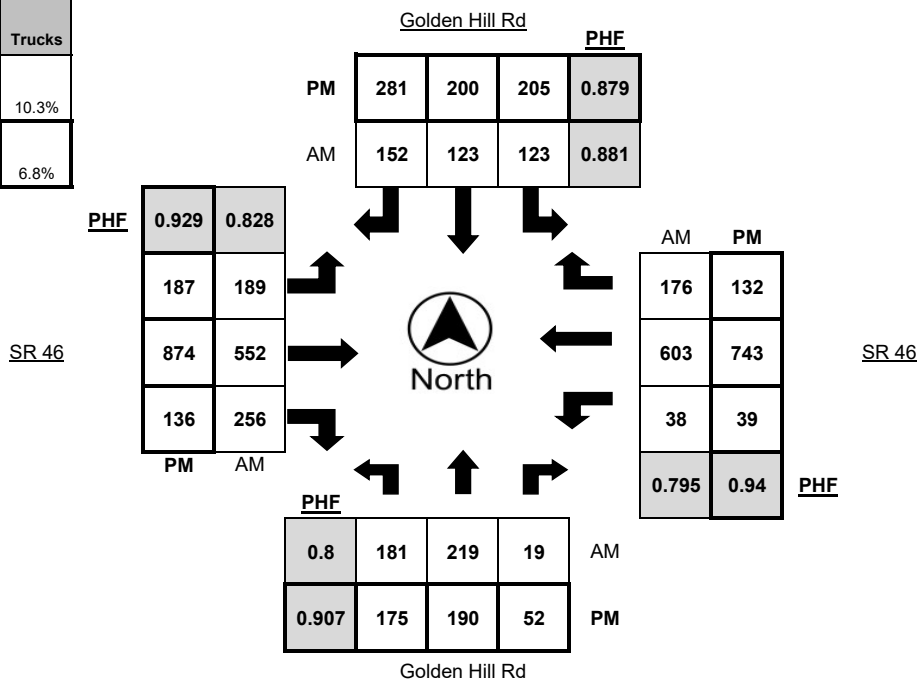
LATITUDE 35.6446
LONGITUDE -120.6581
WEATHER Clear

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	30	23	3	4	20	18	30	7	31	107	30	15	4	84	27	24
7:15 AM - 7:30 AM	20	32	9	6	11	20	39	6	43	122	36	20	4	125	38	28
7:30 AM - 7:45 AM	54	37	3	1	21	29	30	6	43	124	35	25	7	200	50	27
7:45 AM - 8:00 AM	51	78	2	3	36	36	40	7	59	154	88	26	12	182	54	36
8:00 AM - 8:15 AM	39	55	7	9	34	28	31	17	49	132	68	22	9	125	32	35
8:15 AM - 8:30 AM	37	49	7	2	32	30	51	12	38	142	65	23	10	96	40	19
8:30 AM - 8:45 AM	24	42	4	3	27	26	37	5	56	123	34	25	5	98	22	35
8:45 AM - 9:00 AM	16	58	7	4	30	23	37	15	55	140	31	32	5	134	34	24
TOTAL	271	374	42	32	211	210	295	75	374	1044	387	188	56	1044	297	228

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
2:00 PM - 2:15 PM	28	28	13	2	28	36	60	5	49	195	23	34	6	179	40	19
2:15 PM - 2:30 PM	21	54	8	2	26	46	82	11	57	155	20	36	12	171	39	27
2:30 PM - 2:45 PM	31	44	7	5	37	46	76	15	55	161	29	27	11	203	23	30
2:45 PM - 3:00 PM	27	48	8	6	31	36	67	4	37	173	42	35	12	248	37	25
3:00 PM - 3:15 PM	38	50	18	2	20	55	69	6	46	211	33	29	9	201	38	17
3:15 PM - 3:30 PM	33	52	9	6	49	35	62	12	57	219	36	33	16	173	43	28
3:30 PM - 3:45 PM	40	39	12	2	35	40	73	4	54	172	47	24	16	212	42	24
3:45 PM - 4:00 PM	38	40	12	9	44	40	54	3	52	203	38	38	21	211	52	25
4:00 PM - 4:15 PM	31	54	9	3	32	53	78	9	46	201	40	36	11	211	41	13
4:15 PM - 4:30 PM	29	43	15	4	29	43	62	6	36	208	26	24	12	198	33	21
4:30 PM - 4:45 PM	52	49	14	5	43	51	70	4	58	227	37	27	10	191	33	22
4:45 PM - 5:00 PM	43	53	13	1	73	57	63	6	48	201	35	26	10	181	31	20
5:00 PM - 5:15 PM	51	45	10	1	60	49	86	2	45	238	38	29	7	173	35	22
5:15 PM - 5:30 PM	41	53	22	1	33	39	53	2	39	247	21	22	10	153	22	19
5:30 PM - 5:45 PM	31	44	9	2	49	40	52	4	28	193	28	14	7	127	36	18
5:45 PM - 6:00 PM	32	39	18	3	38	40	46	2	43	260	31	23	6	144	29	14
TOTAL	566	735	197	54	627	706	1053	95	750	3264	524	457	176	2976	574	344

PEAK HOUR	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:30 AM - 8:30 AM	181	219	19	15	123	123	152	42	189	552	256	96	38	603	176	117
4:15 PM - 5:15 PM	175	190	52	11	205	200	281	18	187	874	136	106	39	743	132	85

	PHF	Trucks
AM	0.830	10.3%
PM	0.960	6.8%





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COUNTY San Luis Obispo
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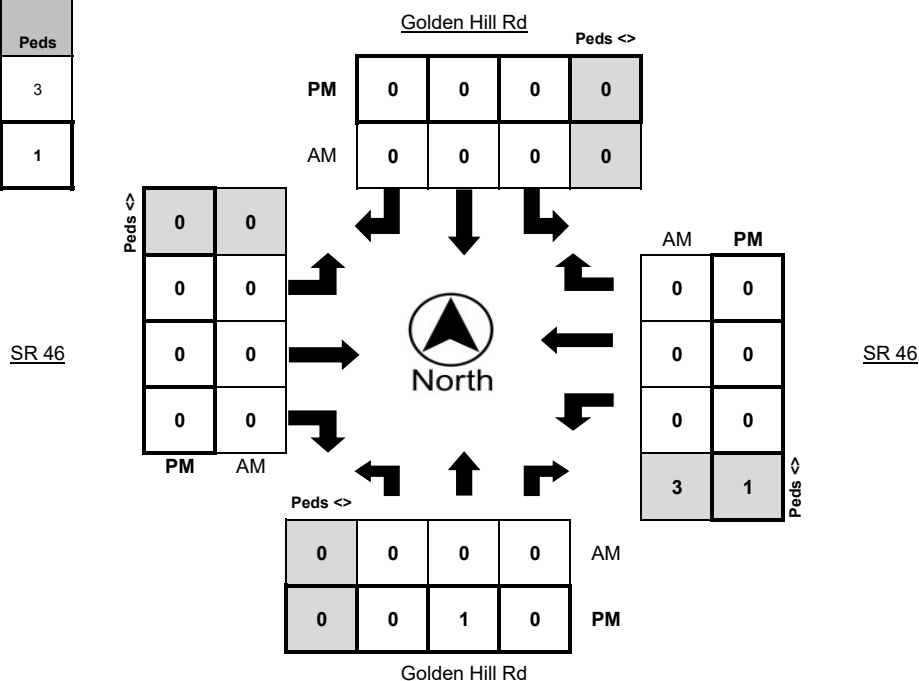
LATITUDE 35.6446
LONGITUDE -120.6581
WEATHER Clear

Time	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8:30 AM - 8:45 AM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0
8:45 AM - 9:00 AM	1	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0
TOTAL	1	1	0	1	0	0	0	0	0	0	0	7	1	0	0	0

Time	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
2:00 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2:15 PM - 2:30 PM	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0
2:30 PM - 2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM - 3:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
3:30 PM - 3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	1	0	0	0	0	0	2	0	0	0	5	0	0	0	0

PEAK HOUR	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
4:15 PM - 5:15 PM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0

