



Date: 3/19/21

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**SDC PDS RCVD 09-09-21
TM5354R2**



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August 30, 2021

Mr. Jimmy Ayala
Tri Pointe Homes
13400 Sabre Springs Pkwy
San Diego, CA 92128

SUBJECT: VTM 5354 RPL4 (Meadowood) Focused Traffic Analysis Letter with delayed connections of Pala Mesa Dr and Pankey Place under existing plus project conditions.

Dear Mr. Ayala:

The purpose of this letter is to provide a focused traffic analysis to determine if the VTM 5354 Meadowood ("Project") would create any new direct traffic impacts if the connection of Pala Mesa Dr between Pankey Place and Old Highway 395 AND the connection of Pankey Place between Horse Ranch Creek Road and Pankey Road were not open for travel prior to completion of the project.

This analysis documents no new impacts if the noted connections are not implemented prior to completion of Meadowood.

BACKGROUND AND APPROACH

The approved *Meadowood (TM 5354) Traffic Impact Study*, dated May 5, 2009 was used for this analysis. Since completion of the 2009 traffic study, the project has been refined; however, the overall project trip generation is lower than the original generation as shown in **Table 1**.

Table 1: Original and Current Project Trip Generation

Land Use	Rate	Size & Units	ADT	%	Split	AM		%	Split	PM			
						IN	OUT			IN	OUT		
Original and Approved Traffic Impact Study Trip Generation													
Residential - Single Family	10 /DU	355 DU	3,550	8%	0.3 0.7	85	199	10%	0.7 0.3	249	107		
Residential - Multi Family	8 /DU	503 DU	4,024	8%	0.2 0.8	65	257	10%	0.7 0.3	282	121		
Neighborhood Park	5 /Acre	10.0 Acres	50	4%	0.5 0.5	1	1	8%	0.5 0.5	2	2		
Elementary School	90 /Acre	12.7 Acres	1,116	32%	0.6 0.4	214	143	9%	0.4 0.6	41	60		
Original and Approved Traffic Study Trip Generation:			8,740			365	600			574	290		
Current Project Trip Generation													
Residential - Single Family	10 /DU	516 DU	5,160	8%	0.3 0.7	124	289	10%	0.7 0.3	362	155		
Residential - Multi Family	8 /DU	370 DU	2,960	8%	0.2 0.8	47	189	10%	0.7 0.3	208	89		
Neighborhood Park	5 /Acre	20.0 Acres	100	4%	0.5 0.5	2	2	8%	0.5 0.5	4	4		
Current Project Trip Generation:			8,220			173	480			574	248		
Trip Generation Change with Current Project:			-520			-192	-120			0	-42		

Source: SANDAG Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002.

This analysis is based on existing year 2009 conditions as documented in the EIR (i.e. the existing + project scenario is analyzed without the recent SR-76 widening and associated interchange improvements).

The existing + cumulative + project and horizon year + project scenarios were not included in this focused analysis as these remaining scenarios include the Pala Mesa Drive and Pankey Place connections because they are needed for either cumulative project access or network connectivity. The Pala Mesa Drive and Pankey Place connections are still proposed in the near-term cumulative and horizon year. The Pala Mesa Drive and Pankey Place connections are not proposed to be removed nor eliminated from the Mobility Element.

If the aforementioned segments of Pala Mesa Drive and Pankey Place were removed from the original EIR analysis, then the project traffic would be redirected through nine segments and eight intersections as shown in **Figure 1a** (for side by side comparison for ADTs) and **Figure 1b** for intersection volumes. Both figures show the volumes with and without the noted connections.

The redirection of project traffic can be seen in Figure 1a where project traffic previously assigned to Pankey Place and Pala Mesa Rd is now assigned to SR-76 and on Old Highway 395. Peak hour volumes are also reassigned and shown in Figure 1b.

FIGURE 1a: ORIGINAL AND REDIRECTED PROJECT TRAFFIC (Segments)

