



Overland Traffic Consultants
24325 Main Street # 202
Santa Clarita, CA 91321
Phone (661) 799 - 8423
E-mail: otc@overlandtraffic.com

February 3, 2017

Mr. Fred Gaines
Gaines & Stacey LLP
16633 Ventura Blvd. Suite 1220
Encino, CA 91436-1872

RE: Response to Public Works Department Memo
(February 2, 2017)

Dear Mr. Gaines,

Overland Traffic Consultants has received the Public Works Department comment dated February 2, 2017 (attached). We have reviewed the comment and adjusted the HCS capacity worksheets for the Pacific Coast Highway and Malibu Canyon Road intersection. The capacity worksheets have been amended to show the southbound left turn shared lane traffic assignment for 1 left turn lane and 1 shared left - through lane to be 55% and 45 %, respectively. The adjusted worksheets are attached and modified to show the reduced delay values for the intersection peak hours and the amended table for Response 13 is provide below.

Response 13

A queuing analysis has been conducted for existing 2016 conditions with and without the project. As shown below are the results of the eastbound left turn queuing analysis for Pacific Coast Highway at Malibu Canyon Road and at Webb Way. The analysis shows that the project will not create a significant traffic impact to the eastbound vehicle queue with ample capacity to accommodate the left turn demand with the project. It should be noted that the dual left turn mitigation at Pacific Coast Highway and Webb Way has been assumed for this analysis. The capacity worksheets are attached for reference.



Intersection	Peak Hour	EB Left Turn Volume and Capacity		
		Q Capacity		Volume
		Without	With Project	
1 Pacific Coast Highway Malibu Canyon Road	am	224	225	139
	pm	527	529	402
	Sat.	314	334	231
2 Pacific Coast Highway Webb Way	am	249	249	165
	pm	201	201	125
	Sat.	203	203	127

Please call if you have questions.

Sincerely,

A handwritten signature in black ink that reads "Jerry T. Overland".

Jerry T. Overland

Attachments



City of Malibu

23825 Stuart Ranch Rd., Malibu, California CA 90265-4861
(310) 456-2489 FAX (310) 456-7650

PUBLIC WORKS REVIEW REFERRAL SHEET

TO: Public Works Department

DATE: 4/28/2015

FROM: City of Malibu Planning Department

PROJECT NUMBER: CDP 15-028

JOB ADDRESS: 4000 MALIBU CANYON RD, Parcel

APPLICANT / CONTACT: Bruce McBride

APPLICANT ADDRESS: PO Box 6528
Malibu, CA 90264

APPLICANT PHONE #: (310) 456-2600 x2

APPLICANT FAX #: _____

APPLICANT EMAIL: bmcbride@pda-llc.net

PROJECT DESCRIPTION: Malibu Memorial Park

TO: Malibu Planning Department and/or Applicant

FROM: Public Works Department

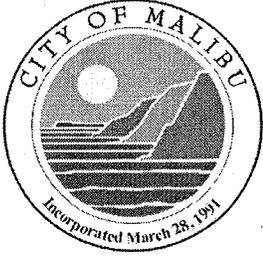
The following items described on the attached memorandum shall be addressed and resubmitted.

The project was reviewed and found to be in conformance with the City's Public Works and LCP policies and CAN proceed through the Planning process.

SIGNATURE

DATE

2/2/17



City of Malibu

MEMORANDUM

To: Bruce McBride

From: Public Works Department
Jonathan Pichardo, Assist. Civil Engineer

Date: February 2, 2017

Re: Memo No.2 (MND Traffic Responses) 4000 Malibu Canyon Road CDP 15-028

The Public Works Department has begun its review of this application and has determined that additional information is required.

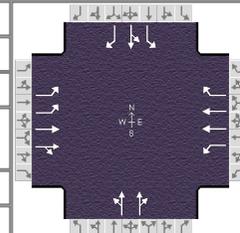
MND Response Comments:

1. The HCS worksheets describe the AM peak hour intersection delay pre project to be 197.7s/veh and the AM peak hour intersection delay to be 197.4s/veh post project. Please clarify how the proposed development is to decrease traffic instead of increase.



HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	City of Malibu			Duration, h	0.25		
Analyst	OTC	Analysis Date	1/19/2017	Area Type	Other		
Jurisdiction		Time Period	existing am peak hour	PHF	0.92		
Urban Street	Pacific Coast Highway	Analysis Year	2017	Analysis Period	1 > 7:00		
Intersection	Malibu Canyon Road	File Name	pch malibu am peak without.xus				
Project Description	am peak hour without project						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	138	939	15	4	704	146	16	7	29	896	13	184

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	0.7	1.7	46.9	26.0	4.8	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0				
				Red	0.0	0.0	0.0	0.0	0.0	0.0				

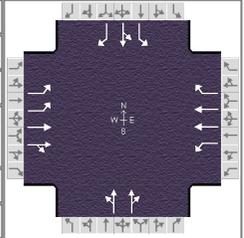
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	3.0		12.0		9.0
Phase Duration, s	10.4	56.6	4.7	50.9		8.8		30.0
Change Period, (Y+R _c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.1		3.0
Queue Clearance Time (g _s), s	6.2		2.2			3.9		28.0
Green Extension Time (g _e), s	0.3	0.0	0.0	0.0		0.1		0.0
Phase Call Probability	0.98		0.11			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	150	520	517	4	765	159	25		32	536	452	200
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1900	1889	1810	1809	1610	1836		1610	1810	1812	1610
Queue Service Time (g _s), s	4.2	17.9	17.9	0.2	14.3	3.0	1.3		1.9	26.0	24.6	9.6
Cycle Queue Clearance Time (g _c), s	4.2	17.9	17.9	0.2	14.3	3.0	1.3		1.9	26.0	24.6	9.6
Green Ratio (g/C)	0.06	0.53	0.53	0.01	0.47	0.73	0.05		0.05	0.26	0.26	0.32
Capacity (c), veh/h	224	999	993	12	1695	1173	87		77	470	471	521
Volume-to-Capacity Ratio (X)	0.669	0.521	0.521	0.352	0.451	0.135	0.286		0.412	1.139	0.960	0.384
Back of Queue (Q), ft/ln (50 th percentile)	45	185.3	184.7	3.2	141.2	19.4	14.9		19.1	548.9	357.9	87.5
Back of Queue (Q), veh/ln (50 th percentile)	1.8	7.4	7.4	0.1	5.6	0.8	0.6		0.8	22.0	14.3	3.5
Queue Storage Ratio (RQ) (50 th percentile)	0.15	0.00	0.00	0.01	0.00	0.00	0.00		0.00	1.25	0.00	0.00
Uniform Delay (d ₁), s/veh	45.8	15.5	15.5	49.4	17.9	4.1	46.0		46.3	37.0	36.5	26.1
Incremental Delay (d ₂), s/veh	1.3	1.9	2.0	6.2	0.9	0.2	0.7		1.3	85.3	31.1	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	47.1	17.4	17.4	55.6	18.8	4.3	46.6		47.6	122.3	67.6	26.3
Level of Service (LOS)	D	B	B	E	B	A	D		D	F	E	C
Approach Delay, s/veh / LOS	21.2	C		16.5	B		47.2	D		85.3	F	
Intersection Delay, s/veh / LOS	43.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.8	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	A	1.3	A	0.5	A	2.4	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	City of Malibu			Duration, h	0.25		
Analyst	OTC	Analysis Date	1/19/2017	Area Type	Other		
Jurisdiction		Time Period	existing am peak hour	PHF	0.92		
Urban Street	Pacific Coast Highway	Analysis Year	2017	Analysis Period	1 > 7:00		
Intersection	Malibu Canyon Road	File Name	pch malibu am peak with.xus				
Project Description	am peak hour with project						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	139	939	15	4	705	149	16	7	29	896	13	184

Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		0.7	1.7	46.8	26.0	4.8	0.0				
		Yellow		4.0	4.0	4.0	4.0	4.0	0.0				
		Red		0.0	0.0	0.0	0.0	0.0	0.0				

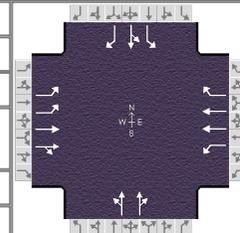
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	3.0		12.0		9.0
Phase Duration, s	10.4	56.6	4.7	50.8		8.8		30.0
Change Period, (Y+R _c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.1		3.0
Queue Clearance Time (g _s), s	6.2		2.2			3.9		28.0
Green Extension Time (g _e), s	0.3	0.0	0.0	0.0		0.1		0.0
Phase Call Probability	0.98		0.11			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	151	520	517	4	766	162	25		32	536	452	200
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1900	1889	1810	1809	1610	1836		1610	1810	1812	1610
Queue Service Time (g _s), s	4.2	17.9	17.9	0.2	14.3	3.0	1.3		1.9	26.0	24.6	9.6
Cycle Queue Clearance Time (g _c), s	4.2	17.9	17.9	0.2	14.3	3.0	1.3		1.9	26.0	24.6	9.6
Green Ratio (g/C)	0.06	0.53	0.53	0.01	0.47	0.73	0.05		0.05	0.26	0.26	0.32
Capacity (c), veh/h	225	999	993	12	1694	1173	87		77	470	471	522
Volume-to-Capacity Ratio (X)	0.670	0.521	0.521	0.352	0.452	0.138	0.286		0.412	1.139	0.960	0.383
Back of Queue (Q), ft/ln (50 th percentile)	45.3	185.3	184.7	3.2	141.4	19.9	14.9		19.1	548.9	357.9	87.4
Back of Queue (Q), veh/ln (50 th percentile)	1.8	7.4	7.4	0.1	5.7	0.8	0.6		0.8	22.0	14.3	3.5
Queue Storage Ratio (RQ) (50 th percentile)	0.15	0.00	0.00	0.01	0.00	0.00	0.00		0.00	1.25	0.00	0.00
Uniform Delay (d ₁), s/veh	45.8	15.5	15.5	49.4	17.9	4.1	46.0		46.3	37.0	36.5	26.1
Incremental Delay (d ₂), s/veh	1.3	1.9	2.0	6.2	0.9	0.2	0.7		1.3	85.3	31.1	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	47.0	17.4	17.4	55.6	18.8	4.3	46.6		47.6	122.3	67.6	26.2
Level of Service (LOS)	D	B	B	E	B	A	D		D	F	E	C
Approach Delay, s/veh / LOS	21.2		C	16.5		B	47.2		D	85.3		F
Intersection Delay, s/veh / LOS	43.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.8	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	A	1.3	A	0.5	A	2.4	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	City of Malibu			Duration, h	0.25		
Analyst	OTC	Analysis Date	1/19/2017	Area Type	Other		
Jurisdiction		Time Period	existing pm peak hour	PHF	0.92		
Urban Street	Pacific Coast Highway	Analysis Year	2017	Analysis Period	1 > 7:00		
Intersection	Malibu Canyon Road	File Name	pch malibu pm peak without.xus				
Project Description	pm peak hour without project						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	400	1182	14	14	1216	235	11	8	28	280	18	165

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	2.1	8.9	52.5	12.0	4.5	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0				
				Red	0.0	0.0	0.0	0.0	0.0	0.0				