	Bikes	Peds
AM Peak Total	0	3
PM Peak Total	1	1





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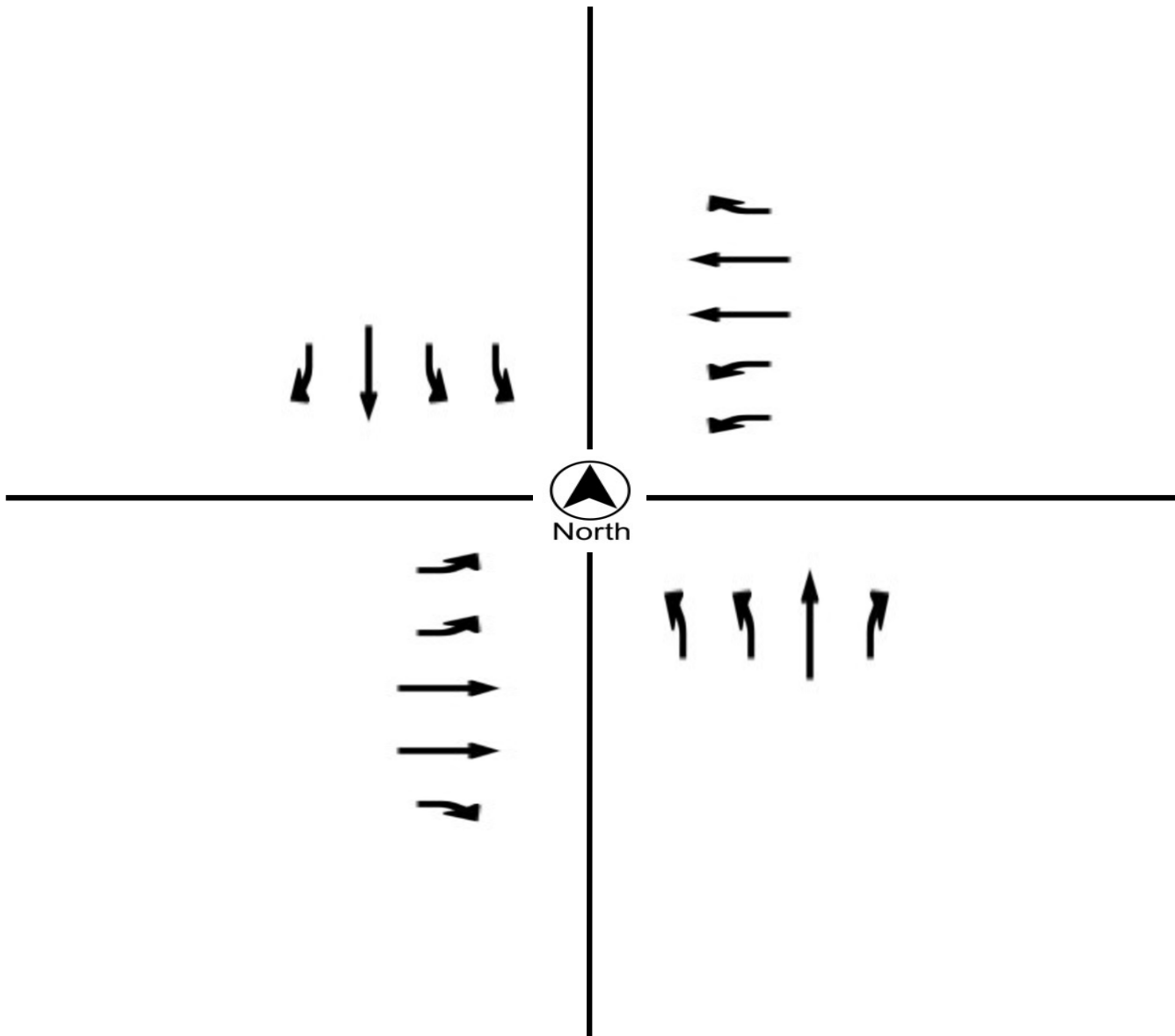
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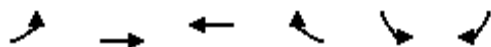
LOCATION Golden Hill Rd @ SR46
COUNTY San Luis Obispo
COLLECTION DATE Thursday, October 5, 2023
CYCLE TIME 158 Seconds

N/S STREET Golden Hill Rd
E/W STREET SR 46
WEATHER Clear
CONTROL TYPE Signal

COMMENTS All approaches have protected left turns.



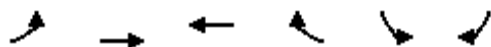
Attachment B: Synchro Worksheets



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	307	1093	1133	155	129	279
v/c Ratio	0.63	0.33	0.84	0.22	0.57	0.38
Control Delay	40.9	0.3	33.2	3.8	53.2	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	0.3	33.2	3.8	53.2	15.8
Queue Length 50th (ft)	170	0	336	0	79	81
Queue Length 95th (ft)	300	0	399	27	144	158
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	489	3282	2890	1311	489	959
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.33	0.39	0.12	0.26	0.29
Intersection Summary						

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Existing AM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	252	896	929	127	106	229
Future Volume (vph)	252	896	929	127	106	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	3282	3282	1468	1641	1468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	3282	3282	1468	1641	1468
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	307	1093	1133	155	129	279
RTOR Reduction (vph)	0	0	0	91	0	35
Lane Group Flow (vph)	307	1093	1133	64	129	244
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	30.6	102.1	42.3	42.3	14.2	48.8
Effective Green, g (s)	30.6	102.1	42.3	42.3	14.2	48.8
Actuated g/C Ratio	0.30	1.00	0.41	0.41	0.14	0.48
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	491	3282	1359	608	228	701
v/s Ratio Prot	c0.19	0.33	c0.35		c0.08	0.17
v/s Ratio Perm				0.04		
v/c Ratio	0.63	0.33	0.83	0.11	0.57	0.35
Uniform Delay, d1	30.8	0.0	26.8	18.3	41.1	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.3	4.8	0.1	3.5	0.3
Delay (s)	33.3	0.3	31.5	18.4	44.5	17.0
Level of Service	C	A	C	B	D	B
Approach Delay (s)		7.5	29.9		25.7	
Approach LOS		A	C		C	

Intersection Summary

HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	102.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing AM
Queues

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	228	665	308	46	727	212	218	287	148	148	183
v/c Ratio	0.52	0.55	0.42	0.12	0.73	0.36	0.50	0.45	0.41	0.49	0.45
Control Delay	45.0	29.0	5.6	40.9	34.8	6.0	44.9	34.6	46.3	41.6	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	29.0	5.6	40.9	34.8	6.0	44.9	34.6	46.3	41.6	9.4
Queue Length 50th (ft)	58	161	0	10	178	0	55	71	38	73	0
Queue Length 95th (ft)	132	314	47	34	337	42	127	131	93	155	44
Internal Link Dist (ft)	3114			2499			875			429	
Turn Bay Length (ft)	225	485		125	390		160	140			
Base Capacity (vph)	667	2606	1227	680	2606	1208	742	955	742	499	548
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.26	0.25	0.07	0.28	0.18	0.29	0.30	0.20	0.30	0.33
Intersection Summary											

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing AM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	552	256	38	603	176	181	219	19	123	123	152
Future Volume (vph)	189	552	256	38	603	176	181	219	19	123	123	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3155	3252	1455	3155	3252	1455	3155	3210		3155	1712	1436
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3155	3252	1455	3155	3252	1455	3155	3210		3155	1712	1436
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	228	665	308	46	727	212	218	264	23	148	148	183
RTOR Reduction (vph)	0	0	193	0	0	143	0	4	0	0	0	151
Lane Group Flow (vph)	228	665	115	46	727	69	218	283	0	148	148	32
Confl. Peds. (#/hr)									3	3		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	12.7	34.2	34.2	8.4	29.9	29.9	12.5	18.2		10.4	16.1	16.1
Effective Green, g (s)	12.7	34.2	34.2	8.4	29.9	29.9	12.5	18.2		10.4	16.1	16.1
Actuated g/C Ratio	0.14	0.37	0.37	0.09	0.33	0.33	0.14	0.20		0.11	0.18	0.18
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	436	1211	542	288	1059	473	429	636		357	300	251
v/s Ratio Prot	0.07	c0.20		0.01	c0.22		c0.07	c0.09		0.05	0.09	
v/s Ratio Perm			0.08			0.05						0.02
v/c Ratio	0.52	0.55	0.21	0.16	0.69	0.15	0.51	0.44		0.41	0.49	0.13
Uniform Delay, d1	36.7	22.7	19.6	38.4	26.9	21.9	36.8	32.4		37.9	34.2	31.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.5	0.2	0.1	1.9	0.1	0.9	0.5		0.8	1.3	0.2
Delay (s)	37.9	23.2	19.8	38.5	28.7	22.1	37.7	32.9		38.7	35.4	32.2
Level of Service	D	C	B	D	C	C	D	C		D	D	C
Approach Delay (s)		25.1			27.8			35.0			35.2	
Approach LOS		C			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			29.0									
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			91.8							20.6		
Intersection Capacity Utilization			52.0%									
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing AM
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	552	256	38	603	176	181	219	19	123	123	152
Future Volume (veh/h)	189	552	256	38	603	176	181	219	19	123	123	152
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		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	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737
Adj Flow Rate, veh/h	228	665	308	46	727	212	218	264	23	148	148	183
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	11	11	11	11	11	11	11	11	11	11	11	11
Cap, veh/h	338	971	433	234	1029	459	329	600	52	242	292	243
Arrive On Green	0.11	0.29	0.29	0.07	0.31	0.31	0.10	0.20	0.20	0.08	0.17	0.17
Sat Flow, veh/h	3209	3300	1472	3209	3300	1472	3209	3072	266	3209	1737	1445
Grp Volume(v), veh/h	228	665	308	46	727	212	218	141	146	148	148	183
Grp Sat Flow(s),veh/h/ln	1605	1650	1472	1605	1650	1472	1605	1650	1688	1605	1737	1445
Q Serve(g_s), s	4.5	11.7	7.5	0.9	12.8	7.6	4.3	5.0	5.0	2.9	5.1	8.0
Cycle Q Clear(g_c), s	4.5	11.7	7.5	0.9	12.8	7.6	4.3	5.0	5.0	2.9	5.1	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	338	971	433	234	1029	459	329	322	329	242	292	243
V/C Ratio(X)	0.68	0.69	0.71	0.20	0.71	0.46	0.66	0.44	0.44	0.61	0.51	0.75
Avail Cap(c_a), veh/h	876	3504	1563	730	3504	1563	974	426	435	974	606	504
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	20.6	7.8	28.7	20.0	18.2	28.5	23.3	23.4	29.6	24.9	26.1
Incr Delay (d2), s/veh	2.4	0.9	2.2	0.2	0.9	0.7	2.3	0.9	0.9	2.5	1.4	4.7
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	1.6	3.8	3.6	0.3	4.1	2.4	1.6	1.8	1.9	1.1	2.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	21.4	10.0	28.9	20.9	19.0	30.8	24.3	24.3	32.1	26.3	30.8
LnGrp LOS	C	C	A	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		1201			985			505			479	
Approach Delay, s/veh		20.3			20.9			27.1			29.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.1	26.7	10.8	16.4	10.9	27.9	9.0	18.2				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	15.0	* 70	20.0	23.0	18.0	70.0	20.0	17.0				
Max Q Clear Time (g_c+I1), s	2.9	13.7	6.3	10.0	6.5	14.8	4.9	7.0				
Green Ext Time (p_c), s	0.0	5.6	0.6	1.1	0.5	5.7	0.4	1.0				

Intersection Summary

HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

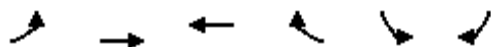
Notes

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.