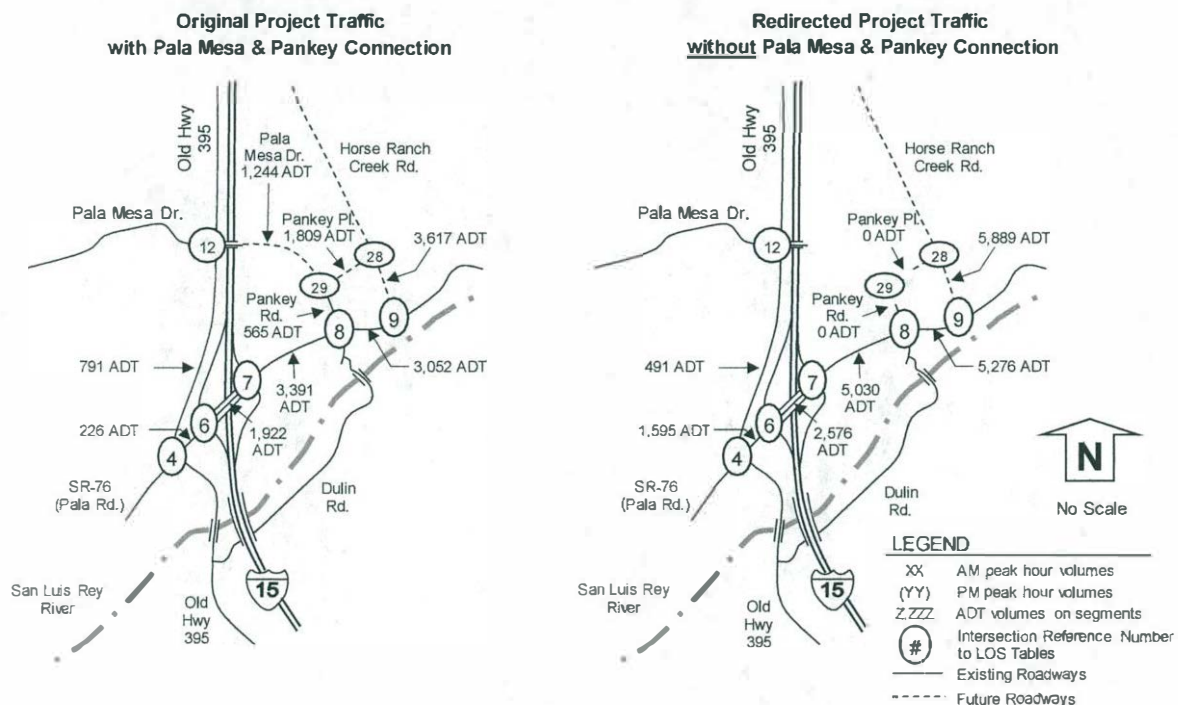
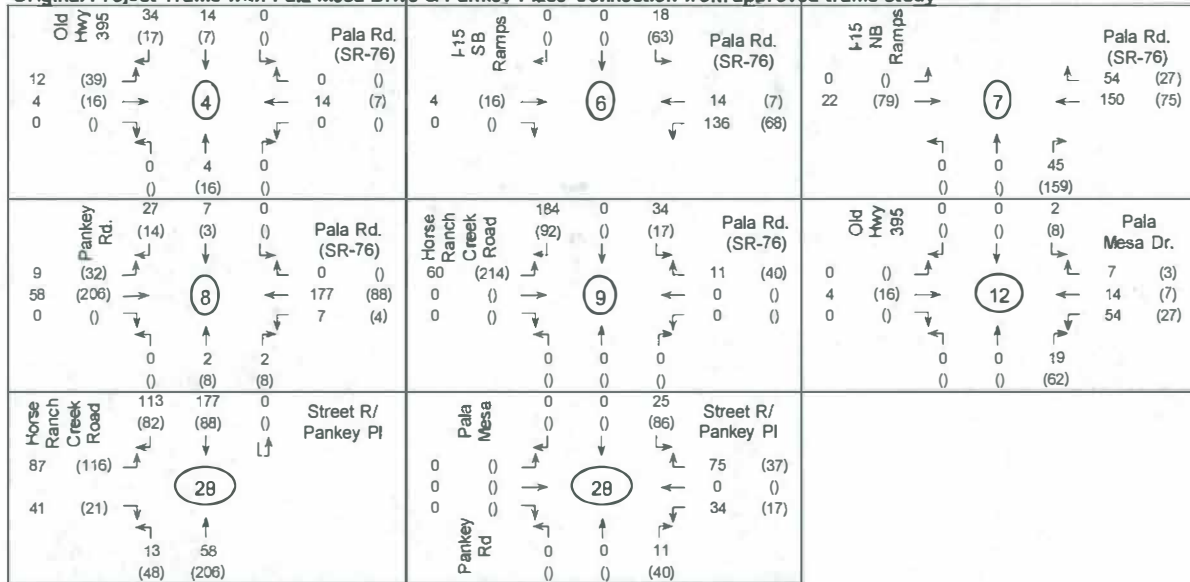
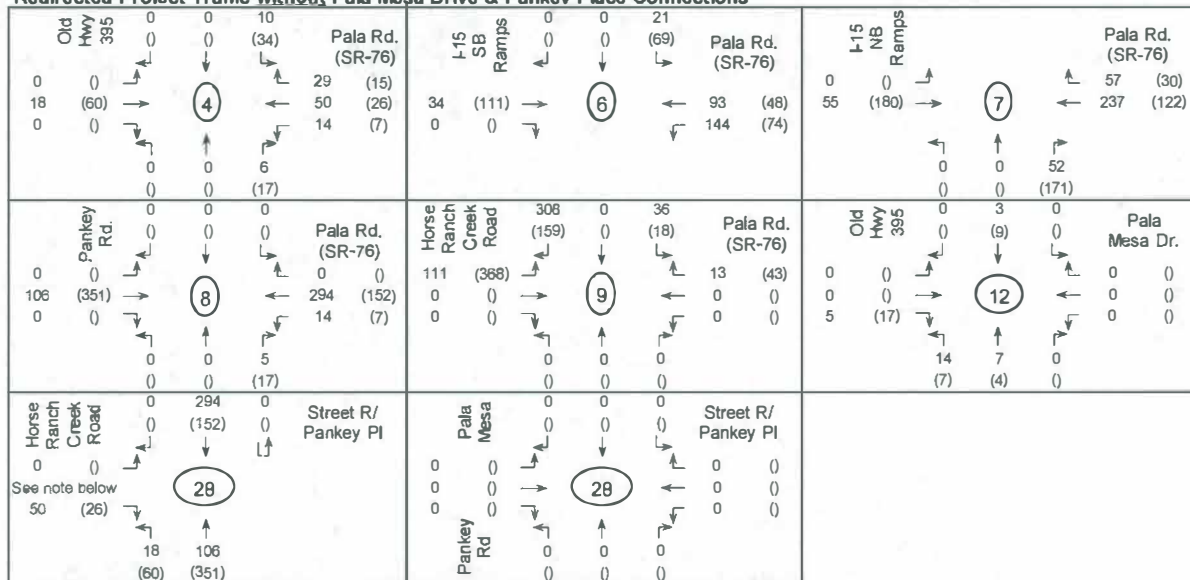


FIGURE 1b: ORIGINAL AND REDIRECTED PROJECT TRAFFIC (Intersections)

Original Project Traffic with Pala Mesa Drive & Pankey Place Connection from approved traffic study



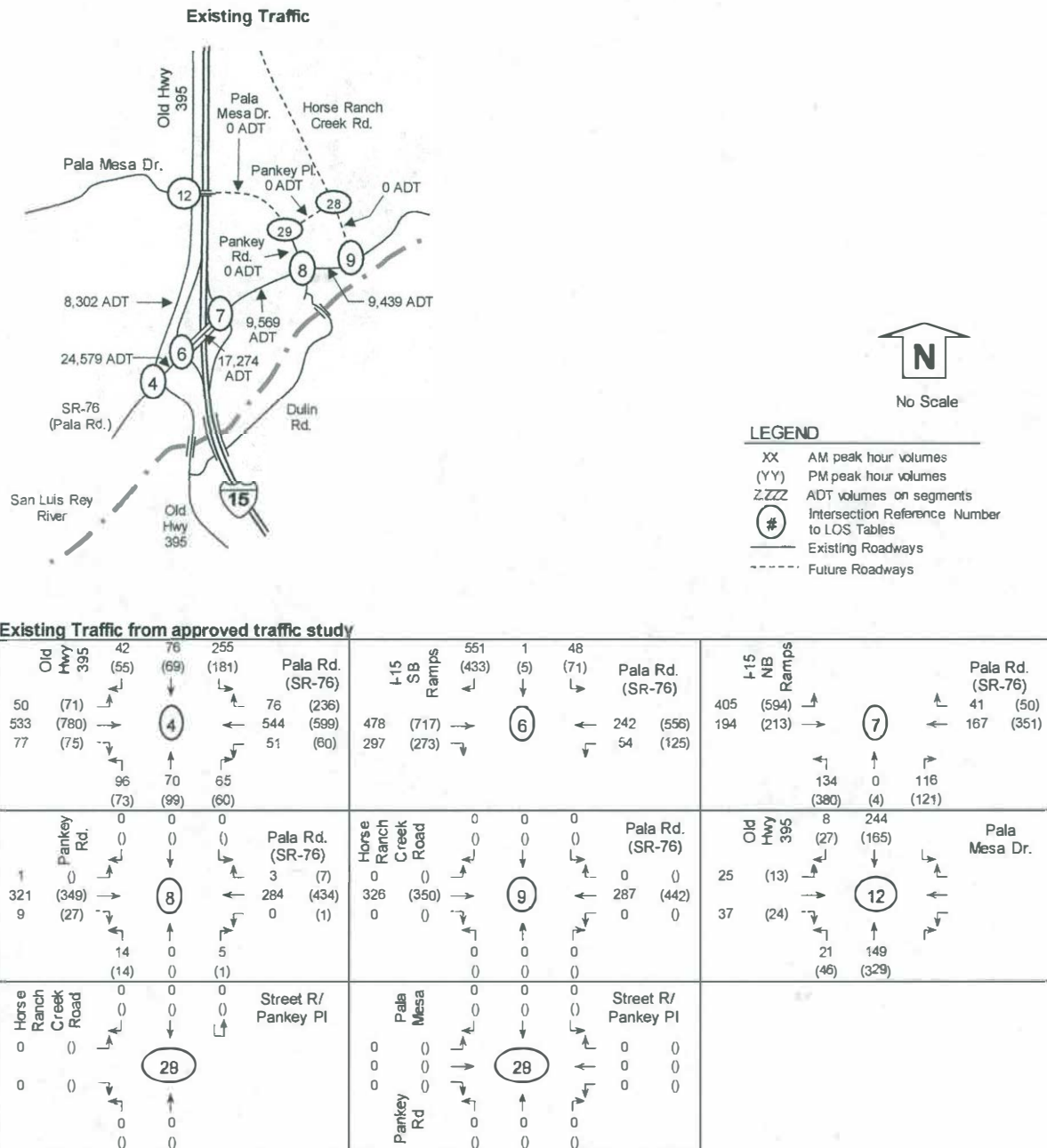
Redirected Project Traffic without Pala Mesa Drive & Pankey Place Connections



