

November 26, 2019

Mr. Bill Lo
Sunmeadows, LLC
27127 Calle Arroyo, Suite 1910
San Juan Capistrano, CA 92675

SUBJECT: ROQUET RANCH SPECIFIC PLAN FOCUSED TRAFFIC ASSESSMENT

Dear Mr. Bill Lo:

This letter summarizes the results of a focused traffic assessment prepared that evaluates the Cadena Creek Mobilehome Community traffic accessing Maryknoll Drive via an easement adjacent to Planning Area 9 (S. Graymoor Avenue). The Roquet Ranch Specific Plan Traffic Impact Analysis (November 2016) (referred to as the **2016 Traffic Study**) assumed there would be no access via the easement between the proposed Project and the adjacent existing Cadena Creek Mobilehome Community. The following intersections have been evaluated for the purposes of this focused traffic assessment (see Exhibit 1):

- S. Graymoor Avenue & W. Maryknoll Drive (#11)
- S. Graymoor Avenue & Pellissier Road (#12)
- S. Rosedale Avenue & W. Maryknoll Drive (#13)
- S. La Cadena Drive & W. Maryknoll Drive (Future Pellissier Road) (#21)
- La Cadena Drive S. & Driveway / I-215 Southbound On-Ramp (#22)

SUMMARY OF FINDINGS

The existing Cadena Creek Mobilehome Community currently takes access via the driveway that aligns with the I-215 Southbound On-Ramp on La Cadena Drive. There is an easement that is located along the S. Graymoor Avenue alignment. The near-term analysis findings and improvement needs for the aforementioned intersections are consistent with those identified in the 2016 Traffic Study and supplemental Roquet Ranch Specific Plan Focused Operations Evaluation (April 25, 2018) if the existing mobilehome community traffic could utilize the easement for access to Maryknoll Drive after a 10-year restriction.

OPERATIONS ANALYSIS

The existing mobilehome community traffic has been reallocated from their existing main entry on La Cadena Drive (that aligns with the I-215 Southbound On-Ramp) to Maryknoll Drive via S. Graymoor Avenue (easement). 50 percent of the existing mobilehome community traffic has conservatively been estimated to utilize the proposed easement starting in Year 2029 (after a 10-year restriction). The modifications have been made to the existing baseline volumes utilized in the 2016 Traffic Study and

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then adjusted to estimate Opening Year Cumulative (2029) (with easement) traffic conditions. In other words, the mobilehome community traffic was reallocated, 21.9% ambient growth applied to the modified existing baseline traffic, and traffic associated with cumulative projects and the proposed Project were added to estimate Opening Year Cumulative (2029) (with easement) traffic forecasts.

As shown on Table 1, the study area intersections are anticipated to operate at a similar level of service to those reported in the 2016 Traffic Study, which evaluated Opening Year Cumulative (2020) traffic conditions. The only deficient intersection is La Cadena Drive and Maryknoll Drive, which is also consistent with the 2016 Traffic Study. Analysis worksheets are included in Attachment A.

As shown on Table 2, the same improvements identified in the Roquet Ranch Specific Plan Focused Operations Evaluation for the intersection of La Cadena Drive and Maryknoll Drive are anticipated to result in acceptable peak hour operations for Opening Year Cumulative (2029) (with easement) traffic conditions (see Attachment B for worksheets). As such, there are no additional near-term traffic impacts or mitigation required from those previously disclosed in the 2016 Traffic Study or supplemental Roquet Ranch Specific Plan Focused Operations Evaluation.

If you have any questions, please contact me directly at (949) 336-5982.

Respectfully submitted,

URBAN CROSSROADS, INC.



Charlene So, PE
Associate Principal

Table 1

Intersection Analysis for Opening Year Cumulative Conditions

#	Intersection	Traffic Control ²	2020 With Project ³				2029 With Project			
			Delay ¹ (secs.)		Level of Service		Delay ¹ (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
11	S. Graymoor Av. / W. Maryknoll Dr.	CSS	8.8	8.7	A	A	9.4	9.1	A	A
12	S. Graymoor Av. / Pellissier Rd.	CSS	11.8	13.6	B	B	10.9	11.0	B	B
13	S. Rosedale Av. / W. Maryknoll Dr.	CSS	17.5	20.7	C	C	12.0	12.2	B	B
21	S. La Cadena Dr. / W. Maryknoll Dr.	CSS	>100.0	>100.0	F	F	>100.0	>100.0	F	F
22	La Cadena Dr. S. / Pellissier Rd. / I-215 SB On-Ramp	AWS	32.1	16.7	D	C	27.1	15.7	D	C

¹ **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).
¹ Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.
² CSS = Cross-street Stop; AWS = All-Way Stop; **CSS** = Improvement
³ Analysis results as reported in the Roquet Ranch Specific Plan Traffic Impact Analysis, Urban Crossroads, Inc., November 30, 2016.

