

Froom Ranch Specific Plan

Preliminary Transportation Analysis

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This report summarizes the preliminary transportation analysis conducted for the Froom Ranch Specific Plan located on the southwest side of Los Osos Valley Road (LOVR) between Froom Ranch Road and Calle Joaquin. The intent of this work was to identify key transportation constraints to assist in the development of the project description and conceptual site plans. This report is divided into two sections:

1. Team/City Staff Meeting- summarizes the agenda and outcome of the meeting.
2. Follow-up analysis evaluating the items called out in the Team/City staff meeting.

1. TEAM/CITY STAFF MEETING

The project team met with City Public Works staff on December 4, 2014 to discuss transportation issues relevant to the conceptual site planning. A meeting summary is provided below with the discussion item followed by the summary outcome in *italics*.

Site access and on-site circulation

- Home Depot area connection- *should occur near Whole Foods market.*
- Access to Los Osos Valley Road
 - Primary access control type, location-*primary access should be provided opposite Auto Park Way, which has met signal warrant for some time. Roundabout should be evaluated for capacity but does not fit well within corridor. See next section for analysis.*
 - Secondary right-in/right-out access- *may be beneficial but may have secondary wetland impacts.*

Access to Calle Joaquin

- Need for CJ connection- *will depend on site plan. Concept plan is not expected to add substantial traffic to Calle Joaquin and connection does not appear to be necessary.*
- Future CJ ramp connections- *CJ controlled by the City but if future ramps are connected Caltrans will require project access relocation to avoid wrong-way travel.*
- Park-and-ride lot accommodation- *PNR lot does not conflict with proposed access, would use existing hotel driveway. Consider incorporating PNR spaces on project site if connection provided on CJ.*

Key Intersections Near Project

- LOVR/Madonna
- LOVR/Froom Ranch
- LOVR/US 101 Ramps
- LOVR/S Higuera
- *Add LOVR/Los Verdes*
- *Add LOVR/Calle Joaquin*
- *Add segment analysis of LOVR*
- *Additional locations TBD*

Preliminary analysis approach

- Trip Generation- *review quality of ITE data for Continuing Care Retirement Community and potentially collect traffic counts at a similar facility. See discussion in next section.*
- Identify project trip distribution from City Model using select zone procedure- *confirmed this will help define study area for traffic impact analysis. See discussion in next section.*
- Review LUCE EIR and other recent documents to determine likelihood of identifying additional impacts- *LUCE modeling included 185ksf retail and 115 residential unit growth in project zones—less than was included in the Land Use Element (350ksf commercial and 250 units residential). Preliminary site plan includes less retail and more residential units than LUCE. See Tables 1 & 2 for more details.*

2. FOLLOW-UP ANALYSIS

This section compares land uses for the project from multiple sources, the available trip generation data for Continuing Care Retirement Communities, the project trip distribution, and an evaluation of the traffic control alternatives for the primary project street access. These items were identified in the Team/City Staff meeting described in section 1 above.

Land Use Comparison

The preliminary project description was compared to the uses in the City’s updated Land Use Element and the land uses included in the City’s Travel Demand Model for the Circulation Element Update. Table 1 summarizes the land uses from each source.

Table 1: Land Use Summary						
Scenario	Residential (Units)				Retail (s.f.)	Office (s.f.)
	SF	MF	Life Plan	Hotel		
Project Description ¹	-	174	457	120	30,000	-
Land Use Element ²	-	250	-	-	350,000	-
Circulation Element ³	-	115	-	139	184,272	16,670

1. Preliminary project description.
2. From Land Use Element section 8.3.2.5 (SP-3). Maximums shown.
3. From land uses in City travel demand model. Reflects growth in Costco/Home Depot area in addition to project site due to the model's TAZ boundaries.

The preliminary project description includes more residential units and less retail square footage than both the Land Use and Circulation Elements. The relative trip generation based on these three sources is summarized in Table 2. Note that these estimates are preliminary and are only intended to show the relative traffic levels of the land uses shown in Table 1.

Table 2: Gross Trip Estimates			
Scenario¹	Daily	AM Peak	PM Peak
	Trips	Hour	Hour
Project Description	6,360	292	525
Land Use Element	21,184	548	1,883
Circulation Element	12,461	307	1,089

1. See Table 1 for scenario descriptions. For comparison purposes only. Trip estimates from ITE using generic internalization rates.