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Existing PM
Queues



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	184	1213	1294	92	75	262
v/c Ratio	0.53	0.36	0.75	0.11	0.33	0.48
Control Delay	39.8	0.3	20.7	3.3	43.0	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	0.3	20.7	3.3	43.0	21.3
Queue Length 50th (ft)	85	0	270	0	35	80
Queue Length 95th (ft)	196	0	468	25	100	193
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	673	3374	3185	1430	673	1192
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.36	0.41	0.06	0.11	0.22
Intersection Summary						

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Existing PM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	171	1128	1203	86	70	244
Future Volume (vph)	171	1128	1203	86	70	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1687	3374	3374	1509	1687	1509
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1687	3374	3374	1509	1687	1509
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	184	1213	1294	92	75	262
RTOR Reduction (vph)	0	0	0	45	0	29
Lane Group Flow (vph)	184	1213	1294	47	75	233
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	16.9	82.2	41.8	41.8	8.5	29.4
Effective Green, g (s)	16.9	82.2	41.8	41.8	8.5	29.4
Actuated g/C Ratio	0.21	1.00	0.51	0.51	0.10	0.36
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	346	3374	1715	767	174	539
v/s Ratio Prot	c0.11	0.36	c0.38		0.04	0.15
v/s Ratio Perm				0.03		
v/c Ratio	0.53	0.36	0.75	0.06	0.43	0.43
Uniform Delay, d1	29.1	0.0	16.1	10.2	34.6	20.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.3	2.1	0.0	2.0	0.6
Delay (s)	30.7	0.3	18.2	10.3	36.6	20.6
Level of Service	C	A	B	B	D	C
Approach Delay (s)		4.3	17.6		24.2	
Approach LOS		A	B		C	

Intersection Summary

HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing PM
Queues

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	195	910	142	41	774	138	182	252	214	208	293
v/c Ratio	0.48	0.67	0.20	0.16	0.75	0.25	0.46	0.38	0.50	0.56	0.53
Control Delay	46.7	28.6	5.3	49.4	35.5	6.4	46.9	32.5	46.3	40.6	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	28.6	5.3	49.4	35.5	6.4	46.9	32.5	46.3	40.6	8.0
Queue Length 50th (ft)	51	226	0	10	195	0	48	59	56	104	0
Queue Length 95th (ft)	130	465	46	39	408	49	124	126	141	230	71
Internal Link Dist (ft)	3114			2499			875			429	
Turn Bay Length (ft)	225	485		125	390		160	140			
Base Capacity (vph)	674	2653	1216	674	2653	1216	749	953	749	516	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	5
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.34	0.12	0.06	0.29	0.11	0.24	0.26	0.29	0.40	0.46
Intersection Summary											

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing PM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	874	136	39	743	132	175	190	52	205	200	281
Future Volume (vph)	187	874	136	39	743	132	175	190	52	205	200	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1509	3273	3374	1509	3273	3256		3273	1776	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3273	3374	1509	3273	3374	1509	3273	3256		3273	1776	1509
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	195	910	142	41	774	138	182	198	54	214	208	293
RTOR Reduction (vph)	0	0	85	0	0	93	0	15	0	0	0	232
Lane Group Flow (vph)	195	910	57	41	774	45	182	237	0	214	208	61
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	11.7	37.9	37.9	4.7	30.9	30.9	11.3	18.8		12.2	19.7	19.7
Effective Green, g (s)	11.7	37.9	37.9	4.7	30.9	30.9	11.3	18.8		12.2	19.7	19.7
Actuated g/C Ratio	0.12	0.40	0.40	0.05	0.33	0.33	0.12	0.20		0.13	0.21	0.21
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	406	1357	607	163	1106	494	392	649		423	371	315
v/s Ratio Prot	0.06	c0.27		0.01	c0.23		0.06	0.07		c0.07	c0.12	
v/s Ratio Perm			0.04			0.03						0.04
v/c Ratio	0.48	0.67	0.09	0.25	0.70	0.09	0.46	0.36		0.51	0.56	0.19
Uniform Delay, d1	38.4	23.0	17.5	43.1	27.6	21.9	38.6	32.5		38.2	33.4	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	1.3	0.1	0.3	2.0	0.1	0.9	0.4		1.0	1.9	0.3
Delay (s)	39.3	24.4	17.6	43.4	29.6	22.0	39.5	32.9		39.1	35.3	31.0
Level of Service	D	C	B	D	C	C	D	C		D	D	C
Approach Delay (s)		25.9			29.1			35.7			34.7	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			30.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			94.2				Sum of lost time (s)			20.6		
Intersection Capacity Utilization			60.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing PM
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	187	874	136	39	743	132	175	190	52	205	200	281
Future Volume (veh/h)	187	874	136	39	743	132	175	190	52	205	200	281
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		0.99	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	195	910	142	41	774	138	182	198	54	214	208	293
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	289	1204	537	100	1155	515	276	572	152	313	406	344
Arrive On Green	0.09	0.35	0.35	0.03	0.34	0.34	0.08	0.22	0.22	0.09	0.23	0.23
Sat Flow, veh/h	3319	3413	1522	3319	3413	1522	3319	2658	705	3319	1796	1520
Grp Volume(v), veh/h	195	910	142	41	774	138	182	125	127	214	208	293
Grp Sat Flow(s),veh/h/ln	1659	1706	1522	1659	1706	1522	1659	1706	1657	1659	1796	1520
Q Serve(g_s), s	4.4	18.3	3.3	0.9	15.1	5.1	4.1	4.8	5.1	4.9	7.9	14.4
Cycle Q Clear(g_c), s	4.4	18.3	3.3	0.9	15.1	5.1	4.1	4.8	5.1	4.9	7.9	14.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	289	1204	537	100	1155	515	276	367	357	313	406	344
V/C Ratio(X)	0.68	0.76	0.26	0.41	0.67	0.27	0.66	0.34	0.36	0.68	0.51	0.85
Avail Cap(c_a), veh/h	769	3074	1371	641	3074	1371	854	373	362	854	532	450
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	22.2	7.5	37.0	22.0	18.7	34.6	25.8	25.9	34.1	26.3	28.8
Incr Delay (d2), s/veh	2.7	1.0	0.3	1.0	0.7	0.3	2.7	0.5	0.6	2.6	1.0	11.6
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	1.7	6.3	1.6	0.4	5.2	1.7	1.7	1.9	1.9	2.0	3.3	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	23.2	7.8	38.0	22.7	19.0	37.2	26.4	26.5	36.7	27.3	40.4
LnGrp LOS	D	C	A	D	C	B	D	C	C	D	C	D
Approach Vol, veh/h	1247			953			434			715		
Approach Delay, s/veh	23.6			22.8			31.0			35.5		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	34.7	10.5	22.9	10.8	33.6	11.3	22.0				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	15.0	* 70	20.0	23.0	18.0	70.0	20.0	17.0				
Max Q Clear Time (g_c+I1), s	2.9	20.3	6.1	16.4	6.4	17.1	6.9	7.1				
Green Ext Time (p_c), s	0.0	7.1	0.5	1.2	0.4	5.8	0.5	0.9				

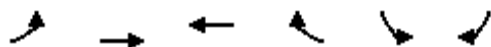
Intersection Summary

HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

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.