Table 2

Intersection Analysis for Opening Year Cumulative (2029) Conditions With Improvements

#	Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
21	S. La Cadena Dr. / W. Maryknoll Dr. - Without Project - With Project	TS	No Improvements Necessary												10.6	9.1	B	A
			<u>1</u>	<u>2</u>	0	<u>1</u>	2	1	<u>2</u>	1	<u>0</u>	0	1	0				

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1 = Improvement

² Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal; **TS** = Improvement

**ATTACHMENT A:
INTERSECTION ANALYSIS WORKSHEETS FOR
OPENING YEAR CUMULATIVE (2029) (WITH EASEMENT) WITH PROJECT CONDITIONS**

Intersection

Int Delay, s/veh 6.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	7	57	0	5	0
Future Vol, veh/h	0	7	57	0	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	67	0	6	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	8	0	138
Stage 1	-	-	-	-	4
Stage 2	-	-	-	-	134
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1612	-	855
Stage 1	-	-	-	-	1019
Stage 2	-	-	-	-	892
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1612	-	819
Mov Cap-2 Maneuver	-	-	-	-	819
Stage 1	-	-	-	-	1019
Stage 2	-	-	-	-	855

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	819	-	-	1612	-
HCM Lane V/C Ratio	0.007	-	-	0.042	-
HCM Control Delay (s)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	50	129	54	41	65	30
Future Vol, veh/h	50	129	54	41	65	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	140	59	45	71	33

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	104	0	-	0	330 82
Stage 1	-	-	-	-	82 -
Stage 2	-	-	-	-	248 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1488	-	-	-	665 978
Stage 1	-	-	-	-	941 -
Stage 2	-	-	-	-	793 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1488	-	-	-	639 978
Mov Cap-2 Maneuver	-	-	-	-	639 -
Stage 1	-	-	-	-	904 -
Stage 2	-	-	-	-	793 -

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1488	-	-	-	718
HCM Lane V/C Ratio	0.037	-	-	-	0.144
HCM Control Delay (s)	7.5	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	200	0	0	97	8	0	0	0	33	0	1
Future Vol, veh/h	1	200	0	0	97	8	0	0	0	33	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	267	0	0	129	11	0	0	0	44	0	1

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	140	0	0	267
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1443	-	-	1297
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1443	-	-	1297
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	12
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1443	-	-	1297	-	-	562
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.081
HCM Control Delay (s)		0	7.5	0	-	0	-	12
HCM Lane LOS		A	A	A	-	A	-	B
HCM 95th %tile Q(veh)		-	0	-	-	0	-	0.3

Intersection

Int Delay, s/veh 102.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Vol, veh/h	261	1	108	8	0	2	49	106	0	14	769	171
Future Vol, veh/h	261	1	108	8	0	2	49	106	0	14	769	171
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	307	1	127	9	0	2	58	125	0	16	905	201

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1116	1178	453	726	1379	63	1106	0	0	125	0	0
Stage 1	937	937	-	241	241	-	-	-	-	-	-	-
Stage 2	179	241	-	485	1138	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 162	189	554	312	143	988	627	-	-	1459	-	-
Stage 1	~ 285	342	-	741	705	-	-	-	-	-	-	-
Stage 2	805	705	-	532	275	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 146	165	554	216	125	988	627	-	-	1459	-	-
Mov Cap-2 Maneuver	~ 146	165	-	216	125	-	-	-	-	-	-	-
Stage 1	~ 257	332	-	668	635	-	-	-	-	-	-	-
Stage 2	724	635	-	396	267	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	409.5	19.7	3.8	0.2
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	627	-	-	146	554	256	1459	-	-
HCM Lane V/C Ratio	0.092	-	-	2.111	0.229	0.046	0.011	-	-
HCM Control Delay (s)	11.3	0.3	-	572.8	13.4	19.7	7.5	0.1	-
HCM Lane LOS	B	A	-	F	B	C	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	24.9	0.9	0.1	0	-	-