Note: EB approach continues to have volumes without the Pankey Place connection because the adjacent Planning Areas have driveways onto Pankey Place. Therefore, a short portion of Pankey Place will be constructed for access to the adjacent Planning Areas without connecting to Pankey Road.

The existing volumes for the nine segments and eight intersections are shown in **Figure 2**.

FIGURE 2: EXISTING TRAFFIC FROM EIR



The addition of redirected project traffic onto existing EIR volumes are shown in **Figure 3a** for segments and **Figure 3b** for intersections.

FIGURE 3a: EXISTING PLUS REDIRECTED TRAFFIC (Segments)

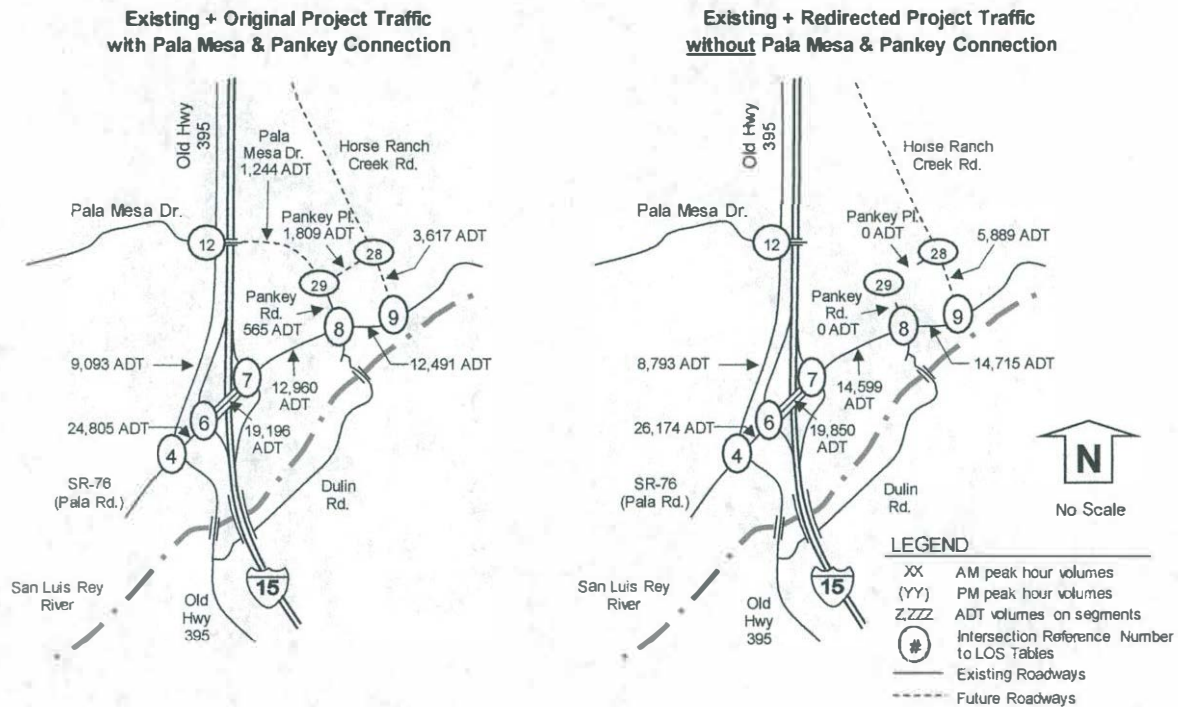
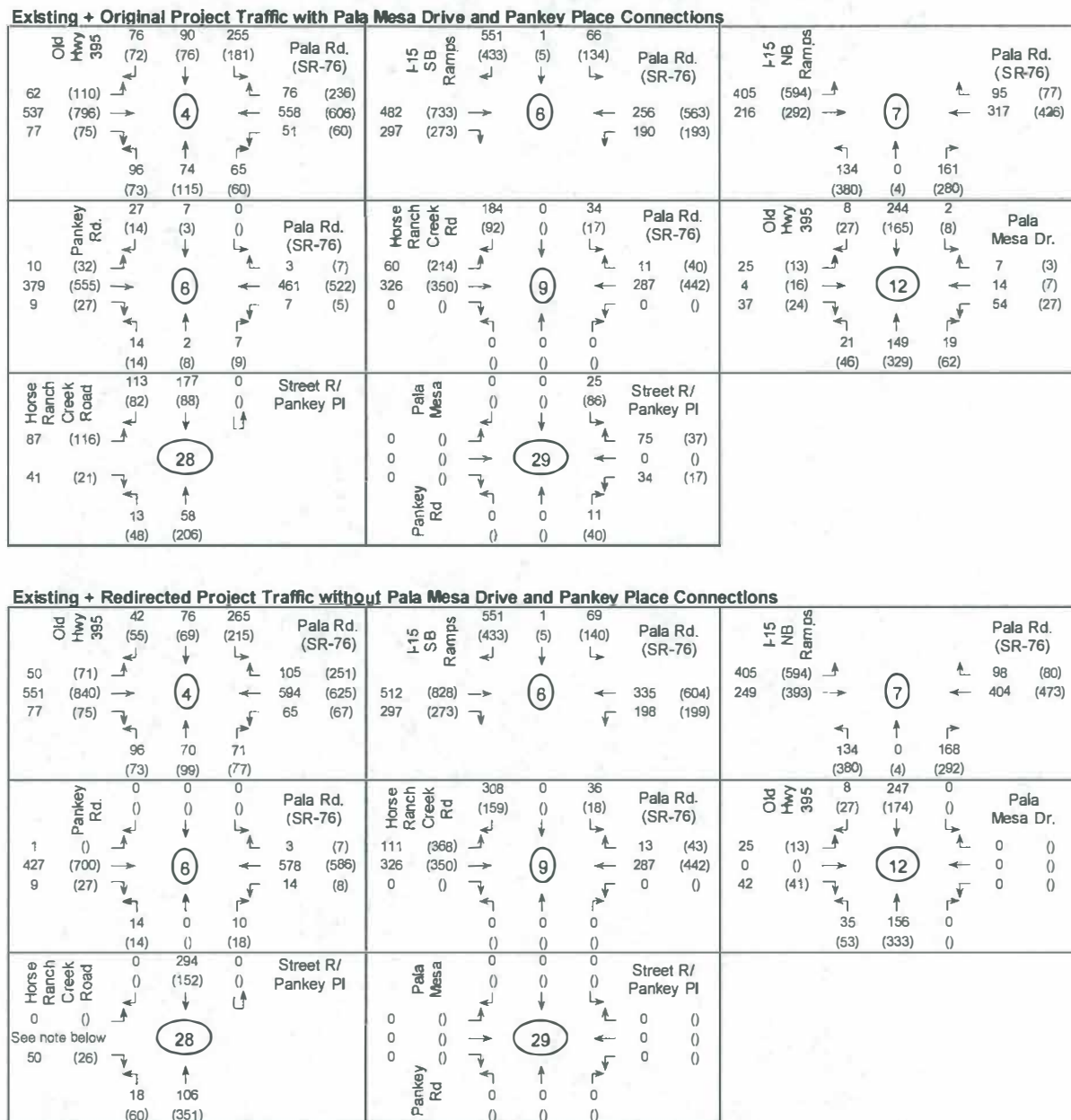