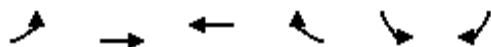
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	417	1093	1133	199	139	305
v/c Ratio	0.87	0.33	0.83	0.27	0.59	0.41
Control Delay	56.4	0.3	33.3	3.7	53.9	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	0.3	33.3	3.7	53.9	16.8
Queue Length 50th (ft)	257	0	340	0	86	95
Queue Length 95th (ft)	#499	0	406	29	154	180
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	482	3282	2862	1305	482	946
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.33	0.40	0.15	0.29	0.32

Intersection Summary

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

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Existing + Project AM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	342	896	929	163	114	250
Future Volume (vph)	342	896	929	163	114	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	3282	3282	1468	1641	1468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	3282	3282	1468	1641	1468
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	417	1093	1133	199	139	305
RTOR Reduction (vph)	0	0	0	116	0	35
Lane Group Flow (vph)	417	1093	1133	83	139	270
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	30.6	103.6	43.0	43.0	15.0	49.6
Effective Green, g (s)	30.6	103.6	43.0	43.0	15.0	49.6
Actuated g/C Ratio	0.30	1.00	0.42	0.42	0.14	0.48
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	484	3282	1362	609	237	702
v/s Ratio Prot	c0.25	0.33	c0.35		c0.08	0.18
v/s Ratio Perm				0.06		
v/c Ratio	0.86	0.33	0.83	0.14	0.59	0.38
Uniform Delay, d1	34.5	0.0	27.1	18.8	41.4	17.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.6	0.3	4.7	0.1	3.9	0.4
Delay (s)	49.1	0.3	31.8	18.9	45.3	17.6
Level of Service	D	A	C	B	D	B
Approach Delay (s)		13.7	29.8		26.3	
Approach LOS		B	C		C	

Intersection Summary

HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	228	671	312	46	752	212	235	287	148	148	184
v/c Ratio	0.53	0.55	0.42	0.12	0.74	0.35	0.53	0.44	0.42	0.50	0.46
Control Delay	46.1	29.6	5.6	41.2	35.3	5.9	45.5	35.1	47.4	43.1	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	29.6	5.6	41.2	35.3	5.9	45.5	35.1	47.4	43.1	9.5
Queue Length 50th (ft)	59	168	0	11	189	0	61	72	39	75	0
Queue Length 95th (ft)	134	320	47	35	351	42	136	133	94	160	44
Internal Link Dist (ft)	3114			2499			875			429	
Turn Bay Length (ft)	225	485		125	390		160	140			
Base Capacity (vph)	653	2561	1212	670	2561	1191	726	935	726	486	545
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.26	0.26	0.07	0.29	0.18	0.32	0.31	0.20	0.30	0.34
Intersection Summary											

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing + Project AM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	557	259	38	624	176	195	219	19	123	123	153
Future Volume (vph)	189	557	259	38	624	176	195	219	19	123	123	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3155	3252	1455	3155	3252	1455	3155	3210		3155	1712	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3155	3252	1455	3155	3252	1455	3155	3210		3155	1712	1455
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	228	671	312	46	752	212	235	264	23	148	148	184
RTOR Reduction (vph)	0	0	196	0	0	142	0	4	0	0	0	152
Lane Group Flow (vph)	228	671	116	46	752	70	235	283	0	148	148	32
Confl. Peds. (#/hr)									3	3		
Heavy Vehicles (%)	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	12.8	34.9	34.9	8.9	31.0	31.0	13.2	18.8		10.5	16.1	16.1
Effective Green, g (s)	12.8	34.9	34.9	8.9	31.0	31.0	13.2	18.8		10.5	16.1	16.1
Actuated g/C Ratio	0.14	0.37	0.37	0.09	0.33	0.33	0.14	0.20		0.11	0.17	0.17
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	430	1211	541	299	1075	481	444	644		353	294	250
v/s Ratio Prot	0.07	c0.21		0.01	c0.23		c0.07	c0.09		0.05	0.09	
v/s Ratio Perm			0.08			0.05						0.02
v/c Ratio	0.53	0.55	0.21	0.15	0.70	0.15	0.53	0.44		0.42	0.50	0.13
Uniform Delay, d1	37.7	23.2	20.1	38.9	27.3	22.0	37.4	32.8		38.8	35.2	32.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.3	0.6	0.2	0.1	2.0	0.1	1.1	0.5		0.8	1.4	0.2
Delay (s)	38.9	23.8	20.3	39.0	29.3	22.2	38.5	33.3		39.6	36.5	33.1
Level of Service	D	C	C	D	C	C	D	C		D	D	C
Approach Delay (s)		25.7			28.3			35.7			36.1	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			29.7									C
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			93.7							20.6		
Intersection Capacity Utilization			52.6%								A	
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing + Project AM
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	557	259	38	624	176	195	219	19	123	123	153
Future Volume (veh/h)	189	557	259	38	624	176	195	219	19	123	123	153
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		0.99
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	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737
Adj Flow Rate, veh/h	228	671	312	46	752	212	235	264	23	148	148	184
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	11	11	11	11	11	11	11	11	11	11	11	11
Cap, veh/h	335	970	433	258	1051	469	346	611	53	240	288	243
Arrive On Green	0.10	0.29	0.29	0.08	0.32	0.32	0.11	0.20	0.20	0.07	0.17	0.17
Sat Flow, veh/h	3209	3300	1472	3209	3300	1472	3209	3072	266	3209	1737	1464
Grp Volume(v), veh/h	228	671	312	46	752	212	235	141	146	148	148	184
Grp Sat Flow(s),veh/h/ln	1605	1650	1472	1605	1650	1472	1605	1650	1688	1605	1737	1464
Q Serve(g_s), s	4.6	12.2	7.9	0.9	13.6	7.8	4.8	5.1	5.2	3.0	5.3	8.1
Cycle Q Clear(g_c), s	4.6	12.2	7.9	0.9	13.6	7.8	4.8	5.1	5.2	3.0	5.3	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	335	970	433	258	1051	469	346	328	335	240	288	243
V/C Ratio(X)	0.68	0.69	0.72	0.18	0.72	0.45	0.68	0.43	0.44	0.62	0.51	0.76
Avail Cap(c_a), veh/h	851	3405	1519	709	3405	1519	946	413	423	946	589	496
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.3	21.2	8.0	29.1	20.4	18.4	29.1	23.8	23.8	30.4	25.8	27.0
Incr Delay (d2), s/veh	2.4	0.9	2.3	0.1	0.9	0.7	2.3	0.9	0.9	2.6	1.4	4.8
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	1.7	4.0	3.8	0.3	4.4	2.4	1.8	1.9	2.0	1.2	2.1	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	22.1	10.3	29.2	21.3	19.1	31.5	24.7	24.7	33.0	27.2	31.8
LnGrp LOS	C	C	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		1211			1010			522			480	
Approach Delay, s/veh		20.9			21.2			27.8			30.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.7	27.2	11.3	16.5	11.1	28.9	9.1	18.8				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	15.0	* 70	20.0	23.0	18.0	70.0	20.0	17.0				
Max Q Clear Time (g_c+I1), s	2.9	14.2	6.8	10.1	6.6	15.6	5.0	7.2				
Green Ext Time (p_c), s	0.0	5.7	0.6	1.1	0.5	6.0	0.4	1.0				

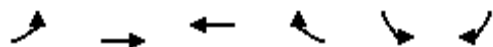
Intersection Summary

HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

Notes

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

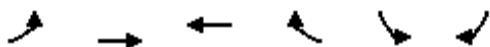
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	229	1213	1294	111	115	363
v/c Ratio	0.64	0.36	0.80	0.14	0.48	0.58
Control Delay	46.3	0.3	26.0	3.6	49.8	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	0.3	26.0	3.6	49.8	25.2
Queue Length 50th (ft)	124	0	323	0	64	144
Queue Length 95th (ft)	262	0	545	31	152	302
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	561	3374	3021	1363	561	1084
Starvation Cap Reductn	0	0	0	0	0	16
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.36	0.43	0.08	0.20	0.34
Intersection Summary						

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Existing + Project PM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	213	1128	1203	103	107	338
Future Volume (vph)	213	1128	1203	103	107	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1687	3374	3374	1509	1687	1509
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1687	3374	3374	1509	1687	1509
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	229	1213	1294	111	115	363
RTOR Reduction (vph)	0	0	0	57	0	27
Lane Group Flow (vph)	229	1213	1294	54	115	336
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	20.4	94.8	45.8	45.8	13.6	38.0
Effective Green, g (s)	20.4	94.8	45.8	45.8	13.6	38.0
Actuated g/C Ratio	0.22	1.00	0.48	0.48	0.14	0.40
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	363	3374	1630	729	242	604
v/s Ratio Prot	c0.14	0.36	c0.38		0.07	c0.22
v/s Ratio Perm				0.04		
v/c Ratio	0.63	0.36	0.79	0.07	0.48	0.56
Uniform Delay, d1	33.8	0.0	20.5	13.1	37.3	21.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.3	2.9	0.1	1.7	1.1
Delay (s)	37.3	0.3	23.5	13.2	39.1	23.0
Level of Service	D	A	C	B	D	C
Approach Delay (s)		6.2	22.6		26.9	
Approach LOS		A	C		C	

Intersection Summary

HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	94.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	196	933	156	41	784	138	189	252	214	208	294
v/c Ratio	0.48	0.68	0.22	0.17	0.75	0.25	0.47	0.38	0.50	0.56	0.54
Control Delay	47.1	28.8	5.1	50.2	35.7	6.3	47.2	32.8	46.8	41.2	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	28.8	5.1	50.2	35.7	6.3	47.2	32.8	46.8	41.2	8.1
Queue Length 50th (ft)	52	234	0	11	201	0	50	60	57	106	0
Queue Length 95th (ft)	131	480	48	39	415	49	128	127	142	233	71
Internal Link Dist (ft)		3114			2499			875		429	
Turn Bay Length (ft)	225		485	125		390	160		140		
Base Capacity (vph)	668	2634	1212	668	2634	1208	743	945	743	511	643
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	4
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.35	0.13	0.06	0.30	0.11	0.25	0.27	0.29	0.41	0.46
Intersection Summary											