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

Intersection	
Intersection Delay, s/veh	27.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕					↕	↕		↕	↕	
Traffic Vol, veh/h	46	10	15	0	0	0	5	88	1	432	418	33
Future Vol, veh/h	46	10	15	0	0	0	5	88	1	432	418	33
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	1	11	0	0	0	0	25	8	100	13	4	2
Mvmt Flow	57	12	19	0	0	0	6	109	1	533	516	41
Number of Lanes	0	1	0	0	0	0	1	2	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	1
HCM Control Delay	11.5	10.4	30.1
HCM LOS	B	B	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	65%	100%	0%
Vol Thru, %	0%	100%	97%	14%	0%	93%
Vol Right, %	0%	0%	3%	21%	0%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	59	30	71	432	451
LT Vol	5	0	0	46	432	0
Through Vol	0	59	29	10	0	418
RT Vol	0	0	1	15	0	33
Lane Flow Rate	6	72	37	88	533	557
Geometry Grp	7	7	7	7	8	8
Degree of Util (X)	0.012	0.127	0.082	0.177	0.867	0.796
Departure Headway (Hd)	7.127	6.329	7.887	7.251	5.855	5.148
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	505	569	456	498	613	696
Service Time	4.833	4.035	5.593	4.954	3.644	2.936
HCM Lane V/C Ratio	0.012	0.127	0.081	0.177	0.869	0.8
HCM Control Delay	9.9	10	11.3	11.5	35.4	25.1
HCM Lane LOS	A	A	B	B	E	D
HCM 95th-tile Q	0	0.4	0.3	0.6	9.9	8

Intersection						
Int Delay, s/veh	6.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	9	40	0	11	0
Future Vol, veh/h	0	9	40	0	11	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	42	0	11	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	9	0	89
Stage 1	-	-	-	-	5
Stage 2	-	-	-	-	84
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1611	-	912
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	939
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1611	-	888
Mov Cap-2 Maneuver	-	-	-	-	888
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	915

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	888	-	-	1611	-
HCM Lane V/C Ratio	0.013	-	-	0.026	-
HCM Control Delay (s)	9.1	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	35	91	150	61	50	53
Future Vol, veh/h	35	91	150	61	50	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	99	163	66	54	58

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	229	0	371
Stage 1	-	-	196
Stage 2	-	-	175
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1339	-	630
Stage 1	-	-	837
Stage 2	-	-	855
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1339	-	611
Mov Cap-2 Maneuver	-	-	611
Stage 1	-	-	812
Stage 2	-	-	855

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1339	-	-	-	713
HCM Lane V/C Ratio	0.028	-	-	-	0.157
HCM Control Delay (s)	7.8	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	143	0	0	220	41	0	0	0	25	0	1
Future Vol, veh/h	2	143	0	0	220	41	0	0	0	25	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	164	0	0	253	47	0	0	0	29	0	1

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	300	0	0	164
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1261	-	-	1414
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1261	-	-	1414
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	12.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1261	-	-	1414	-	-	528
HCM Lane V/C Ratio	-	0.002	-	-	-	-	-	0.057
HCM Control Delay (s)		0	7.9	0	0	-	-	12.2
HCM Lane LOS		A	A	A	-	A	-	B
HCM 95th %tile Q(veh)		-	0	-	-	0	-	0.2

Intersection

Int Delay, s/veh 20

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Traffic Vol, veh/h	173	0	63	2	1	2	50	350	5	3	696	287
Future Vol, veh/h	173	0	63	2	1	2	50	350	5	3	696	287
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	188	0	68	2	1	2	54	380	5	3	757	312

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1062	1256	379	876	1566	193	1069	0	0	385	0	0
Stage 1	763	763	-	491	491	-	-	-	-	-	-	-
Stage 2	299	493	-	385	1075	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 178	170	619	243	110	816	648	-	-	1170	-	-
Stage 1	363	411	-	528	546	-	-	-	-	-	-	-
Stage 2	685	545	-	610	294	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 161	151	619	198	98	816	648	-	-	1170	-	-
Mov Cap-2 Maneuver	~ 161	151	-	198	98	-	-	-	-	-	-	-
Stage 1	325	408	-	472	488	-	-	-	-	-	-	-
Stage 2	609	487	-	539	292	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	135	21.8	1.8	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	648	-	-	161	619	220	1170	-	-
HCM Lane V/C Ratio	0.084	-	-	1.168	0.111	0.025	0.003	-	-
HCM Control Delay (s)	11.1	0.5	-	180	11.5	21.8	8.1	0	-
HCM Lane LOS	B	A	-	F	B	C	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	10.3	0.4	0.1	0	-	-