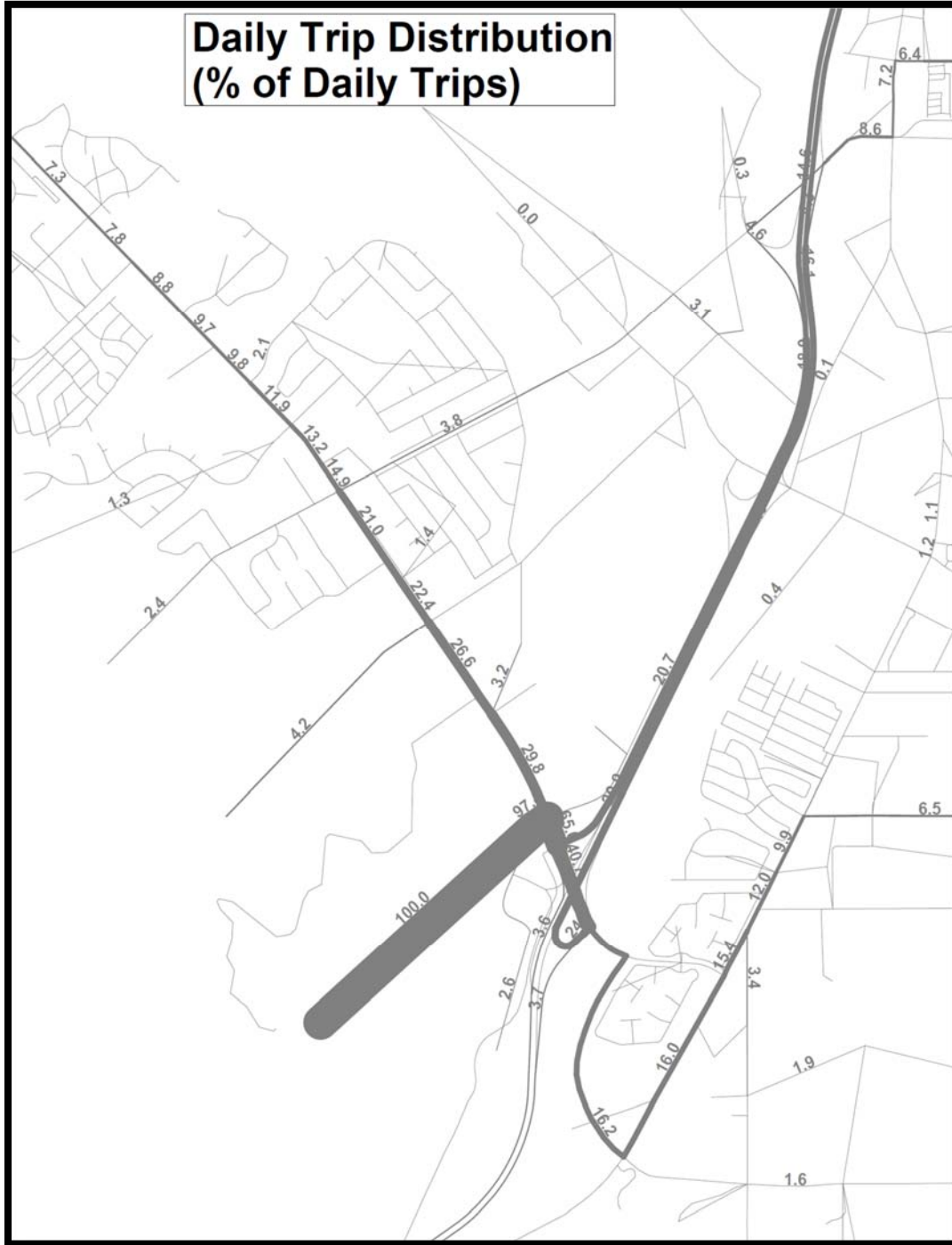
The preliminary project description would result in trip levels that are substantially lower than those evaluated as a part of the Circulation Element’s technical analysis and Land Use Element.

Life Plan Community Data Quality

ITE provides trip generation data for Continuing Care Retirement Communities (CCRC) summarizing four or five studied sites depending on the time period. The trip rates for these sites were relatively consistent, with R² values (a measure of how well data fit a statistical model, where a value of 1 indicates a perfect explanatory fit and 0 indicates no correlation) of 0.78, 0.70, and 0.99 for the AM peak hour, PM peak hour, and daily periods, respectively. Given the data quality and that the CCRC constitutes a relatively small portion of site trips, additional data collection is not recommended for this land use.