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing + Project PM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	896	150	39	753	132	181	190	52	205	200	282
Future Volume (vph)	188	896	150	39	753	132	181	190	52	205	200	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1509	3273	3374	1509	3273	3256		3273	1776	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3273	3374	1509	3273	3374	1509	3273	3256		3273	1776	1509
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	196	933	156	41	784	138	189	198	54	214	208	294
RTOR Reduction (vph)	0	0	93	0	0	92	0	15	0	0	0	233
Lane Group Flow (vph)	196	933	63	41	784	46	189	237	0	214	208	61
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	11.8	38.6	38.6	4.6	31.4	31.4	11.6	19.0		12.3	19.7	19.7
Effective Green, g (s)	11.8	38.6	38.6	4.6	31.4	31.4	11.6	19.0		12.3	19.7	19.7
Actuated g/C Ratio	0.12	0.41	0.41	0.05	0.33	0.33	0.12	0.20		0.13	0.21	0.21
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	406	1369	612	158	1114	498	399	650		423	367	312
v/s Ratio Prot	0.06	c0.28		0.01	c0.23		0.06	0.07		c0.07	c0.12	
v/s Ratio Perm			0.04			0.03						0.04
v/c Ratio	0.48	0.68	0.10	0.26	0.70	0.09	0.47	0.36		0.51	0.57	0.20
Uniform Delay, d1	38.8	23.2	17.5	43.6	27.8	22.0	38.9	32.8		38.6	33.9	31.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	1.4	0.1	0.3	2.0	0.1	0.9	0.3		1.0	2.0	0.3
Delay (s)	39.7	24.6	17.6	43.9	29.8	22.1	39.8	33.2		39.5	35.9	31.5
Level of Service	D	C	B	D	C	C	D	C		D	D	C
Approach Delay (s)		26.1			29.3			36.0			35.2	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			30.2				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			95.1				Sum of lost time (s)			20.6		
Intersection Capacity Utilization			61.0%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Existing + Project PM
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	896	150	39	753	132	181	190	52	205	200	282
Future Volume (veh/h)	188	896	150	39	753	132	181	190	52	205	200	282
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		0.99	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	196	933	156	41	784	138	189	198	54	214	208	294
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	288	1227	547	99	1174	524	282	577	153	311	405	343
Arrive On Green	0.09	0.36	0.36	0.03	0.34	0.34	0.09	0.22	0.22	0.09	0.23	0.23
Sat Flow, veh/h	3319	3413	1522	3319	3413	1522	3319	2658	705	3319	1796	1520
Grp Volume(v), veh/h	196	933	156	41	784	138	189	125	127	214	208	294
Grp Sat Flow(s),veh/h/ln	1659	1706	1522	1659	1706	1522	1659	1706	1657	1659	1796	1520
Q Serve(g_s), s	4.6	19.2	3.8	1.0	15.6	5.2	4.4	4.9	5.2	5.0	8.1	14.8
Cycle Q Clear(g_c), s	4.6	19.2	3.8	1.0	15.6	5.2	4.4	4.9	5.2	5.0	8.1	14.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	288	1227	547	99	1174	524	282	370	360	311	405	343
V/C Ratio(X)	0.68	0.76	0.29	0.41	0.67	0.26	0.67	0.34	0.35	0.69	0.51	0.86
Avail Cap(c_a), veh/h	750	2999	1338	625	2999	1338	833	370	360	833	519	439
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	22.5	7.6	37.9	22.2	18.8	35.4	26.4	26.4	35.0	27.0	29.6
Incr Delay (d2), s/veh	2.8	1.0	0.3	1.0	0.7	0.3	2.7	0.5	0.6	2.7	1.0	12.7
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	1.8	6.7	1.8	0.4	5.5	1.7	1.8	1.9	2.0	2.0	3.4	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.1	23.5	7.9	39.0	22.9	19.1	38.1	26.9	27.0	37.7	28.0	42.3
LnGrp LOS	D	C	A	D	C	B	D	C	C	D	C	D
Approach Vol, veh/h	1285			963			441			716		
Approach Delay, s/veh	23.8			23.0			31.7			36.8		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	35.9	10.8	23.3	10.9	34.7	11.5	22.6				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	15.0	* 70	20.0	23.0	18.0	70.0	20.0	17.0				
Max Q Clear Time (g_c+I1), s	3.0	21.2	6.4	16.8	6.6	17.6	7.0	7.2				
Green Ext Time (p_c), s	0.0	7.4	0.5	1.2	0.4	5.9	0.5	0.9				

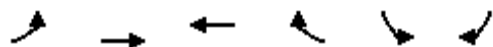
Intersection Summary

HCM 6th Ctrl Delay	27.4
HCM 6th LOS	C

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.



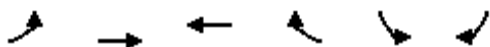
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	348	1522	1739	239	217	250
v/c Ratio	0.76	0.46	0.96	0.26	0.88	0.50
Control Delay	52.0	0.5	35.8	2.2	76.4	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	0.5	35.8	2.2	76.4	28.6
Queue Length 50th (ft)	110	0	524	0	138	118
Queue Length 95th (ft)	#160	0	#723	33	#273	194
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	490	3282	1861	936	249	519
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.46	0.93	0.26	0.87	0.48

Intersection Summary

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

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Cumulative AM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↱	↰↱	↰↱	↰	↰	↰
Traffic Volume (vph)	320	1400	1600	220	200	230
Future Volume (vph)	320	1400	1600	220	200	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3183	3282	3282	1468	1641	1468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3183	3282	3282	1468	1641	1468
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	1522	1739	239	217	250
RTOR Reduction (vph)	0	0	0	107	0	10
Lane Group Flow (vph)	348	1522	1739	132	217	240
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	14.1	97.5	53.7	53.7	14.7	32.8
Effective Green, g (s)	14.1	97.5	53.7	53.7	14.7	32.8
Actuated g/C Ratio	0.14	1.00	0.55	0.55	0.15	0.34
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	460	3282	1807	808	247	493
v/s Ratio Prot	c0.11	0.46	c0.53		c0.13	0.16
v/s Ratio Perm				0.09		
v/c Ratio	0.76	0.46	0.96	0.16	0.88	0.49
Uniform Delay, d1	40.1	0.0	20.9	10.8	40.5	25.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	0.5	13.4	0.1	28.2	0.8
Delay (s)	47.0	0.5	34.4	10.9	68.8	26.4
Level of Service	D	A	C	B	E	C
Approach Delay (s)		9.1	31.5		46.1	
Approach LOS		A	C		D	

Intersection Summary

HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative AM
Queues

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	435	935	380	217	1283	272	413	576	152	217	283
v/c Ratio	0.96	0.84	0.51	0.33	0.98	0.39	0.86	0.70	0.97	0.83	0.64
Control Delay	94.2	50.4	5.3	52.8	62.0	11.6	75.6	50.7	129.5	82.6	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.2	50.4	5.3	52.8	62.0	11.6	75.6	50.7	129.5	82.6	15.2
Queue Length 50th (ft)	212	424	0	92	~633	52	194	245	74	197	18
Queue Length 95th (ft)	#330	471	66	144	#811	128	#274	312	#153	#306	112
Internal Link Dist (ft)		3114			2514			875		429	
Turn Bay Length (ft)	225		485	125		390	160		140		
Base Capacity (vph)	451	1403	843	648	1310	697	518	938	157	306	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.67	0.45	0.33	0.98	0.39	0.80	0.61	0.97	0.71	0.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative AM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	400	860	350	200	1180	250	380	450	80	140	200	260
Future Volume (vph)	400	860	350	200	1180	250	380	450	80	140	200	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3155	3252	1455	3155	3252	1455	3155	3171		3155	1712	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3155	3252	1455	3155	3252	1455	3155	3171		3155	1712	1455
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)	435	935	380	217	1283	272	413	489	87	152	217	283
RTOR Reduction (vph)	0	0	251	0	0	111	0	10	0	0	0	221
Lane Group Flow (vph)	435	935	129	217	1283	161	413	566	0	152	217	62
Confl. Peds. (#/hr)									3	3		
Heavy Vehicles (%)	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	20.0	47.7	47.7	28.8	56.5	56.5	21.5	36.0		7.0	21.5	21.5
Effective Green, g (s)	20.0	47.7	47.7	28.8	56.5	56.5	21.5	36.0		7.0	21.5	21.5
Actuated g/C Ratio	0.14	0.34	0.34	0.21	0.40	0.40	0.15	0.26		0.05	0.15	0.15
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	450	1107	495	648	1311	586	484	814		157	262	223
v/s Ratio Prot	c0.14	0.29		0.07	c0.39		c0.13	0.18		0.05	c0.13	
v/s Ratio Perm			0.09			0.11						0.04
v/c Ratio	0.97	0.84	0.26	0.33	0.98	0.27	0.85	0.69		0.97	0.83	0.28
Uniform Delay, d1	59.7	42.8	33.4	47.5	41.2	28.1	57.8	47.1		66.4	57.5	52.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	33.5	6.1	0.3	0.1	19.7	0.3	13.6	2.6		61.6	18.9	0.7
Delay (s)	93.3	48.8	33.7	47.6	60.9	28.3	71.4	49.7		128.0	76.5	53.1
Level of Service	F	D	C	D	E	C	E	D		F	E	D
Approach Delay (s)		56.6			54.2			58.7			78.3	
Approach LOS		E			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			58.9									
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			140.1									
Intersection Capacity Utilization			82.6%									
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative AM
HCM 6th Signalized Intersection Summary