FIGURE 3b: EXISTING PLUS REDIRECTED TRAFFIC (Intersections)



Note: EB approach continues to have volumes without the Pankey Place connection because the adjacent Planning Areas have driveways onto Pankey Place. Therefore, a short portion of Pankey Place will be constructed for access to the adjacent Planning Areas without connecting to Pankey Road.

RESULTS

The existing + project Level of Service (LOS) was pulled from the approved *Meadowood (TM 5354) Traffic Impact Study*, dated May 5, 2009. There are no new study intersection impacts with the redirected project traffic. The EIR existing + original project and existing + redirected project traffic LOS are shown in **Table 1** (new LOS calculations included in **Attachment A**).

Table 1: Existing + Project (Original & Redirected) Intersection Level of Service

Intersection & (Analysis) ¹	Move-ment	Peak Hour	Existing		Existing + Project				County		CMP
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	CM Vol ⁵	Sig ⁶	Sig ⁷	
4) SR-76 (Pala Rd) at Old Hwy 395 (S)	All	AM	29.7	C	33.2	C	3.5	NA	No	No	
	All	PM	30.2	C	33.5	C	3.3	NA	No	No	
<u>With Redirected Project Traffic</u>											
4) SR-76 (Pala Rd) at Old Hwy 395 (S)	All	AM	29.7	C	32.4	C	2.7	NA	No	No	
	All	PM	30.2	C	34.6	C	4.4	NA	No	No	
6) SR-76 (Pala Rd) at I-15 SB Ramps (S)	All	AM	27.5	C	30.1	C	2.6	NA	No	No	
	All	PM	26.4	C	26.9	C	0.5	NA	No	No	
<u>With Redirected Project Traffic</u>											
6) SR-76 (Pala Rd) at I-15 SB Ramps (S)	All	AM	27.5	C	29.2	C	1.7	NA	No	No	
	All	PM	26.4	C	27.6	C	1.2	NA	No	No	
7) SR-76 (Pala Rd) at I-15 NB Ramps (S)	All	AM	22.4	C	29.2	C	6.8	NA	No	No	
	All	PM	43.6	D	49.4	D	5.8	NA	No	No	
<u>With Redirected Project Traffic</u>											
7) SR-76 (Pala Rd) at I-15 NB Ramps (S)	All	AM	22.4	C	29.2	C	6.8	NA	No	No	
	All	PM	43.6	D	53.3	D	9.7	NA	No	No	
8) SR-76 (Pala Rd) at Pankey Road (U)	NB LTR	AM	12.2	B	15.7	C	NA	4	No	NA	
	NB LTR	PM	14.6	B	22.8	C	NA	16	No	NA	
	SB LTR	AM	0.0	A	12.1	B	NA	34	No	NA	
	SB LTR	PM	0.0	A	13.3	B	NA	17	No	NA	
<u>With Redirected Project Traffic</u>											
8) SR-76 (Pala Rd) at Pankey Road (U)	NB LTR	AM	12.2	B	19.9	D	NA	5	No	NA	
	NB LTR	PM	14.6	B	26.8	D	NA	17	No	NA	
	SB LTR	AM	0.0	A	0.0	A	NA	0	No	NA	
	SB LTR	PM	0.0	A	0.0	A	NA	0	No	NA	
9) SR-76 (Pala Rd) at Horse Ranch Creek Rd (S)	All	AM	DNE	NA	12.8	B	NA	NA	No	No	
	All	PM	DNE	NA	16.4	B	NA	NA	No	No	
<u>With Redirected Project Traffic</u>											
9) SR-76 (Pala Rd) at Horse Ranch Creek Rd (S)	All	AM	DNE	NA	15.8	B	NA	NA	No	No	
	All	PM	DNE	NA	35.4	D	NA	NA	No	No	
12) Old Highway 395 at Pala Mesa Dr (U)	EB LTR	AM	11.0	B	11.7	B	NA	4	No	NA	
	EB LTR	PM	11.1	B	13.5	B	NA	16	No	NA	
	East leg completed WB LTR	AM	DNE	NA	14.4	B	NA	75	No	NA	
	with project WB LTR	PM	DNE	NA	17.3	C	NA	37	No	NA	
<u>With Redirected Project Traffic</u>											
12) Old Highway 395 at Pala Mesa Dr (U)	EB LR	AM	11.0	B	11.2	B	NA	5	No	NA	
	EB LR	PM	11.1	B	10.9	B	NA	17	No	NA	
28) Horse Ranch Crk Rd at Street R (U)	EB LR	AM	DNE	NA	11.4	B	NA	128	No	No	
	EB LR	PM	DNE	NA	13.3	B	NA	137	No	No	
<u>With Redirected Project Traffic</u>											
28) Horse Ranch Crk Rd at Street R (U)	EB LR	AM	DNE	NA	10.3	B	NA	50	No	No	
	EB LR	PM	DNE	NA	9.2	A	NA	26	No	No	
29) Pankey/Pala Mesa Dr at Street R (U)	WB LR	AM	DNE	NA	8.9	A	NA	109	No	No	
	WB LR	PM	DNE	NA	9.1	A	NA	54	No	No	

With Redirected Project Traffic there are no longer any volumes at this intersection, thus no LOS

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) CM Vol: Critical Movement Volume used to show project volumes on the critical movement. 6) County Sig: is the project have a calculated impact based on the critical volume (Yes or No). 7) CMP Sig: Congestion Management Program significant impact based on CMP criteria (Yes or No). DNE: Does Not Exist. NA: Not Applicable.

The segment analysis resulted in no new project impacts with the redirected project traffic; however, the same previous impacts remain on SR-76. The segments operations are shown in Table 2.