Notes

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





















Intersection	
Intersection Delay, s/veh	15.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕					↕	↕		↕	↕	
Traffic Vol, veh/h	35	14	15	0	0	0	25	305	0	319	391	46
Future Vol, veh/h	35	14	15	0	0	0	25	305	0	319	391	46
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	0	0	0	0	0	0	14	5	0	10	1	5
Mvmt Flow	38	15	16	0	0	0	27	328	0	343	420	49
Number of Lanes	0	1	0	0	0	0	1	2	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	1
HCM Control Delay	10.9	9.2	19
HCM LOS	B	A	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	55%	100%	0%
Vol Thru, %	0%	100%	100%	22%	0%	89%
Vol Right, %	0%	0%	0%	23%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	153	153	64	319	437
LT Vol	25	0	0	35	319	0
Through Vol	0	153	153	14	0	391
RT Vol	0	0	0	15	0	46
Lane Flow Rate	27	164	164	69	343	470
Geometry Grp	7	7	7	7	8	8
Degree of Util (X)	0.049	0.266	0.184	0.135	0.587	0.708
Departure Headway (Hd)	6.497	5.838	4.036	7.085	6.158	5.424
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	554	618	892	506	590	667
Service Time	4.206	3.547	1.745	4.819	3.873	3.142
HCM Lane V/C Ratio	0.049	0.265	0.184	0.136	0.581	0.705
HCM Control Delay	9.5	10.7	7.7	10.9	17.3	20.2
HCM Lane LOS	A	B	A	B	C	C
HCM 95th-tile Q	0.2	1.1	0.7	0.5	3.8	5.9

**ATTACHMENT B:
INTERSECTION ANALYSIS WORKSHEETS FOR
OPENING YEAR CUMULATIVE (2029) (WITH EASEMENT) WITH PROJECT CONDITIONS,
WITH IMPROVEMENTS**

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	1	108	8	0	2	49	106	0	14	769	171
Future Volume (veh/h)	261	1	108	8	0	2	49	106	0	14	769	171
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1765	1800	1800	1765	1800	1765	1765	1800	1765	1765	1765
Adj Flow Rate, veh/h	307	1	127	9	0	2	58	125	0	16	905	201
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	712	2	248	203	10	23	375	2306	0	861	2306	980
Arrive On Green	0.17	0.17	0.17	0.17	0.00	0.17	0.22	0.22	0.00	0.65	0.65	0.65
Sat Flow, veh/h	2649	12	1490	566	62	140	477	3529	0	1185	3529	1500
Grp Volume(v), veh/h	307	0	128	11	0	0	58	125	0	16	905	201
Grp Sat Flow(s),veh/h/ln	1325	0	1502	768	0	0	477	1765	0	1185	1765	1500
Q Serve(g_s), s	1.1	0.0	4.7	0.0	0.0	0.0	6.3	1.7	0.0	0.3	7.2	3.2
Cycle Q Clear(g_c), s	5.8	0.0	4.7	4.7	0.0	0.0	13.4	1.7	0.0	2.0	7.2	3.2
Prop In Lane	1.00		0.99	0.82		0.18	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	712	0	250	237	0	0	375	2306	0	861	2306	980
V/C Ratio(X)	0.43	0.00	0.51	0.05	0.00	0.00	0.15	0.05	0.00	0.02	0.39	0.21
Avail Cap(c_a), veh/h	1242	0	551	496	0	0	375	2306	0	861	2306	980
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.99	0.99	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	22.8	21.1	0.0	0.0	16.5	8.8	0.0	4.3	4.8	4.2
Incr Delay (d2), s/veh	0.4	0.0	1.6	0.1	0.0	0.0	0.9	0.0	0.0	0.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	2.0	0.2	0.0	0.0	0.9	0.8	0.0	0.1	3.6	1.4
LnGrp Delay(d),s/veh	23.6	0.0	24.4	21.2	0.0	0.0	17.4	8.9	0.0	4.3	5.3	4.6
LnGrp LOS	C		C	C			B	A		A	A	A
Approach Vol, veh/h		435			11			183			1122	
Approach Delay, s/veh		23.8			21.2			11.6			5.2	
Approach LOS		C			C			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.4		14.6		45.4		14.6				
Change Period (Y+Rc), s		6.2		4.6		6.2		4.6				
Max Green Setting (Gmax), s		27.2		22.0		27.2		22.0				
Max Q Clear Time (g_c+I1), s		15.4		7.8		9.2		6.7				
Green Ext Time (p_c), s		1.2		1.7		8.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			10.6									
HCM 2010 LOS			B									