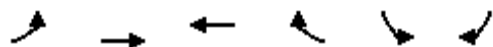
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	860	350	200	1180	250	380	450	80	140	200	260
Future Volume (veh/h)	400	860	350	200	1180	250	380	450	80	140	200	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
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	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737
Adj Flow Rate, veh/h	435	935	380	217	1283	272	413	489	87	152	217	283
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, %	11	11	11	11	11	11	11	11	11	11	11	11
Cap, veh/h	450	1089	486	588	1306	583	461	756	134	158	305	257
Arrive On Green	0.14	0.33	0.33	0.18	0.40	0.40	0.14	0.27	0.27	0.05	0.18	0.18
Sat Flow, veh/h	3209	3300	1472	3209	3300	1472	3209	2800	496	3209	1737	1464
Grp Volume(v), veh/h	435	935	380	217	1283	272	413	287	289	152	217	283
Grp Sat Flow(s),veh/h/ln	1605	1650	1472	1605	1650	1472	1605	1650	1646	1605	1737	1464
Q Serve(g_s), s	19.2	37.7	22.2	8.4	54.8	19.5	18.0	21.9	22.1	6.7	16.8	25.0
Cycle Q Clear(g_c), s	19.2	37.7	22.2	8.4	54.8	19.5	18.0	21.9	22.1	6.7	16.8	25.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	450	1089	486	588	1306	583	461	446	445	158	305	257
V/C Ratio(X)	0.97	0.86	0.78	0.37	0.98	0.47	0.89	0.64	0.65	0.96	0.71	1.10
Avail Cap(c_a), veh/h	450	1399	624	588	1306	583	518	475	474	158	305	257
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.9	44.6	19.2	51.0	42.5	31.9	59.9	45.9	46.0	67.6	55.4	58.7
Incr Delay (d2), s/veh	33.5	4.5	4.9	0.1	20.6	0.6	16.7	2.7	2.9	60.8	7.6	86.0
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	9.6	15.4	8.0	3.3	24.6	7.0	8.3	9.2	9.3	4.1	7.9	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.4	49.1	24.1	51.1	63.2	32.5	76.7	48.7	48.9	128.4	62.9	144.7
LnGrp LOS	F	D	C	D	E	C	E	D	D	F	E	F
Approach Vol, veh/h	1750			1772			989			652		
Approach Delay, s/veh	55.0			57.0			60.4			113.7		
Approach LOS	D			E			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.4	54.3	24.5	30.3	24.0	63.7	11.0	43.8				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	16.0	* 60	23.0	25.0	20.0	56.4	7.0	41.0				
Max Q Clear Time (g_c+I1), s	10.4	39.7	20.0	27.0	21.2	56.8	8.7	24.1				
Green Ext Time (p_c), s	0.2	7.3	0.5	0.0	0.0	0.0	0.0	3.0				

Intersection Summary

HCM 6th Ctrl Delay	64.1
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



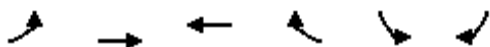
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	344	1710	1774	183	183	269
v/c Ratio	0.80	0.51	0.95	0.20	0.78	0.55
Control Delay	53.0	0.5	30.7	2.1	59.9	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	0.5	30.7	2.1	59.9	28.8
Queue Length 50th (ft)	99	0	460	0	101	119
Queue Length 95th (ft)	#166	0	#657	27	#204	199
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	440	3374	1957	952	250	506
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.51	0.91	0.19	0.73	0.53

Intersection Summary

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

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Cumulative PM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↱	↰↱	↰↱	↰	↰	↰
Traffic Volume (vph)	320	1590	1650	170	170	250
Future Volume (vph)	320	1590	1650	170	170	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3273	3374	3374	1509	1687	1509
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3273	3374	3374	1509	1687	1509
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	344	1710	1774	183	183	269
RTOR Reduction (vph)	0	0	0	81	0	10
Lane Group Flow (vph)	344	1710	1774	102	183	259
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	11.5	87.3	48.5	48.5	12.3	27.8
Effective Green, g (s)	11.5	87.3	48.5	48.5	12.3	27.8
Actuated g/C Ratio	0.13	1.00	0.56	0.56	0.14	0.32
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	431	3374	1874	838	237	480
v/s Ratio Prot	c0.11	0.51	c0.53		c0.11	0.17
v/s Ratio Perm				0.07		
v/c Ratio	0.80	0.51	0.95	0.12	0.77	0.54
Uniform Delay, d1	36.8	0.0	18.2	9.2	36.1	24.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.9	0.5	10.8	0.1	14.8	1.2
Delay (s)	46.7	0.5	29.0	9.3	50.9	25.7
Level of Service	D	A	C	A	D	C
Approach Delay (s)		8.3	27.1		35.9	
Approach LOS		A	C		D	

Intersection Summary

HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	87.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative PM
Queues

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	365	1260	208	313	1292	219	260	385	271	365	375
v/c Ratio	0.97	0.95	0.29	0.77	0.96	0.30	0.78	0.46	0.96	0.88	0.70
Control Delay	99.5	57.2	4.6	73.3	57.3	5.0	77.7	44.3	106.7	74.4	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	99.5	57.2	4.6	73.3	57.3	5.0	77.7	44.3	106.7	74.7	23.9
Queue Length 50th (ft)	175	572	0	150	611	2	121	151	130	322	111
Queue Length 95th (ft)	#292	#751	51	#256	#807	56	#185	201	#231	#455	231
Internal Link Dist (ft)		3114			2514			875		429	
Turn Bay Length (ft)	225		485	125		390	160		140		
Base Capacity (vph)	378	1398	747	407	1350	732	354	985	283	487	589
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	10	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.90	0.28	0.77	0.96	0.30	0.73	0.39	0.96	0.77	0.64

Intersection Summary

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

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

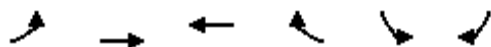
Cumulative PM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	1210	200	300	1240	210	250	320	50	260	350	360
Future Volume (vph)	350	1210	200	300	1240	210	250	320	50	260	350	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1509	3273	3374	1509	3273	3299		3273	1776	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3273	3374	1509	3273	3374	1509	3273	3299		3273	1776	1509
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	365	1260	208	312	1292	219	260	333	52	271	365	375
RTOR Reduction (vph)	0	0	127	0	0	129	0	9	0	0	0	186
Lane Group Flow (vph)	365	1260	81	313	1292	90	260	376	0	271	365	189
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.0	54.3	54.3	17.3	55.6	55.6	14.2	34.6		12.0	32.4	32.4
Effective Green, g (s)	16.0	54.3	54.3	17.3	55.6	55.6	14.2	34.6		12.0	32.4	32.4
Actuated g/C Ratio	0.12	0.39	0.39	0.12	0.40	0.40	0.10	0.25		0.09	0.23	0.23
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	377	1319	590	407	1351	604	334	822		282	414	352
v/s Ratio Prot	0.11	c0.37		0.10	c0.38		0.08	0.11		c0.08	c0.21	
v/s Ratio Perm			0.05			0.06						0.13
v/c Ratio	0.97	0.96	0.14	0.77	0.96	0.15	0.78	0.46		0.96	0.88	0.54
Uniform Delay, d1	61.1	41.1	27.2	58.8	40.4	26.5	60.8	44.1		63.2	51.3	46.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	37.5	15.3	0.1	7.7	15.2	0.1	10.9	0.4		42.8	19.2	1.6
Delay (s)	98.7	56.3	27.3	66.5	55.6	26.6	71.7	44.6		106.0	70.6	48.2
Level of Service	F	E	C	E	E	C	E	D		F	E	D
Approach Delay (s)		61.5			54.0			55.5			71.8	
Approach LOS		E			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			60.1									HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			138.8									Sum of lost time (s) 20.6
Intersection Capacity Utilization			87.0%									ICU Level of Service E
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative PM
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	1210	200	300	1240	210	250	320	50	260	350	360
Future Volume (veh/h)	350	1210	200	300	1240	210	250	320	50	260	350	360
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		0.99	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	365	1260	208	312	1292	219	260	333	52	271	365	375
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	366	1326	591	320	1356	605	306	792	122	274	465	393
Arrive On Green	0.11	0.39	0.39	0.10	0.40	0.40	0.09	0.27	0.27	0.08	0.26	0.26
Sat Flow, veh/h	3319	3413	1522	3319	3413	1522	3319	2956	457	3319	1796	1520
Grp Volume(v), veh/h	365	1260	208	312	1292	219	260	191	194	271	365	375
Grp Sat Flow(s),veh/h/ln	1659	1706	1522	1659	1706	1522	1659	1706	1706	1659	1796	1520
Q Serve(g_s), s	16.0	52.0	10.2	13.6	53.3	14.7	11.2	13.4	13.7	11.8	27.5	35.3
Cycle Q Clear(g_c), s	16.0	52.0	10.2	13.6	53.3	14.7	11.2	13.4	13.7	11.8	27.5	35.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	366	1326	591	320	1356	605	306	457	457	274	465	393
V/C Ratio(X)	1.00	0.95	0.35	0.98	0.95	0.36	0.85	0.42	0.42	0.99	0.79	0.95
Avail Cap(c_a), veh/h	366	1349	602	320	1356	605	343	482	482	274	470	398
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.6	43.1	16.4	65.4	42.4	30.8	65.0	43.8	43.9	66.5	50.1	53.0
Incr Delay (d2), s/veh	46.6	14.3	0.4	43.3	14.7	0.4	16.7	0.6	0.6	51.0	8.5	33.1
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	8.9	23.3	3.5	7.5	23.9	5.4	5.4	5.7	5.8	6.9	13.3	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.2	57.3	16.8	108.8	57.1	31.2	81.7	44.4	44.5	117.5	58.6	86.1
LnGrp LOS	F	E	B	F	E	C	F	D	D	F	E	F
Approach Vol, veh/h	1833				1823				645		1011	
Approach Delay, s/veh	63.4				62.8				59.5		84.6	
Approach LOS	E				E				E		F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.3	63.7	17.4	42.9	20.0	65.0	16.0	44.2				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	14.0	* 57	15.0	38.0	16.0	55.4	12.0	41.0				
Max Q Clear Time (g_c+I1), s	15.6	54.0	13.2	37.3	18.0	55.3	13.8	15.7				
Green Ext Time (p_c), s	0.0	2.4	0.2	0.3	0.0	0.1	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay	66.8											
HCM 6th LOS	E											
Notes												