Table 2: Existing + Project Segment LOS

Segment	Sept 2005 Circulation Class.	Existing			Project		Existing + Project					County Sig Impact?	CMP Sig Impact?		
		Daily Volume	# of Lanes	LOS E Capacity	V/C	LOS	Daily Volume	Daily Volume	LOS E Capacity	V/C	LOS			Change in V/C	
Horse Ranch Creek Road															
Pankey Place to SR-76 (Pala Rd)	Light Collector	0	2	16,200	0.000	A	3,617	3,617	16,200	0.223	B	0.223	No	No	
Old Highway 395															
Pala Mesa Drive to SR-76 (Pala Road)	Collector	8,302	2	16,200	0.512	D	791	9,093	16,200	0.561	D	0.049	No	No	
Pankey Place															
Pankey Rd to Horse Ranch Creek Rd	Light Collector	0	2	16,200	0.000	A	1,809	1,809	16,200	0.112	A	0.112	No	No	
Pankey Road															
Pankey Place to SR-76 (Pala Rd)	Light Collector	0	2	16,200	0.000	A	565	565	16,200	0.035	A	0.035	No	No	
<u>With Redirected Project Traffic</u>															
Horse Ranch Creek Road															
Pankey Place to SR-76 (Pala Rd)	Light Collector	0	2	16,200	0.000	A	5,889	5,889	16,200	0.364	C	0.364	No	No	
Old Highway 395															
Pala Mesa Drive to SR-76 (Pala Road)	Collector	8,302	2	16,200	0.512	D	491	8,793	16,200	0.543	D	0.030	No	No	
Pankey Place															
Pankey Rd to Horse Ranch Creek Rd	Light Collector	0	2	16,200	0.000	A	0	0	16,200	0.000	A	0.000	No	No	
Pankey Road															
Pankey Place to SR-76 (Pala Rd)	Light Collector	0	2	16,200	0.000	A	0	0	16,200	0.000	A	0.000	No	No	

Notes: Classification (Sept 2005 Circulation Element). Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.
Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

The operations for SR-76 are shown in Table 3 with the Pala Mesa Dr and Pankey Place connections and in Table 4 without the Pala Mesa Dr and Pankey Place connections. The redirected project traffic maintained the same impacts as previously identified in the EIR.

Table 3: Existing + Original Project SR-76 (with Pala Mesa & Pankey connections)

State Route 76		Lanes in		AM (Eastbound)			Project			Change In			AM (Westbound)			Project			Change In			v/c		
Study Limits		each dir	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	Sig	Delta	Sig
Old Hwy 395 to I-15 SB Ramps		2	1507	EB	2050	0.74	D	4	1511	0.74	D	0.00	No	665	WB	2028	0.33	B	14	679	0.33	B	0.01	No
I-15 SB to NB Ramps		1	844	EB	950	0.89	E	22	866	0.91	E	0.02	Yes	539	WB	950	0.57	C	150	689	0.73	D	0.16	No
I-15 NB Ramps to Pankey Rd		2	559	EB	3100	0.18	A	67	626	0.20	A	0.02	No	606	WB	3030	0.20	A	204	810	0.27	A	0.07	No
Pankey Rd to Horse Ranch Creek Rd		2	589	EB	1806	0.33	B	60	649	0.36	B	0.03	No	540	WB	2028	0.27	A	184	724	0.36	B	0.09	No
State Route 76		Lanes in		PM (Eastbound)			Project			Change In			PM (Westbound)			Project			Change In			v/c		
Study Limits		each dir	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig
Old Hwy 395 to I-15 SB Ramps		2	816	EB	2050	0.40	B	16	832	0.41	B	0.01	No	1258	WB	2028	0.62	C	7	1265	0.62	C	0.00	No
I-15 SB to NB Ramps		1	718	EB	950	0.76	D	79	797	0.84	D	0.08	No	1153	WB	950	1.21	F	75	1228	1.29	F	0.08	Yes
I-15 NB Ramps to Pankey Rd		2	696	EB	3100	0.22	A	238	934	0.30	A	0.08	No	820	WB	3030	0.27	A	102	922	0.30	A	0.03	No
Pankey Rd to Horse Ranch Creek Rd		2	631	EB	1806	0.35	B	214	845	0.47	B	0.12	No	897	WB	2028	0.44	B	92	989	0.49	B	0.05	No

Source: SANDAG Hwy cov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

Table 4: Existing + Redirected Project SR-76 (without Pala Mesa & Pankey connections)

State Route 76		Lanes in		AM (Eastbound)			Project			Change In			AM (Westbound)			Project			Change In			v/c		
Study Limits		each dir	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	Sig	Delta	Sig
Old Hwy 395 to I-15 SB Ramps		2	1507	EB	2050	0.74	D	29	1536	0.75	D	0.01	No	665	WB	2028	0.33	B	89	754	0.37	B	0.04	No
I-15 SB to NB Ramps		1	844	EB	950	0.89	E	47	891	0.94	E	0.05	Yes	539	WB	950	0.57	C	225	764	0.80	D	0.24	No
I-15 NB Ramps to Pankey Rd		2	559	EB	3100	0.18	A	92	651	0.21	A	0.03	No	606	WB	3030	0.20	A	279	885	0.29	A	0.09	No
Pankey Rd to Horse Ranch Creek Rd		2	589	EB	1806	0.33	B	96	685	0.38	B	0.05	No	540	WB	2028	0.27	A	293	833	0.41	B	0.14	No
State Route 76		Lanes in		PM (Eastbound)			Project			Change In			PM (Westbound)			Project			Change In			v/c		
Study Limits		each dir	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig
Old Hwy 395 to I-15 SB Ramps		2	816	EB	2050	0.40	B	102	918	0.45	B	0.05	No	1258	WB	2028	0.62	C	44	1302	0.64	C	0.02	No
I-15 SB to NB Ramps		1	718	EB	950	0.76	D	165	883	0.93	E	0.17	No	1153	WB	950	1.21	F	112	1265	1.33	F	0.12	Yes
I-15 NB Ramps to Pankey Rd		2	696	EB	3100	0.22	A	324	1020	0.33	B	0.10	No	820	WB	3030	0.27	A	139	959	0.32	B	0.05	No
Pankey Rd to Horse Ranch Creek Rd		2	631	EB	1806	0.35	B	340	971	0.54	C	0.19	No	897	WB	2028	0.44	B	146	1043	0.51	C	0.07	No

Source: SANDAG Hwy cov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

Since completion of the EIR, the study section of SR-76 has been widened to 4 lanes and the interchange at I-15 has been expanded. As shown in **Table 5**, the current 4 lane configuration on SR-76 mitigates the original SR-76 segment impacts.