Project Trip Distribution

The project trip distribution was based on a select link procedure in the City’s Travel Demand Model, which indicated that 30% of the project trips would travel towards Madonna Road and 70% would travel towards US 101. A plot showing the daily trip distribution is below. The Traffic Analysis Zone structure and roadway loading in the City’s model should be modified when it is applied for project-level analysis to more closely match the proposed site plan loading points.



Intersection Control Evaluation

This section evaluates traffic operations at the primary project entry opposite Auto Park Way on Los Osos Valley Road to determine the appropriate control type and lane configuration based on the conceptual project description.

Project traffic was estimated using the conceptual project description as shown in Table 3. Project internalization and pass-by rates would be estimated in more detail as a part of the traffic study to be prepared as a part of the project’s Environmental Impact Report (EIR) but are included in Table 3 as a preliminary estimate.

Table 3: Preliminary Project Description Trip Generation Estimates								
Land Use	Size	Number of Trips						
		Daily	AM			PM		
			In	Out	Total	In	Out	Total
Multi-Family Housing ¹	174 units	1,178	18	71	89	73	40	113
Life Plan Community ²	457 units	1,097	42	22	64	28	45	73
Hotel ³	120 rooms	980	38	26	64	37	35	72
Commercial ⁴	30 k sq ft	3,105	47	28	75	128	139	267
	<i>Gross Trips</i>	<i>6,360</i>	<i>145</i>	<i>147</i>	<i>292</i>	<i>266</i>	<i>259</i>	<i>525</i>
Project Internalization Reduction ⁵		1,068	4	4	8	49	49	98
Pass-By Trip Reduction ⁶		860	10	10	20	37	37	74
Total Net New Trips		4,432	131	133	264	180	173	353

1. ITE Land Use Code 220, Apartment. Fitted curve equation used.
 2. ITE Land Use Code 255, Continuing Care Retirement Community. Average rate used.
 3. ITE Land Use Code 310, Hotel. Average rate used.
 4. ITE Land Use Code 820, Shopping Center. Fitted curve equation used.
 5. Daily and PM reductions based on ITE methods. AM reduction based on NCHRP methods.
 6. Pass-by trip reduction applied to commercial component only. Daily and AM reductions assumed to be proportional to ITE value for PM reduction.

Source: Trip Generation, 9th Edition, ITE (2012) and CCTC, 2017

The project trip distribution was based on a select link procedure in the City’s Travel Demand Model, as described in the previous section.

Cumulative traffic forecasts were developed using the LUCE projections at Froom Ranch Way/LOVR. The forecast growth on LOVR from the LUCE was added to recent counts at Auto Park Way/LOVR, then the project traffic was added to the intersection.

The resulting volumes were evaluated under signal and roundabout control. The vehicular service levels are reported in Table 4. The Synchro output sheets are attached and the Synchro files were submitted to City staff via email.

Table 4: Cumulative Plus Project Intersection Levels of Service					
Intersection	Peak Hour	Roundabout		Signal	
		Delay ¹ (sec/veh)	LOS	Delay ¹ (sec/veh)	LOS
Los Osos Valley Road/ Auto Park Way	AM	13.4	B	8.9	A
	PM	59.7	F	15.0	B

1. HCM 2010 average control delay in seconds per vehicle.

The roundabout would operate unacceptably at LOS F during the PM peak hour. The signal would operate at LOS B or better during both the AM and PM peak hours. This suggests that a traffic signal is preferable to a roundabout in this location.

The needed lane configurations were provided to the design team for their use in preparing a preliminary layout of the Los Osos Valley Road/Auto Park Way intersection. The resulting conceptual design is attached as Appendix B. The eastbound volumes may support a third eastbound through lane, potentially extending from the right turn lane to the west. The need for this additional lane should be evaluated as a part of the project's EIR once more detailed traffic volume forecasts are prepared.