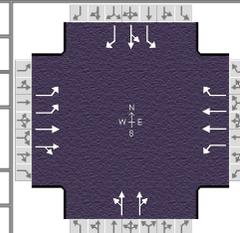
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	3.0		12.0		9.0
Phase Duration, s	19.0	69.4	6.1	56.5		8.5		16.0
Change Period, (Y+R _c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.1		3.1
Queue Clearance Time (g _s), s	14.0		2.8			3.8		11.2
Green Extension Time (g _e), s	1.0	0.0	0.0	0.0		0.1		0.8
Phase Call Probability	1.00		0.34			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	435	651	649	15	1322	255	21		30	167	157	179
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1900	1892	1810	1809	1610	1847		1610	1810	1821	1610
Queue Service Time (g _s), s	12.0	18.0	18.1	0.8	27.4	6.7	1.1		1.8	9.0	8.3	9.2
Cycle Queue Clearance Time (g _c), s	12.0	18.0	18.1	0.8	27.4	6.7	1.1		1.8	9.0	8.3	9.2
Green Ratio (g/C)	0.15	0.65	0.65	0.02	0.52	0.64	0.05		0.05	0.12	0.12	0.27
Capacity (c), veh/h	527	1243	1237	37	1898	1038	84		73	217	218	434
Volume-to-Capacity Ratio (X)	0.825	0.524	0.524	0.406	0.696	0.246	0.246		0.415	0.772	0.717	0.413
Back of Queue (Q), ft/ln (50 th percentile)	126.9	164.3	163.7	9.8	265.6	51.8	12.3		18.5	99.7	92	85.1
Back of Queue (Q), veh/ln (50 th percentile)	5.1	6.6	6.5	0.4	10.6	2.1	0.5		0.7	4.0	3.7	3.4
Queue Storage Ratio (RQ) (50 th percentile)	0.42	0.00	0.00	0.04	0.00	0.00	0.00		0.00	0.23	0.00	0.00
Uniform Delay (d ₁), s/veh	41.2	9.1	9.1	48.4	17.8	7.5	46.1		46.4	42.7	42.4	30.0
Incremental Delay (d ₂), s/veh	1.3	1.6	1.6	2.6	2.1	0.6	0.6		1.4	2.2	1.7	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	42.5	10.7	10.7	51.0	19.9	8.1	46.6		47.8	44.9	44.0	30.2
Level of Service (LOS)	D	B	B	D	B	A	D		D	D	D	C
Approach Delay, s/veh / LOS	18.7	B		18.3	B		47.3	D		39.4	D	
Intersection Delay, s/veh / LOS	21.6						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.2	B		2.8	C		3.0	C		3.0	C	
Bicycle LOS Score / LOS	1.9	B		1.8	B		0.5	A		1.3	A	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	City of Malibu			Duration, h	0.25		
Analyst	OTC		Analysis Date	1/19/2017		Area Type	Other
Jurisdiction			Time Period	existing pm peak hour		PHF	0.92
Urban Street	Pacific Coast Highway		Analysis Year	2017		Analysis Period	1 > 7:00
Intersection	Malibu Canyon Road		File Name	pch malibu pm peak without.xus			
Project Description	pm peak hour with project						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	402	1182	14	14	1220	240	11	8	28	280	18	165

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	2.1	9.0	52.4	12.0	4.5	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0				
				Red	0.0	0.0	0.0	0.0	0.0	0.0				