Table 5: Current Conditions (E+P) SR-76 LOS (without Pala Mesa Dr & Pankey Pl)

Segment	General Plan	Existing					Project	Existing + Project					County	CMP
	Mobility Element	Daily Volume	# of Lanes	LOS E	V/C	LOS	Daily Volume	Daily Volume	LOS E	V/C	LOS	Change in V/C	Sig Impact?	Sig Impact?
SR-76														
Old Hwy 395 to I-15 SB Ramps	4.1A	24,579	4	37,000	0.664	B	1,595	26,174	37,000	0.707	C	0.043	No	No
I-15 SB Ramps to I-15 NB Ramps	4.1A	17,274	4	37,000	0.467	B	2,576	19,850	37,000	0.536	B	0.070	No	No
I-15 NB Ramps to Pankey Rd	4.1A	9,569	4	37,000	0.259	A	5,030	14,599	37,000	0.395	A	0.136	No	No
Pankey Rd to Horse Ranch Creek Rd	4.1A	9,439	4	37,000	0.255	A	5,276	14,715	37,000	0.398	A	0.143	No	No

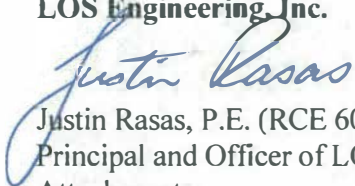
Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

CONCLUSION

The purpose of this letter was to provide a focused traffic analysis to determine if VTM 5354 Meadowood would create any new direct traffic impacts if the connection of Pala Mesa Dr between Pankey Place and Old Highway 395 AND the connection of Pankey Place between Horse Ranch Creek Road and Pankey Road were not open for travel prior to completion of the project. This letter has documented:

- 1) No new intersection impacts from redirected project traffic without the connections of Pala Mesa Drive and Pankey Place under existing + project conditions.
- 2) No new segment impacts from redirected project traffic without the connections of Pala Mesa Drive and Pankey Place under existing + project conditions; however, the same previous impacts remain on SR-76. The current 4 lane configuration on SR-76 mitigates the previous EIR SR-76 impacts.
- 3) The EIR findings under existing + project conditions will remain unchanged if Pala Mesa Drive and Pankey Place connections are not in place prior to completion of Meadowood.
- 4) The Pala Mesa Drive and Pankey Place connections are still proposed in the near-term cumulative and horizon year scenarios. Pala Mesa Drive and Pankey Place are not proposed to be removed nor eliminated from the Mobility Element.
- 5) This analysis is based on year 2009 conditions as documented in the EIR (i.e. it did not rely on the recent SR-76 widening). However, recent SR-76 improvements provide additional capacity and better operations than what was documented in the approved EIR.

Sincerely,
LOS Engineering, Inc.


Justin Rasas, P.E. (RCE 60690), PTOE.
Principal and Officer of LOS Engineering, Inc.
Attachments

ATTACHMENT A

Existing + Redirected Project Traffic Intersection LOS

AM Existing + Project
4: Old Hwy 395 & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey Pl Connections

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	551	77	65	594	105	96	70	71	265	76	42
Future Volume (vph)	50	551	77	65	594	105	96	70	71	265	76	42
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	
Fr _t	1.00	0.98		1.00	1.00	0.85		0.96			0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.97	
Satd. Flow (prot)	1583	3474		1583	3539	1417		1752			1774	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.97	
Satd. Flow (perm)	1583	3474		1583	3539	1417		1752			1774	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	580	81	68	625	111	101	74	75	279	80	44
RTOR Reduction (vph)	0	11	0	0	0	80	0	16	0	0	5	0
Lane Group Flow (vph)	53	650	0	68	625	31	0	234	0	0	398	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	4.1	20.0		6.0	21.9	21.9		16.0			23.6	
Effective Green, g (s)	4.1	20.0		6.0	21.9	21.9		16.0			23.6	
Actuated g/C Ratio	0.05	0.25		0.07	0.27	0.27		0.20			0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	79	851		116	949	380		343			513	
v/s Ratio Prot	0.03	c0.19		0.04	c0.18			c0.13			c0.22	
v/s Ratio Perm						0.02						
v/c Ratio	0.67	0.76		0.59	0.66	0.08		0.68			0.78	
Uniform Delay, d ₁	38.1	28.6		36.6	26.5	22.3		30.4			26.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d ₂	20.1	4.1		7.4	1.7	0.1		5.5			7.2	
Delay (s)	58.2	32.7		44.0	28.2	22.4		35.9			33.8	
Level of Service	E	C		D	C	C		D			C	
Approach Delay (s)		34.6			28.7			35.9			33.8	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			32.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			81.6				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			67.2%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

AM Existing + Project
6: I-15 SB Ramps & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey PI Connections

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑						↑	↑
Traffic Volume (vph)	0	512	297	198	335	0	0	0	0	69	1	551
Future Volume (vph)	0	512	297	198	335	0	0	0	0	69	1	551
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1417	1583	1863						1775	1417
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1417	1583	1863						1775	1417
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	539	313	208	353	0	0	0	0	73	1	580
RTOR Reduction (vph)	0	0	208	0	0	0	0	0	0	0	0	317
Lane Group Flow (vph)	0	539	105	208	353	0	0	0	0	0	74	263
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		33.5	33.5	17.2	54.7						37.3	37.3
Effective Green, g (s)		33.5	33.5	17.2	54.7						37.3	37.3
Actuated g/C Ratio		0.34	0.34	0.17	0.55						0.37	0.37
Clearance Time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		624	474	272	1019						662	528
v/s Ratio Prot		c0.29		c0.13	0.19							
v/s Ratio Perm			0.07								0.04	c0.19
v/c Ratio		0.86	0.22	0.76	0.35						0.11	0.50
Uniform Delay, d1		31.1	23.9	39.5	12.7						20.5	24.1
Progression Factor		1.00	1.00	0.70	0.98						1.00	1.00
Incremental Delay, d2		11.9	0.2	9.4	0.2						0.3	3.3
Delay (s)		43.0	24.1	37.0	12.5						20.9	27.5
Level of Service		D	C	D	B						C	C
Approach Delay (s)		36.1			21.6			0.0			26.7	
Approach LOS		D			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			29.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			63.8%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

AM Existing + Project
7: I-15 NB Ramps & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey PI Connections

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	405	249	0	0	404	98	134	0	168	0	0	0
Future Volume (vph)	405	249	0	0	404	98	134	0	168	0	0	0
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	1.00			1.00	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)	1583	1863			1863	1417		1770	1417			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1583	1863			1863	1417		1770	1417			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	426	262	0	0	425	103	141	0	177	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	126	0	0	0
Lane Group Flow (vph)	426	262	0	0	425	63	0	141	51	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	32.4	63.4			27.0	27.0		28.6	28.6			
Effective Green, g (s)	32.4	63.4			27.0	27.0		28.6	28.6			
Actuated g/C Ratio	0.32	0.63			0.27	0.27		0.29	0.29			
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	512	1181			503	382		506	405			
v/s Ratio Prot	c0.27	0.14			c0.23							
v/s Ratio Perm						0.04		0.08	0.04			
v/c Ratio	0.83	0.22			0.84	0.16		0.28	0.12			
Uniform Delay, d1	31.3	7.8			34.5	27.9		27.7	26.4			
Progression Factor	0.65	0.33			1.00	1.00		1.00	1.00			
Incremental Delay, d2	8.8	0.1			12.3	0.2		1.4	0.6			
Delay (s)	29.0	2.7			46.8	28.1		29.1	27.1			
Level of Service	C	A			D	C		C	C			
Approach Delay (s)		19.0			43.2			28.0			0.0	
Approach LOS		B			D			C			A	
Intersection Summary												
HCM 2000 Control Delay			29.2				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			63.8%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

AM Existing + Project
8: Pankey Rd & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey PI Connections