Enclosures:


Appendix A: Queue and LOS Calculation Sheets

Appendix B: LOVR/Auto Park Way Geometry Exhibit

Appendix A: LOS Calculation Sheets

Signal CM+P AM
2: LOVR & Autopark

Froom SP Intersection Configuration
04/14/2017




Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	47	109	22	22	108	902	33	1391	46
v/c Ratio	0.23	0.26	0.11	0.05	0.24	0.32	0.17	0.64	0.05
Control Delay	31.3	13.3	30.1	0.2	29.5	4.9	33.2	10.4	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	13.3	30.1	0.2	29.5	4.9	33.2	10.4	2.5
Queue Length 50th (ft)	16	15	7	0	19	43	11	179	0
Queue Length 95th (ft)	54	60	32	0	51	144	44	300	12
Internal Link Dist (ft)				762		1214		403	
Turn Bay Length (ft)	200				250		200		200
Base Capacity (vph)	689	491	689	860	599	3442	216	3441	1540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.22	0.03	0.03	0.18	0.26	0.15	0.40	0.03

Intersection Summary

Signal CM+P AM
2: LOVR & Autopark

Froom SP Intersection Configuration
04/14/2017




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	43	0	100	20	0	20	99	790	40	30	1280	42
Future Volume (veh/h)	43	0	100	20	0	20	99	790	40	30	1280	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	47	0	109	22	0	22	108	859	43	33	1391	46
Adj No. of Lanes	1	1	1	1	1	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	189	246	236	0	160	187	2382	119	48	2362	1057
Arrive On Green	0.10	0.00	0.10	0.10	0.00	0.10	0.05	0.69	0.69	0.03	0.67	0.67
Sat Flow, veh/h	1384	1863	1583	1279	0	1583	3442	3430	172	1774	3539	1583
Grp Volume(v), veh/h	47	0	109	22	0	22	108	443	459	33	1391	46
Grp Sat Flow(s), veh/h/ln	1384	1863	1583	1279	0	1583	1721	1770	1832	1774	1770	1583
Q Serve(g_s), s	2.2	0.0	4.2	1.1	0.0	0.9	2.1	6.9	6.9	1.2	14.6	0.7
Cycle Q Clear(g_c), s	3.0	0.0	4.2	1.1	0.0	0.9	2.1	6.9	6.9	1.2	14.6	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	229	189	246	236	0	160	187	1229	1272	48	2362	1057
V/C Ratio(X)	0.21	0.00	0.44	0.09	0.00	0.14	0.58	0.36	0.36	0.68	0.59	0.04
Avail Cap(c_a), veh/h	619	714	693	597	0	607	508	1958	2027	183	3759	1682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	26.0	27.9	0.0	27.8	31.3	4.2	4.2	32.7	6.2	3.9
Incr Delay (d2), s/veh	0.4	0.0	1.2	0.2	0.0	0.4	2.8	0.2	0.2	15.5	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.9	0.0	1.9	0.4	0.0	0.4	1.1	3.4	3.5	0.8	7.0	0.3
LnGrp Delay(d), s/veh	29.6	0.0	27.2	28.0	0.0	28.1	34.1	4.4	4.4	48.2	6.4	3.9
LnGrp LOS	C		C	C		C	C	A	A	D	A	A
Approach Vol, veh/h		156			44			1010				1470
Approach Delay, s/veh		27.9			28.1			7.6				7.3
Approach LOS		C			C			A				A

Intersection Summary

HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Signal CM+P PM
2: LOVR & Autopark

Froom SP Intersection Configuration
04/14/2017

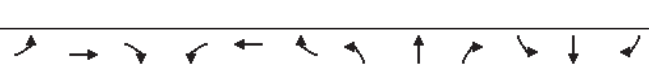


Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	68	160	43	54	165	2021	33	1815	71
v/c Ratio	0.42	0.41	0.26	0.21	0.45	0.73	0.30	0.77	0.07
Control Delay	49.8	30.7	44.8	5.4	47.0	10.0	54.9	13.5	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.8	30.7	44.8	5.4	47.0	10.0	54.9	13.5	2.1
Queue Length 50th (ft)	38	68	23	0	47	371	19	347	1
Queue Length 95th (ft)	89	143	62	16	93	561	56	507	16
Internal Link Dist (ft)			762		1214		403		
Turn Bay Length (ft)	200			250		200		200	
Base Capacity (vph)	437	398	458	572	386	3007	110	2905	1310
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.40	0.09	0.09	0.43	0.67	0.30	0.62	0.05