Timings
 21: S. La Cadena Dr. & W. Maryknoll Dr./Driveway

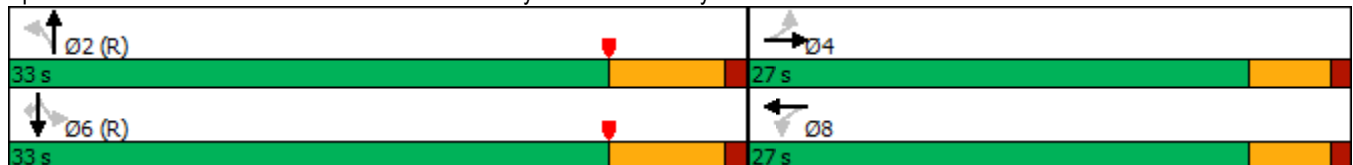






















Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖↗	↗		↖↗	↖	↖↗	↖	↖↗	↖
Traffic Volume (vph)	173	0	2	1	50	350	3	696	287
Future Volume (vph)	173	0	2	1	50	350	3	696	287
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	26.6	26.6	14.6	14.6	28.2	28.2	28.2	28.2	28.2
Total Split (s)	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	5.2	5.2	5.2	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6		4.6	6.2	6.2	6.2	6.2	6.2
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	12.6	12.6		12.6	36.6	36.6	36.6	36.6	36.6
Actuated g/C Ratio	0.21	0.21		0.21	0.61	0.61	0.61	0.61	0.61
v/c Ratio	0.36	0.17		0.01	0.14	0.18	0.01	0.35	0.26
Control Delay	21.1	2.1		13.2	3.8	2.8	7.0	7.3	1.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	2.1		13.2	3.8	2.8	7.0	7.3	1.9
LOS	C	A		B	A	A	A	A	A
Approach Delay		16.1		13.2		2.9		5.7	
Approach LOS		B		B		A		A	

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.36
 Intersection Signal Delay: 6.5
 Intersection LOS: A
 Intersection Capacity Utilization 54.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 21: S. La Cadena Dr. & W. Maryknoll Dr./Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	0	63	2	1	2	50	350	5	3	696	287
Future Volume (veh/h)	173	0	63	2	1	2	50	350	5	3	696	287
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1765	1800	1800	1765	1800	1765	1765	1800	1765	1765	1765
Adj Flow Rate, veh/h	188	0	68	2	1	2	54	380	5	3	757	312
Adj No. of Lanes	2	1	0	0	1	0	1	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	677	0	247	154	80	100	397	2278	30	649	2313	983
Arrive On Green	0.16	0.00	0.16	0.16	0.16	0.16	0.22	0.22	0.22	0.66	0.66	0.66
Sat Flow, veh/h	2647	0	1500	423	488	607	494	3476	46	935	3529	1500
Grp Volume(v), veh/h	188	0	68	5	0	0	54	193	192	3	757	312
Grp Sat Flow(s),veh/h/ln	1323	0	1500	1518	0	0	494	1765	1757	935	1765	1500
Q Serve(g_s), s	3.6	0.0	2.4	0.0	0.0	0.0	5.5	5.3	5.3	0.1	5.6	5.4
Cycle Q Clear(g_c), s	3.8	0.0	2.4	0.2	0.0	0.0	11.2	5.3	5.3	5.4	5.6	5.4
Prop In Lane	1.00		1.00	0.40		0.40	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	677	0	247	334	0	0	397	1157	1151	649	2313	983
V/C Ratio(X)	0.28	0.00	0.28	0.01	0.00	0.00	0.14	0.17	0.17	0.00	0.33	0.32
Avail Cap(c_a), veh/h	1229	0	560	640	0	0	397	1157	1151	649	2313	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	21.9	21.0	0.0	0.0	14.9	10.2	10.2	5.7	4.5	4.5
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.0	0.0	0.0	0.7	0.3	0.3	0.0	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.0	0.1	0.0	0.0	0.8	2.7	2.7	0.0	2.9	2.4
LnGrp Delay(d),s/veh	22.7	0.0	22.5	21.0	0.0	0.0	15.5	10.5	10.5	5.7	4.9	5.3
LnGrp LOS	C		C	C			B	B	B	A	A	A
Approach Vol, veh/h		256			5			439			1072	
Approach Delay, s/veh		22.7			21.0			11.1			5.0	
Approach LOS		C			C			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.5		14.5		45.5		14.5				
Change Period (Y+Rc), s		6.2		4.6		6.2		4.6				
Max Green Setting (Gmax), s		26.8		22.4		26.8		22.4				
Max Q Clear Time (g_c+I1), s		13.2		5.8		7.6		2.2				
Green Ext Time (p_c), s		2.9		1.0		7.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			9.1									
HCM 2010 LOS			A									