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	427	9	14	578	3	14	0	10	0	0	0
Future Volume (Veh/h)	1	427	9	14	578	3	14	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	449	9	15	608	3	15	0	11	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	611			458			1094	1096	454	1102	1100	610
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	611			458			1094	1096	454	1102	1100	610
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			92	100	98	100	100	100
cM capacity (veh/h)	968			1103			189	210	606	184	209	495
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	1	458	15	611	26	0						
Volume Left	1	0	15	0	15	0						
Volume Right	0	9	0	3	11	0						
cSH	968	1700	1103	1700	267	1700						
Volume to Capacity	0.00	0.27	0.01	0.36	0.10	0.00						
Queue Length 95th (ft)	0	0	1	0	8	0						
Control Delay (s)	8.7	0.0	8.3	0.0	19.9	0.0						
Lane LOS	A		A		C	A						
Approach Delay (s)	0.0		0.2		19.9	0.0						
Approach LOS					C	A						
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			40.6%		ICU Level of Service				A			
Analysis Period (min)			15									

AM Existing + Project

Without Pala Mesa Dr and Pankey PI Connections

9: Pala Rd (SR-76) & Horse Ranch Creek Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	326	0	0	287	13	0	0	0	36	0	308
Future Volume (vph)	111	326	0	0	287	13	0	0	0	36	0	308
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0			4.0					4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00					0.95	0.91	0.95
Frt	1.00	1.00			0.99					1.00	0.85	0.85
Flt Protected	0.95	1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)	1583	1863			1850					1504	1443	1346
Flt Permitted	0.95	1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)	1583	1863			1850					1504	1443	1346
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	117	343	0	0	302	14	0	0	0	38	0	324
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	135	143
Lane Group Flow (vph)	117	343	0	0	315	0	0	0	0	36	23	25
Turn Type	Prot	NA		Prot	NA					Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	7.5	26.1			14.6					7.6	7.6	7.6
Effective Green, g (s)	7.5	26.1			14.6					7.6	7.6	7.6
Actuated g/C Ratio	0.15	0.51			0.28					0.15	0.15	0.15
Clearance Time (s)	4.0	4.0			4.0					4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)	230	942			523					221	212	198
v/s Ratio Prot	c0.07	0.18			c0.17					c0.02	0.02	
v/s Ratio Perm												0.02
v/c Ratio	0.51	0.36			0.60					0.16	0.11	0.12
Uniform Delay, d1	20.3	7.7			16.0					19.2	19.1	19.1
Progression Factor	1.00	1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2	1.8	0.2			2.0					0.3	0.2	0.3
Delay (s)	22.1	8.0			17.9					19.6	19.3	19.4
Level of Service	C	A			B					B	B	B
Approach Delay (s)		11.6			17.9			0.0			19.4	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			15.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			51.6			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			36.9%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

AM Existing + Project
12: Old Hwy 395 & Pala Mesa Dr

Without Pala Mesa Dr and Pankey PI Connections

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	42	35	156	247	8
Future Volume (Veh/h)	25	42	35	156	247	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	44	37	164	260	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	502	264	268			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	502	264	268			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	94	97			
cM capacity (veh/h)	514	775	1296			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	70	37	164	268		
Volume Left	26	37	0	0		
Volume Right	44	0	0	8		
cSH	652	1296	1700	1700		
Volume to Capacity	0.11	0.03	0.10	0.16		
Queue Length 95th (ft)	9	2	0	0		
Control Delay (s)	11.2	7.9	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	11.2	1.4		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			31.3%	ICU Level of Service	A	
Analysis Period (min)			15			

AM Existing + Project
28: Horse Ranch Creek Rd & Pankey PI

Without Pala Mesa Dr and Pankey PI Connections

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	18	106	294	0
Future Volume (Veh/h)	0	50	18	106	294	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	53	19	112	309	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	459	309	309			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	459	309	309			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	98			
cM capacity (veh/h)	552	731	1252			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	53	131	309			
Volume Left	0	19	0			
Volume Right	53	0	0			
cSH	731	1252	1700			
Volume to Capacity	0.07	0.02	0.18			
Queue Length 95th (ft)	6	1	0			
Control Delay (s)	10.3	1.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.3	1.3	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization		31.0%		ICU Level of Service		A
Analysis Period (min)			15			

29: Pankey Rd/Pala Mesa Dr & Pankey PI

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1023	1085			1623	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%	ICU Level of Service	A		
Analysis Period (min)		15				

PM Existing + Project
4: Old Hwy 395 & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey PI Connections

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	840	75	67	625	251	73	99	77	215	69	55
Future Volume (vph)	71	840	75	67	625	251	73	99	77	215	69	55
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	
Flt	1.00	0.99		1.00	1.00	0.85		0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.97	
Satd. Flow (prot)	1583	3496		1583	3539	1417		1759			1766	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.97	
Satd. Flow (perm)	1583	3496		1583	3539	1417		1759			1766	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	75	884	79	71	658	264	77	104	81	226	73	58
RTOR Reduction (vph)	0	7	0	0	0	185	0	16	0	0	7	0
Lane Group Flow (vph)	75	956	0	71	658	79	0	246	0	0	350	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						
Actuated Green, G (s)	7.3	28.3		5.1	26.1	26.1		16.9			21.7	
Effective Green, g (s)	7.3	28.3		5.1	26.1	26.1		16.9			21.7	
Actuated g/C Ratio	0.08	0.32		0.06	0.30	0.30		0.19			0.25	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	131	1124		91	1049	420		337			435	
v/s Ratio Prot	0.05	c0.27		0.04	c0.19			c0.14			c0.20	
v/s Ratio Perm						0.06						
v/c Ratio	0.57	0.85		0.78	0.63	0.19		0.73			0.81	
Uniform Delay, d1	38.8	27.9		40.9	26.7	23.1		33.4			31.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	5.9	6.3		34.1	1.2	0.2		7.7			10.4	
Delay (s)	44.8	34.2		75.0	27.9	23.3		41.1			41.6	
Level of Service	D	C		E	C	C		D			D	
Approach Delay (s)		35.0			30.1			41.1			41.6	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			34.6				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			88.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			75.9%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

PM Existing + Project
6: I-15 SB Ramps & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey PI Connections

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑						↑	↑
Traffic Volume (vph)	0	828	273	198	604	0	0	0	0	140	5	433
Future Volume (vph)	0	828	273	198	604	0	0	0	0	140	5	433
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1417	1583	1863						1777	1417
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1417	1583	1863						1777	1417
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	872	287	208	636	0	0	0	0	147	5	456
RTOR Reduction (vph)	0	0	124	0	0	0	0	0	0	0	0	251
Lane Group Flow (vph)	0	872	163	208	636	0	0	0	0	0	152	205
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		49.7	49.7	15.9	69.6						22.4	22.4
Effective Green, g (s)		49.7	49.7	15.9	69.6						22.4	22.4
Actuated g/C Ratio		0.50	0.50	0.16	0.70						0.22	0.22
Clearance Time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		925	704	251	1296						398	317
v/s Ratio Prot		c0.47		c0.13	0.34							
v/s Ratio Perm			0.12								0.09	c0.14
v/c Ratio		0.94	0.23	0.83	0.49						0.38	0.65
Uniform Delay, d1		23.8	14.3	40.7	7.0						32.9	35.2
Progression Factor		1.00	1.00	0.49	0.36						1.00	1.00
Incremental Delay, d2		17.3	0.2	2.2	0.0						2.8	9.7
Delay (s)		41.1	14.5	22.1	2.6						35.7	44.9
Level of Service		D	B	C	A						D	D
Approach Delay (s)		34.5			7.4			0.0			42.6	
Approach LOS		C			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			27.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			92.9%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