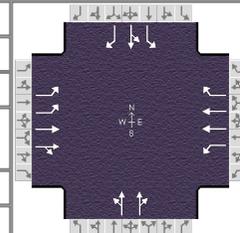
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	3.0		12.0		9.0
Phase Duration, s	19.1	69.4	6.1	56.4		8.5		16.0
Change Period, (Y+R _c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.1		3.1
Queue Clearance Time (g _s), s	14.1		2.8			3.8		11.1
Green Extension Time (g _e), s	1.0	0.0	0.0	0.0		0.1		0.8
Phase Call Probability	1.00		0.34			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	437	651	649	15	1326	261	21		30	167	157	179
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1900	1892	1810	1809	1610	1847		1610	1810	1821	1610
Queue Service Time (g _s), s	12.1	18.0	18.1	0.8	27.5	6.9	1.1		1.8	9.0	8.3	9.1
Cycle Queue Clearance Time (g _c), s	12.1	18.0	18.1	0.8	27.5	6.9	1.1		1.8	9.0	8.3	9.1
Green Ratio (g/C)	0.15	0.65	0.65	0.02	0.52	0.64	0.05		0.05	0.12	0.12	0.27
Capacity (c), veh/h	529	1243	1237	37	1896	1037	84		73	217	218	435
Volume-to-Capacity Ratio (X)	0.826	0.524	0.524	0.406	0.699	0.252	0.246		0.415	0.772	0.718	0.412
Back of Queue (Q), ft/ln (50 th percentile)	127.2	163.4	162.8	9.8	267.1	53.5	12.3		18.5	99.7	92	85
Back of Queue (Q), veh/ln (50 th percentile)	5.1	6.5	6.5	0.4	10.7	2.1	0.5		0.7	4.0	3.7	3.4
Queue Storage Ratio (RQ) (50 th percentile)	0.42	0.00	0.00	0.04	0.00	0.00	0.00		0.00	0.23	0.00	0.00
Uniform Delay (d ₁), s/veh	41.2	9.1	9.1	48.4	17.9	7.6	46.1		46.4	42.7	42.4	30.0
Incremental Delay (d ₂), s/veh	1.3	1.6	1.6	2.6	2.2	0.6	0.6		1.4	2.2	1.7	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	42.5	10.7	10.7	51.0	20.0	8.1	46.6		47.8	44.9	44.0	30.2
Level of Service (LOS)	D	B	B	D	C	A	D		D	D	D	C
Approach Delay, s/veh / LOS	18.7		B	18.4		B	47.3		D	39.4		D
Intersection Delay, s/veh / LOS	21.6						C					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.2	B	2.8	C	3.0	C	3.0
Bicycle LOS Score / LOS	1.9	B	1.8	B	0.5	A	1.3	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	City of Malibu			Duration, h	0.25
Analyst	OTC	Analysis Date	1/19/2017	Area Type	Other
Jurisdiction		Time Period	existing sat peak hour	PHF	0.92
Urban Street	Pacific Coast Highway	Analysis Year	2017	Analysis Period	1 > 7:00
Intersection	Malibu Canyon Road	File Name	pch malibu sat peak without.xus		
Project Description	sat peak hour without project				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	214	1216	24	13	1387	146	22	6	26	375	28	446

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	1.9	3.0	44.2	26.0	4.8	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0				
				Red	0.0	0.0	0.0	0.0	0.0	0.0				

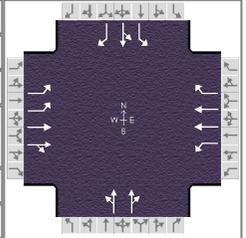
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	3.0		12.0		9.0
Phase Duration, s	12.9	55.2	5.9	48.2		8.8		30.0
Change Period, (Y+R _c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.1		3.1
Queue Clearance Time (g _s), s	8.5		2.8			3.7		28.0
Green Extension Time (g _e), s	0.5	0.0	0.0	0.0		0.1		0.0
Phase Call Probability	1.00		0.32			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	233	676	672	14	1508	159	30		28	224	214	485
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1900	1887	1810	1809	1610	1828		1610	1810	1822	1610
Queue Service Time (g _s), s	6.5	26.9	27.0	0.8	39.8	3.3	1.6		1.7	10.5	9.8	26.0
Cycle Queue Clearance Time (g _c), s	6.5	26.9	27.0	0.8	39.8	3.3	1.6		1.7	10.5	9.8	26.0
Green Ratio (g/C)	0.09	0.51	0.51	0.02	0.44	0.70	0.05		0.05	0.26	0.26	0.35
Capacity (c), veh/h	314	973	967	35	1600	1131	88		78	470	474	563
Volume-to-Capacity Ratio (X)	0.741	0.694	0.695	0.401	0.942	0.140	0.345		0.364	0.477	0.451	0.862
Back of Queue (Q), ft/ln (50 th percentile)	69	289.5	288.5	9.1	454.1	22.6	18.2		17	109.6	103.7	300.2
Back of Queue (Q), veh/ln (50 th percentile)	2.8	11.6	11.5	0.4	18.2	0.9	0.7		0.7	4.4	4.1	12.0
Queue Storage Ratio (RQ) (50 th percentile)	0.23	0.00	0.00	0.04	0.00	0.00	0.00		0.00	0.25	0.00	0.00
Uniform Delay (d ₁), s/veh	44.4	18.5	18.5	48.4	26.7	4.9	46.1		46.1	31.3	31.0	30.3
Incremental Delay (d ₂), s/veh	1.3	4.1	4.1	2.7	12.4	0.3	0.9		1.1	0.3	0.3	12.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	45.7	22.5	22.6	51.2	39.0	5.2	46.9		47.2	31.5	31.3	42.7
Level of Service (LOS)	D	C	C	D	D	A	D		D	C	C	D
Approach Delay, s/veh / LOS	26.0		C	35.9		D	47.0		D	37.3		D
Intersection Delay, s/veh / LOS	32.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.8	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	B	1.9	B	0.5	A	2.0	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	City of Malibu			Duration, h	0.25
Analyst	OTC	Analysis Date	1/19/2017	Area Type	Other
Jurisdiction		Time Period	existing sat peak hour	PHF	0.92
Urban Street	Pacific Coast Highway	Analysis Year	2017	Analysis Period	1 > 7:00
Intersection	Malibu Canyon Road	File Name	pch malibu sat peak with.xus		
Project Description	sat peak hour with project				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	231	1216	24	13	1400	176	22	6	26	375	28	446