Intersection Summary												
Arrive On Green	0.12	0.00	0.12	0.12	0.00	0.12	0.07	0.74	0.74	0.02	0.69	0.69
Sat Flow, veh/h	1345	1863	1583	1221	0	1583	3442	3542	77	1774	3539	1583
Grp Volume(v), veh/h	68	0	160	43	0	54	165	985	1036	33	1815	71
Grp Sat Flow(s), veh/h/ln	1345	1863	1583	1221	0	1583	1721	1770	1849	1774	1770	1583
Q Serve(g_s), s	5.0	0.0	9.3	3.3	0.0	3.2	4.8	34.0	34.5	1.9	33.2	1.5
Cycle Q Clear(g_c), s	8.1	0.0	9.3	3.3	0.0	3.2	4.8	34.0	34.5	1.9	33.2	1.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	194	230	301	221	0	195	231	1302	1361	42	2452	1097
V/C Ratio(X)	0.35	0.00	0.53	0.19	0.00	0.28	0.72	0.76	0.76	0.78	0.74	0.06
Avail Cap(c_a), veh/h	369	472	507	380	0	401	302	1328	1388	86	2519	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	0.0	37.4	40.9	0.0	40.8	46.9	8.1	8.1	49.8	9.9	5.1
Incr Delay (d2), s/veh	1.1	0.0	1.5	0.4	0.0	0.8	5.4	2.5	2.5	26.2	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.9	0.0	4.2	1.1	0.0	1.4	2.5	17.0	18.2	1.2	16.3	0.7
LnGrp Delay(d), s/veh	45.6	0.0	38.9	41.3	0.0	41.6	52.3	10.5	10.6	76.0	11.1	5.1
LnGrp LOS	D		D	D		D	D	B	B	E	B	A
Approach Vol, veh/h		228				97			2186			1919
Approach Delay, s/veh		40.9				41.4			13.7			12.0
Approach LOS		D				D			B			B

Signal CM+P PM
2: LOVR & Autopark

Froom SP Intersection Configuration
04/14/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	63	0	147	40	0	50	152	1820	40	30	1670	65
Future Volume (veh/h)	63	0	147	40	0	50	152	1820	40	30	1670	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	68	0	160	43	0	54	165	1978	43	33	1815	71
Adj No. of Lanes	1	1	1	1	1	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	194	230	301	221	0	195	231	2607	56	42	2452	1097
Arrive On Green	0.12	0.00	0.12	0.12	0.00	0.12	0.07	0.74	0.74	0.02	0.69	0.69
Sat Flow, veh/h	1345	1863	1583	1221	0	1583	3442	3542	77	1774	3539	1583
Grp Volume(v), veh/h	68	0	160	43	0	54	165	985	1036	33	1815	71
Grp Sat Flow(s), veh/h/ln	1345	1863	1583	1221	0	1583	1721	1770	1849	1774	1770	1583
Q Serve(g_s), s	5.0	0.0	9.3	3.3	0.0	3.2	4.8	34.0	34.5	1.9	33.2	1.5
Cycle Q Clear(g_c), s	8.1	0.0	9.3	3.3	0.0	3.2	4.8	34.0	34.5	1.9	33.2	1.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	194	230	301	221	0	195	231	1302	1361	42	2452	1097
V/C Ratio(X)	0.35	0.00	0.53	0.19	0.00	0.28	0.72	0.76	0.76	0.78	0.74	0.06
Avail Cap(c_a), veh/h	369	472	507	380	0	401	302	1328	1388	86	2519	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	0.0	37.4	40.9	0.0	40.8	46.9	8.1	8.1	49.8	9.9	5.1
Incr Delay (d2), s/veh	1.1	0.0	1.5	0.4	0.0	0.8	5.4	2.5	2.5	26.2	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.9	0.0	4.2	1.1	0.0	1.4	2.5	17.0	18.2	1.2	16.3	0.7
LnGrp Delay(d), s/veh	45.6	0.0	38.9	41.3	0.0	41.6	52.3	10.5	10.6	76.0	11.1	5.1
LnGrp LOS	D		D	D		D	D	B	B	E	B	A
Approach Vol, veh/h		228				97			2186			1919
Approach Delay, s/veh		40.9				41.4			13.7			12.0
Approach LOS		D				D			B			B