PM Existing + Project
7: I-15 NB Ramps & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey PI Connections
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	594	393	0	0	473	80	380	4	292	0	0	0
Future Volume (vph)	594	393	0	0	473	80	380	4	292	0	0	0
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	1.00			1.00	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)	1583	1863			1863	1417		1775	1417			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1583	1863			1863	1417		1775	1417			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	625	414	0	0	498	84	400	4	307	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	236	0	0	0
Lane Group Flow (vph)	625	414	0	0	498	43	0	404	71	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	40.0	69.0			25.0	25.0		23.0	23.0			
Effective Green, g (s)	40.0	69.0			25.0	25.0		23.0	23.0			
Actuated g/C Ratio	0.40	0.69			0.25	0.25		0.23	0.23			
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	633	1285			465	354		408	325			
v/s Ratio Prot	c0.39	0.22			c0.27							
v/s Ratio Perm						0.03		0.23	0.05			
v/c Ratio	0.99	0.32			1.07	0.12		0.99	0.22			
Uniform Delay, d1	29.7	6.2			37.5	29.0		38.4	31.2			
Progression Factor	0.80	0.31			1.00	1.00		1.00	1.00			
Incremental Delay, d2	22.4	0.1			62.0	0.2		42.2	1.5			
Delay (s)	46.2	2.0			99.5	29.2		80.6	32.7			
Level of Service	D	A			F	C		F	C			
Approach Delay (s)		28.6			89.4			59.9			0.0	
Approach LOS		C			F			E			A	
Intersection Summary												
HCM 2000 Control Delay		53.3			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		1.01										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		92.9%			ICU Level of Service			F				
Analysis Period (min)		15										

c Critical Lane Group

PM Existing + Project
8: Pankey Rd & Pala Rd (SR-76)

Without Pala Mesa Dr and Pankey PI Connections
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	700	27	8	586	7	14	0	18	0	0	0
Future Volume (Veh/h)	0	700	27	8	586	7	14	0	18	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	737	28	8	617	7	15	0	19	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	624			765			1384	1391	751	1392	1402	620
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	624			765			1384	1391	751	1392	1402	620
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			87	100	95	100	100	100
cM capacity (veh/h)	957			848			120	141	411	113	139	488
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	0	765	8	624	34	0						
Volume Left	0	0	8	0	15	0						
Volume Right	0	28	0	7	19	0						
cSH	1700	1700	848	1700	199	1700						
Volume to Capacity	0.00	0.45	0.01	0.37	0.17	0.00						
Queue Length 95th (ft)	0	0	1	0	15	0						
Control Delay (s)	0.0	0.0	9.3	0.0	26.8	0.0						
Lane LOS			A		D	A						
Approach Delay (s)	0.0		0.1		26.8	0.0						
Approach LOS					D	A						
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			48.5%		ICU Level of Service				A			
Analysis Period (min)			15									

PM Existing + Project

Without Pala Mesa Dr and Pankey PI Connections

9: Pala Rd (SR-76) & Horse Ranch Creek Rd

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	368	350	0	0	442	43	0	0	0	18	0	159
Future Volume (vph)	368	350	0	0	442	43	0	0	0	18	0	159
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0			4.0					4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00					0.95	0.91	0.95
Frt	1.00	1.00			0.99					1.00	0.85	0.85
Flt Protected	0.95	1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)	1583	1863			1838					1504	1441	1346
Flt Permitted	0.95	1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)	1583	1863			1838					1504	1441	1346
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	387	368	0	0	465	45	0	0	0	19	0	167
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	74	77
Lane Group Flow (vph)	387	368	0	0	506	0	0	0	0	19	8	8
Turn Type	Prot	NA		Prot	NA					Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												6
Actuated Green, G (s)	22.0	45.0			19.0					6.5	6.5	6.5
Effective Green, g (s)	22.0	45.0			19.0					6.5	6.5	6.5
Actuated g/C Ratio	0.32	0.65			0.28					0.09	0.09	0.09
Clearance Time (s)	4.0	4.0			4.0					4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)	504	1215			506					141	135	126
v/s Ratio Prot	c0.24	0.20			c0.28					c0.01	0.01	
v/s Ratio Perm												0.01
v/c Ratio	0.77	0.30			1.00					0.13	0.06	0.06
Uniform Delay, d1	21.2	5.2			25.0					28.7	28.5	28.5
Progression Factor	1.00	1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2	6.9	0.1			40.2					0.4	0.2	0.2
Delay (s)	28.1	5.3			65.2					29.1	28.6	28.7
Level of Service	C	A			E					C	C	C
Approach Delay (s)		17.0			65.2			0.0			28.7	
Approach LOS		B			E			A			C	
Intersection Summary												
HCM 2000 Control Delay		35.4			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		0.69										
Actuated Cycle Length (s)		69.0			Sum of lost time (s)			16.0				
Intersection Capacity Utilization		62.0%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

PM Existing + Project
12: Old Hwy 395 & Pala Mesa Dr

Without Pala Mesa Dr and Pankey PI Connections

HCM Unsignalized Intersection Capacity Analysis

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	41	53	333	174	27
Future Volume (Veh/h)	13	41	53	333	174	27
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	14	43	56	351	183	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	660	197	211			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	660	197	211			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	95	96			
cM capacity (veh/h)	410	844	1360			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	57	56	351	211		
Volume Left	14	56	0	0		
Volume Right	43	0	0	28		
cSH	670	1360	1700	1700		
Volume to Capacity	0.09	0.04	0.21	0.12		
Queue Length 95th (ft)	7	3	0	0		
Control Delay (s)	10.9	7.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.9	1.1		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			27.8%	ICU Level of Service		A
Analysis Period (min)			15			

PM Existing + Project
28: Horse Ranch Creek Rd & Pankey Rd

Without Pala Mesa Dr and Pankey PI Connections
HCM Unsignalized Intersection Capacity Analysis

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	26	60	351	152	0
Future Volume (Veh/h)	0	26	60	351	152	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	27	63	369	160	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	655	160	160			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	655	160	160			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	96			
cM capacity (veh/h)	412	885	1419			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	27	432	160			
Volume Left	0	63	0			
Volume Right	27	0	0			
cSH	885	1419	1700			
Volume to Capacity	0.03	0.04	0.09			
Queue Length 95th (ft)	2	3	0			
Control Delay (s)	9.2	1.5	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	1.5	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.4				
Intersection Capacity Utilization		43.1%		ICU Level of Service		A
Analysis Period (min)		15				

PM Existing + Project
29: Pankey Rd & Pala Mesa Dr

Without Pala Mesa Dr and Pankey PI Connections
HCM Unsignalized Intersection Capacity Analysis

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1023	1085			1623	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%	ICU Level of Service	A	
Analysis Period (min)			15			