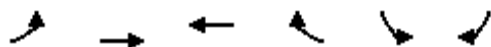
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	446	1522	1739	278	226	273
v/c Ratio	0.93	0.46	0.97	0.30	0.93	0.54
Control Delay	69.0	0.5	37.2	2.3	84.6	29.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	0.5	37.2	2.3	84.6	29.7
Queue Length 50th (ft)	146	0	524	0	144	132
Queue Length 95th (ft)	#240	0	#723	36	#288	214
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	481	3282	1828	940	244	510
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.46	0.95	0.30	0.93	0.54

Intersection Summary

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

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Cumulative + Project AM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↰	↱↱	↰↰	↱	↰	↱
Traffic Volume (vph)	410	1400	1600	256	208	251
Future Volume (vph)	410	1400	1600	256	208	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3183	3282	3282	1468	1641	1468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3183	3282	3282	1468	1641	1468
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	446	1522	1739	278	226	273
RTOR Reduction (vph)	0	0	0	126	0	10
Lane Group Flow (vph)	446	1522	1739	152	226	263
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	15.0	99.1	54.3	54.3	14.8	33.8
Effective Green, g (s)	15.0	99.1	54.3	54.3	14.8	33.8
Actuated g/C Ratio	0.15	1.00	0.55	0.55	0.15	0.34
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	481	3282	1798	804	245	500
v/s Ratio Prot	c0.14	0.46	c0.53		c0.14	0.18
v/s Ratio Perm				0.10		
v/c Ratio	0.93	0.46	0.97	0.19	0.92	0.53
Uniform Delay, d1	41.5	0.0	21.5	11.3	41.6	26.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.0	0.5	14.2	0.2	37.4	1.0
Delay (s)	65.5	0.5	35.7	11.5	79.0	27.2
Level of Service	E	A	D	B	E	C
Approach Delay (s)		15.2	32.4		50.7	
Approach LOS		B	C		D	

Intersection Summary

HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	435	940	384	217	1305	272	428	576	152	217	284
v/c Ratio	0.97	0.85	0.51	0.34	1.00	0.39	0.87	0.69	0.97	0.83	0.64
Control Delay	95.1	50.5	5.2	53.2	66.8	11.6	77.5	50.4	130.3	82.8	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.1	50.5	5.2	53.2	66.8	11.6	77.5	50.4	130.3	82.8	15.6
Queue Length 50th (ft)	212	426	0	92	~680	52	203	245	74	197	19
Queue Length 95th (ft)	#330	473	67	145	#833	128	#290	312	#153	#306	114
Internal Link Dist (ft)	3114				2514				875		429
Turn Bay Length (ft)	225			485	125			390	160		
Base Capacity (vph)	449	1399	845	639	1306	695	516	935	157	305	473
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.67	0.45	0.34	1.00	0.39	0.83	0.62	0.97	0.71	0.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

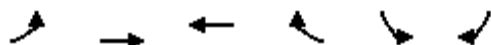
Cumulative + Project AM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	400	865	353	200	1201	250	394	450	80	140	200	261
Future Volume (vph)	400	865	353	200	1201	250	394	450	80	140	200	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3155	3252	1455	3155	3252	1455	3155	3171		3155	1712	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3155	3252	1455	3155	3252	1455	3155	3171		3155	1712	1455
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)	435	940	384	217	1305	272	428	489	87	152	217	284
RTOR Reduction (vph)	0	0	253	0	0	111	0	10	0	0	0	220
Lane Group Flow (vph)	435	940	131	217	1305	161	428	566	0	152	217	64
Confl. Peds. (#/hr)									3	3		
Heavy Vehicles (%)	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	20.0	48.1	48.1	28.5	56.6	56.6	21.8	36.4		7.0	21.6	21.6
Effective Green, g (s)	20.0	48.1	48.1	28.5	56.6	56.6	21.8	36.4		7.0	21.6	21.6
Actuated g/C Ratio	0.14	0.34	0.34	0.20	0.40	0.40	0.16	0.26		0.05	0.15	0.15
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	448	1112	497	639	1309	585	489	820		157	263	223
v/s Ratio Prot	c0.14	0.29		0.07	c0.40		c0.14	0.18		0.05	c0.13	
v/s Ratio Perm			0.09			0.11						0.04
v/c Ratio	0.97	0.85	0.26	0.34	1.00	0.28	0.88	0.69		0.97	0.83	0.29
Uniform Delay, d1	60.0	42.8	33.5	48.0	41.9	28.2	58.1	47.0		66.7	57.7	52.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	34.9	6.1	0.3	0.1	24.0	0.3	15.9	2.4		61.6	18.6	0.7
Delay (s)	94.9	48.9	33.7	48.1	65.9	28.5	74.0	49.4		128.3	76.3	53.4
Level of Service	F	D	C	D	E	C	E	D		F	E	D
Approach Delay (s)		56.9			58.1			59.9			78.4	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			60.6				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			140.6				Sum of lost time (s)			20.6		
Intersection Capacity Utilization			83.5%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative + Project AM
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	865	353	200	1201	250	394	450	80	140	200	261
Future Volume (veh/h)	400	865	353	200	1201	250	394	450	80	140	200	261
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		0.99
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	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737	1737
Adj Flow Rate, veh/h	435	940	384	217	1305	272	428	489	87	152	217	284
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, %	11	11	11	11	11	11	11	11	11	11	11	11
Cap, veh/h	448	1093	487	576	1300	580	474	766	136	157	303	256
Arrive On Green	0.14	0.33	0.33	0.18	0.39	0.39	0.15	0.27	0.27	0.05	0.17	0.17
Sat Flow, veh/h	3209	3300	1472	3209	3300	1472	3209	2800	496	3209	1737	1464
Grp Volume(v), veh/h	435	940	384	217	1305	272	428	287	289	152	217	284
Grp Sat Flow(s),veh/h/ln	1605	1650	1472	1605	1650	1472	1605	1650	1646	1605	1737	1464
Q Serve(g_s), s	19.3	38.1	22.3	8.5	56.4	19.7	18.8	21.9	22.1	6.8	16.9	25.0
Cycle Q Clear(g_c), s	19.3	38.1	22.3	8.5	56.4	19.7	18.8	21.9	22.1	6.8	16.9	25.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	448	1093	487	576	1300	580	474	451	450	157	303	256
V/C Ratio(X)	0.97	0.86	0.79	0.38	1.00	0.47	0.90	0.64	0.64	0.97	0.72	1.11
Avail Cap(c_a), veh/h	448	1392	621	576	1300	580	516	473	471	157	303	256
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	44.8	18.9	51.7	43.4	32.2	60.0	45.7	45.8	68.0	55.7	59.1
Incr Delay (d2), s/veh	34.7	4.6	5.2	0.2	25.8	0.6	18.2	2.6	2.8	62.2	7.8	89.2
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	9.8	15.5	8.1	3.3	26.2	7.0	8.7	9.2	9.3	4.1	8.0	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.0	49.4	24.2	51.8	69.2	32.8	78.2	48.4	48.6	130.2	63.5	148.3
LnGrp LOS	F	D	C	D	F	C	E	D	D	F	E	F
Approach Vol, veh/h	1759			1794			1004			653		
Approach Delay, s/veh	55.4			61.6			61.1			115.9		
Approach LOS	E			E			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.0	54.7	25.2	30.3	24.0	63.7	11.0	44.5				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	16.0	* 60	23.0	25.0	20.0	56.4	7.0	41.0				
Max Q Clear Time (g_c+I1), s	10.5	40.1	20.8	27.0	21.3	58.4	8.8	24.1				
Green Ext Time (p_c), s	0.2	7.3	0.4	0.0	0.0	0.0	0.0	3.0				
Intersection Summary												
HCM 6th Ctrl Delay	66.2											
HCM 6th LOS	E											
Notes												



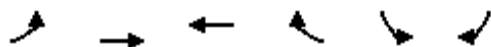
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	389	1710	1774	201	223	370
v/c Ratio	0.90	0.51	0.95	0.22	0.91	0.74
Control Delay	64.1	0.5	31.7	2.1	78.2	37.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	0.5	31.7	2.1	78.2	37.0
Queue Length 50th (ft)	114	0	460	0	127	181
Queue Length 95th (ft)	#198	0	#657	29	#262	#316
Internal Link Dist (ft)		2323	900		514	
Turn Bay Length (ft)	345			330	450	
Base Capacity (vph)	432	3374	1921	945	245	497
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.51	0.92	0.21	0.91	0.74

Intersection Summary

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

Buena Vista Vineyard
1: SR 46 E & Buena Vista Drive

Cumulative + Project PM
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↱	↱↱	↰↱	↰	↰	↰
Traffic Volume (vph)	362	1590	1650	187	207	344
Future Volume (vph)	362	1590	1650	187	207	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	7.3	7.3	4.2	3.7
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3273	3374	3374	1509	1687	1509
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3273	3374	3374	1509	1687	1509
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	389	1710	1774	201	223	370
RTOR Reduction (vph)	0	0	0	90	0	9
Lane Group Flow (vph)	389	1710	1774	111	223	361
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	8	Free!	6		7!	4
Permitted Phases				6		4
Actuated Green, G (s)	11.7	88.6	49.0	49.0	12.9	28.6
Effective Green, g (s)	11.7	88.6	49.0	49.0	12.9	28.6
Actuated g/C Ratio	0.13	1.00	0.55	0.55	0.15	0.32
Clearance Time (s)	3.5		7.3	7.3	4.2	3.7
Vehicle Extension (s)	3.0		4.0	4.0	3.5	3.0
Lane Grp Cap (vph)	432	3374	1865	834	245	487
v/s Ratio Prot	c0.12	0.51	c0.53		c0.13	0.24
v/s Ratio Perm				0.07		
v/c Ratio	0.90	0.51	0.95	0.13	0.91	0.74
Uniform Delay, d1	37.9	0.0	18.7	9.6	37.3	26.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.4	0.5	11.5	0.1	34.9	6.0
Delay (s)	59.3	0.5	30.2	9.7	72.2	32.7
Level of Service	E	A	C	A	E	C
Approach Delay (s)		11.4	28.1		47.5	
Approach LOS		B	C		D	

Intersection Summary

HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM 6th Edition methodology cannot be performed with phasing conflicts.