Signal Information				Signal Timing (s)									
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		1.9	3.5	43.7	26.0	4.8	0.0				
		Yellow		4.0	4.0	4.0	4.0	4.0	0.0				
		Red		0.0	0.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	3.0		12.0		9.0
Phase Duration, s	13.5	55.2	5.9	47.7		8.8		30.0
Change Period, (Y+R _c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.1		3.1
Queue Clearance Time (g _s), s	9.0		2.8			3.7		28.0
Green Extension Time (g _e), s	0.5	0.0	0.0	0.0		0.1		0.0
Phase Call Probability	1.00		0.32			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	251	676	672	14	1522	191	30		28	224	214	485
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1900	1887	1810	1809	1610	1828		1610	1810	1822	1610
Queue Service Time (g _s), s	7.0	26.9	27.0	0.8	40.9	4.1	1.6		1.7	10.5	9.8	26.0
Cycle Queue Clearance Time (g _c), s	7.0	26.9	27.0	0.8	40.9	4.1	1.6		1.7	10.5	9.8	26.0
Green Ratio (g/C)	0.09	0.51	0.51	0.02	0.44	0.70	0.05		0.05	0.26	0.26	0.35
Capacity (c), veh/h	334	973	967	35	1580	1122	88		78	470	474	571
Volume-to-Capacity Ratio (X)	0.753	0.694	0.695	0.401	0.963	0.171	0.345		0.364	0.477	0.451	0.848
Back of Queue (Q), ft/ln (50 th percentile)	74.4	289.5	288.5	9.1	481.3	28.9	18.2		17	109.6	103.7	292.2
Back of Queue (Q), veh/ln (50 th percentile)	3.0	11.6	11.5	0.4	19.3	1.2	0.7		0.7	4.4	4.1	11.7
Queue Storage Ratio (RQ) (50 th percentile)	0.25	0.00	0.00	0.04	0.00	0.00	0.00		0.00	0.25	0.00	0.00
Uniform Delay (d ₁), s/veh	44.1	18.5	18.5	48.4	27.4	5.2	46.1		46.1	31.3	31.0	29.8
Incremental Delay (d ₂), s/veh	1.3	4.1	4.1	2.7	15.4	0.3	0.9		1.1	0.3	0.3	10.9
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh	45.4	22.5	22.6	51.2	42.8	5.5	46.9		47.2	31.5	31.3	40.7
Level of Service (LOS)	D	C	C	D	D	A	D		D	C	C	D
Approach Delay, s/veh / LOS	26.2	C		38.7	D		47.0	D		36.3	D	
Intersection Delay, s/veh / LOS	33.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.8	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	B	1.9	B	0.5	A	2.0	B