Timer							
Assigned Phs	1	2	3	4	5	6	8
Phs Duration (G+Y+Rc), s	6.4	79.5		16.6	10.9	75.1	16.6
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	77.0		26.0	9.0	73.0	26.0
Max Q Clear Time (g_c+I1), s	3.9	36.5		11.3	6.8	35.2	5.3
Green Ext Time (p_c), s	0.0	38.2		1.3	0.1	35.9	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Roundabout CM+P AM
2: LOVR & Autopark

Froom SP Intersection Configuration
04/14/2017

Intersection								
Intersection Delay, s/veh	13.4							
Intersection LOS	B							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		2	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	156		44		1010		1470	
Demand Flow Rate, veh/h	159		44		1030		1500	
Vehicles Circulating, veh/h	1475		1034		82		132	
Vehicles Exiting, veh/h	157		78		1552		946	
Follow-Up Headway, s	3.186		3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	13.3		7.2		9.1		16.6	
Approach LOS	B		A		A		C	
Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	R	LT	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.302	0.698	0.477	0.523	0.470	0.530	0.470	0.530
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	48	111	21	23	484	546	705	795
Cap Entry Lane, veh/h	374	402	520	548	1063	1067	1023	1030
Entry HV Adj Factor	0.979	0.982	0.985	1.014	0.981	0.980	0.980	0.980
Flow Entry, veh/h	47	109	21	23	475	535	691	779
Cap Entry, veh/h	366	395	512	556	1042	1046	1003	1010
V/C Ratio	0.128	0.276	0.040	0.042	0.456	0.512	0.689	0.772
Control Delay, s/veh	11.9	13.9	7.5	7.0	8.6	9.6	14.6	18.3
LOS	B	B	A	A	A	A	B	C
95th %tile Queue, veh	0	1	0	0	2	3	6	8

Roundabout CM+P PM
2: LOVR & Autopark

Froom SP Intersection Configuration
04/14/2017

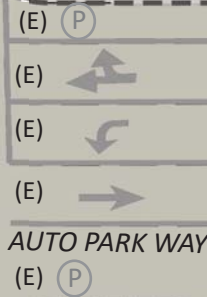
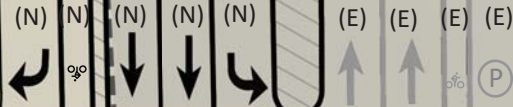
Intersection								
Intersection Delay, s/veh	59.7							
Intersection LOS	F							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		2	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	228		97		2186		1919	
Demand Flow Rate, veh/h	232		99		2230		1957	
Vehicles Circulating, veh/h	1929		2255		103		212	
Vehicles Exiting, veh/h	240		78		2058		2142	
Follow-Up Headway, s	3.186		3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	26.9		22.5		69.0		55.0	
Approach LOS	D		C		F		F	
Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	R	LT	R	LT	TR	LT	TR
RT Channelized								
Lane Util	0.297	0.703	0.444	0.556	0.470	0.530	0.470	0.530
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	69	163	44	55	1048	1182	920	1037
Cap Entry Lane, veh/h	266	293	208	233	1046	1051	964	974
Entry HV Adj Factor	0.986	0.982	0.977	0.982	0.981	0.980	0.980	0.981
Flow Entry, veh/h	68	160	43	54	1028	1159	902	1017
Cap Entry, veh/h	262	287	204	229	1026	1031	945	955
V/C Ratio	0.259	0.557	0.211	0.236	1.002	1.124	0.955	1.065
Control Delay, s/veh	19.8	30.0	23.4	21.7	48.7	86.9	40.1	68.2
LOS	C	D	C	C	F	F	E	F
95th %tile Queue, veh	1	3	1	1	20	30	16	24

Appendix B: LOVR/Auto Park Way Exhibit

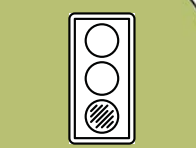
New Striping, Typical

New Sidewalk, Typical

Existing road, bike lanes, sidewalk and striping to remain, typical

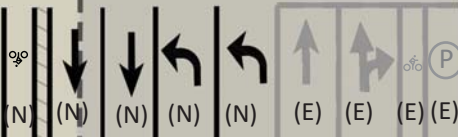


Existing edge of paving
Road Widening, Typical



New signalized intersection and crosswalks

New transit stop



LOS OSOS VALLEY ROAD