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	366	1283	223	313	1302	219	267	385	271	365	376
v/c Ratio	0.97	0.96	0.30	0.82	0.97	0.30	0.79	0.46	0.96	0.88	0.70
Control Delay	100.4	57.0	4.5	78.2	58.9	5.2	78.6	44.2	107.0	74.5	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	100.4	57.0	4.5	78.2	58.9	5.2	78.6	44.2	107.0	74.9	24.3
Queue Length 50th (ft)	175	589	0	150	619	3	125	151	130	322	113
Queue Length 95th (ft)	#293	#774	53	#256	#817	58	#193	201	#231	#455	234
Internal Link Dist (ft)		3114			2514			875		429	
Turn Bay Length (ft)	225		485	125		390	160		140		
Base Capacity (vph)	377	1396	755	383	1348	731	354	984	283	486	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	10	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.92	0.30	0.82	0.97	0.30	0.75	0.39	0.96	0.77	0.64

Intersection Summary

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

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative + Project PM
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	351	1232	214	300	1250	210	256	320	50	260	350	361
Future Volume (vph)	351	1232	214	300	1250	210	256	320	50	260	350	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1509	3273	3374	1509	3273	3299		3273	1776	1509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3273	3374	1509	3273	3374	1509	3273	3299		3273	1776	1509
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	366	1283	223	312	1302	219	267	333	52	271	365	376
RTOR Reduction (vph)	0	0	134	0	0	128	0	9	0	0	0	185
Lane Group Flow (vph)	366	1283	89	313	1302	91	267	376	0	271	365	191
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	16.0	55.3	55.3	16.3	55.6	55.6	14.4	34.8		12.0	32.4	32.4
Effective Green, g (s)	16.0	55.3	55.3	16.3	55.6	55.6	14.4	34.8		12.0	32.4	32.4
Actuated g/C Ratio	0.12	0.40	0.40	0.12	0.40	0.40	0.10	0.25		0.09	0.23	0.23
Clearance Time (s)	4.0	7.3	7.3	4.0	7.3	7.3	4.0	5.3		4.0	5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	376	1342	600	383	1349	603	339	825		282	413	351
v/s Ratio Prot	0.11	c0.38		0.10	c0.39		0.08	0.11		c0.08	c0.21	
v/s Ratio Perm			0.06			0.06						0.13
v/c Ratio	0.97	0.96	0.15	0.82	0.97	0.15	0.79	0.46		0.96	0.88	0.54
Uniform Delay, d1	61.3	40.7	26.8	59.9	40.8	26.6	60.8	44.1		63.3	51.5	46.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	39.1	15.2	0.1	12.1	16.7	0.1	11.5	0.4		42.8	19.5	1.7
Delay (s)	100.4	55.9	26.9	72.0	57.5	26.7	72.3	44.5		106.1	71.0	48.5
Level of Service	F	E	C	E	E	C	E	D		F	E	D
Approach Delay (s)		61.1			56.3			55.9			72.0	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			60.9				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			139.0				Sum of lost time (s)			20.6		
Intersection Capacity Utilization			87.5%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Buena Vista Vineyard
2: Golden Hill Road & SR 46 E

Cumulative + Project PM
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	351	1232	214	300	1250	210	256	320	50	260	350	361
Future Volume (veh/h)	351	1232	214	300	1250	210	256	320	50	260	350	361
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		0.99	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	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	366	1283	223	312	1302	219	267	333	52	271	365	376
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	362	1329	593	317	1359	606	311	799	123	272	464	393
Arrive On Green	0.11	0.39	0.39	0.10	0.40	0.40	0.09	0.27	0.27	0.08	0.26	0.26
Sat Flow, veh/h	3319	3413	1522	3319	3413	1522	3319	2956	457	3319	1796	1520
Grp Volume(v), veh/h	366	1283	223	312	1302	219	267	191	194	271	365	376
Grp Sat Flow(s),veh/h/ln	1659	1706	1522	1659	1706	1522	1659	1706	1706	1659	1796	1520
Q Serve(g_s), s	16.0	53.9	11.1	13.8	54.4	14.8	11.6	13.5	13.7	12.0	27.7	35.7
Cycle Q Clear(g_c), s	16.0	53.9	11.1	13.8	54.4	14.8	11.6	13.5	13.7	12.0	27.7	35.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	362	1329	593	317	1359	606	311	461	461	272	464	393
V/C Ratio(X)	1.01	0.97	0.38	0.98	0.96	0.36	0.86	0.41	0.42	1.00	0.79	0.96
Avail Cap(c_a), veh/h	362	1337	596	317	1359	606	340	477	477	272	466	394
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.3	43.8	16.6	66.2	42.9	31.0	65.4	43.9	44.0	67.2	50.6	53.6
Incr Delay (d2), s/veh	49.8	17.0	0.4	45.9	15.5	0.4	18.0	0.6	0.6	53.7	8.7	34.3
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	9.1	24.6	3.9	7.7	24.5	5.5	5.6	5.7	5.9	7.0	13.4	17.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	115.1	60.8	17.0	112.1	58.4	31.4	83.5	44.5	44.7	121.0	59.3	87.9
LnGrp LOS	F	E	B	F	E	C	F	D	D	F	E	F
Approach Vol, veh/h		1872			1833			652			1012	
Approach Delay, s/veh		66.2			64.3			60.5			86.4	
Approach LOS		E			E			E			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.3	64.3	17.7	43.1	20.0	65.6	16.0	44.9				
Change Period (Y+Rc), s	7.3	* 7.3	4.0	5.3	4.0	7.3	4.0	5.3				
Max Green Setting (Gmax), s	14.0	* 57	15.0	38.0	16.0	55.4	12.0	41.0				
Max Q Clear Time (g_c+I1), s	15.8	55.9	13.6	37.7	18.0	56.4	14.0	15.7				
Green Ext Time (p_c), s	0.0	1.1	0.1	0.1	0.0	0.0	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay			68.7									
HCM 6th LOS			E									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Attachment C: VMT Tool Results

Retail (and Other) Only Land Use Projects

Retail and Other Only uses appropriate for this category include those where the primary source of trips to and from the use are not made by residents or employees....such as, but not limited to, customers.

This analysis will be computed on the basis of Net VMT for the County

Project Information

Project Name: Buena Vista Vineyard
Address: BUENA VISTA PASO ROBLES 00000
APN: 20011026
SLOCOG TAZ: 1358
VMT District: 81 Paso Robles Fringe

Retail Project Inputs

Daily Trips <-- Choose type of input (Jobs, Sq.Ft., Daily Trips)
1,975 <-- Enter Number of Daily Trips

Mitigation:

If needed, Mitigation Analysis must be conducted separately, entered here, and approved by County of San Luis Obispo
None <-- Choose type of Mitigation
0.0% <-- Mitigation Percent
 <-- Slider for Mitigation Reduction

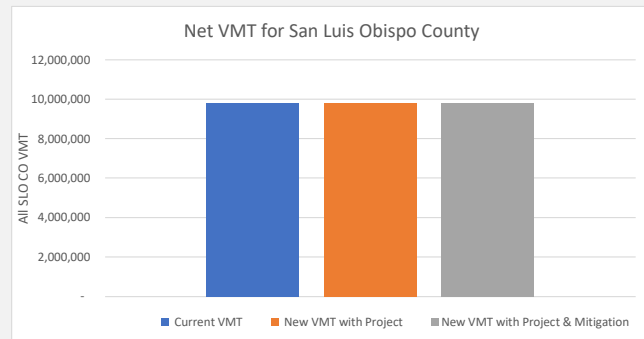
[Click for CAPCOA Reference](#)

**Notes:**

- 1) Trip generation takes user input in units of Daily Trips
- 2) Default parameters used for VMT analysis
- 3) Mitigation Type = None; for a total reduction of 0%

Results

San Luis Obispo County		VMT	Miles per Vehicle Trip
Current VMT		9,812,738	11.26
New VMT with Project		9,810,582	11.24
Net VMT		(2,155)	(0.03)
San Luis Obispo County with Mitigation		VMT	Miles per Vehicle Trip
Current VMT		9,812,738	11.26
New VMT with Project & Mitigation		9,810,582	11.24
Net VMT		(2,155)	(0.03)
County Pct. Change		VMT	Avg. Trip Length
Project		-0.02%	-0.25%
Project with Mitigation		-0.02%	-0.25%

**Final Result:**

Project does not increase VMT