Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic

LIST OF TABLES

Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic

LIST OF FIGURES

I. Introduction

The following traffic study was completed at the request of the City of Albuquerque and the New Mexico Department of Transportation. The planned development is to be located at the existing location of a lube service center, on the north side of Candelaria Road, with the access opposing Palo Verde Drive to the south. The existing site also includes a car wash which is planned to remain. The fuel center will have 10 fuel positions. This study will look at the operation of the Candelaria Road and Tramway Boulevard, as well as Candelaria Road and Palo Verde Drive, with the addition of the Smith's fuel center. Candelaria Road is a four lane facility (two lanes in each direction without a center left turn lane at the location of the site access). There is a 30 mph speed limit on Calendaria Road at the site.

Figure One shows the vicinity map for the site. Figure Two shows the proposed site plan, including the proposed Smith's Fuel Center.

Trip projection and traffic analysis in this report will be performed for the AM and PM peak hours.

II. Existing Traffic Data

Intersection traffic counts in the area were reviewed for the purposes of this study.

A. Intersection Counts

Intersection counts for Tramway Boulevard and Candelaria Road were made on September 9, 2010. Counts were made in 15 minute intervals. The AM Peak Hour was from 7:15 AM to 8:15 AM. The PM Peak Hour was from 4:45 PM to 5:45 PM. The peak hours were determined based on the total volumes.

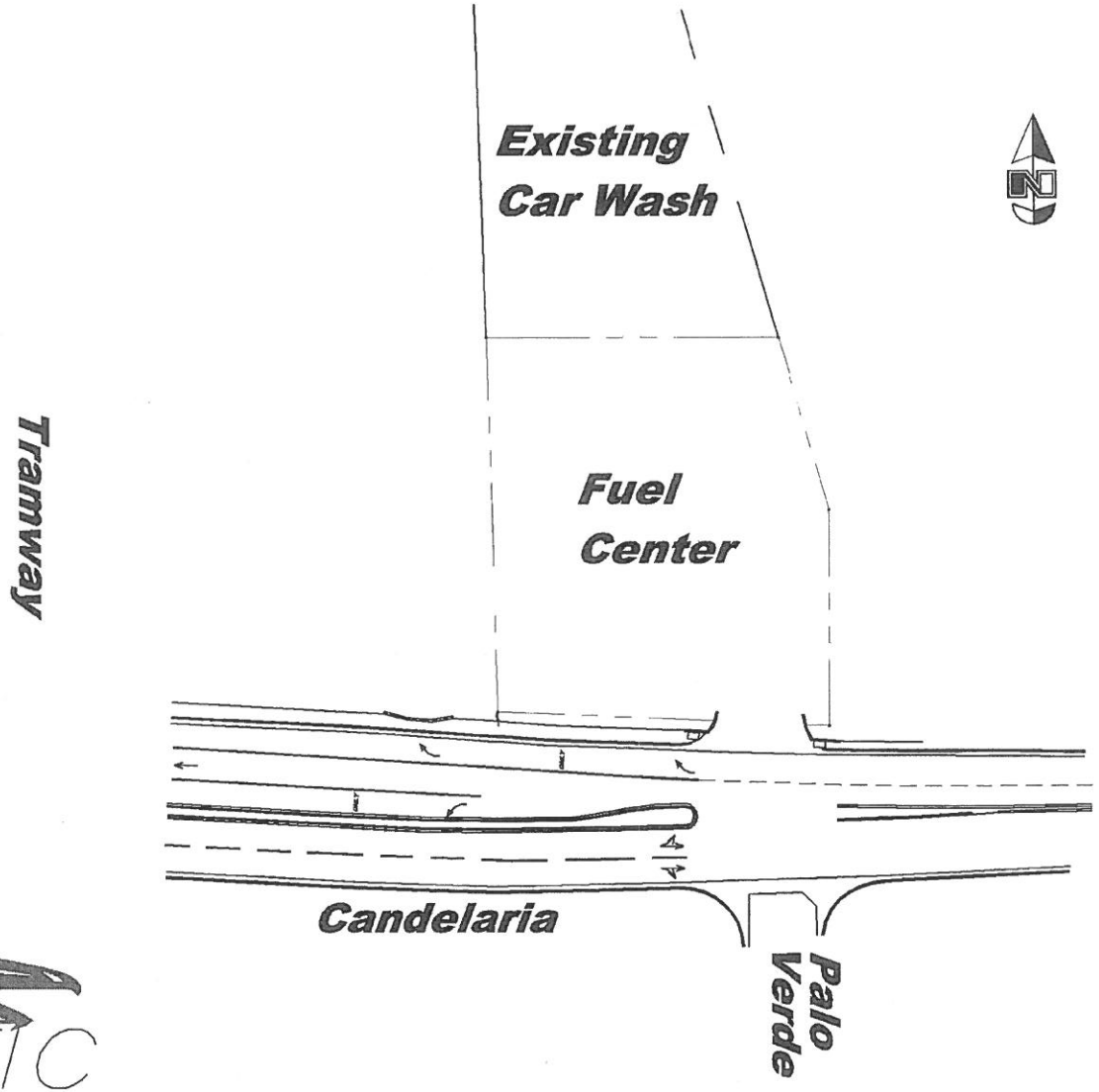
To supplement the intersection counts, traffic counts were made at the site access (Candelaria Road and Palo Verde Drive) on Thursday, January 5, 2012 for the AM and PM peak hours. The peak hour from the Tramway intersection will be used for this intersection. The counts from the two intersections do not match exactly, as they were counted on different days. The counts were not balanced between the two intersections.

The traffic counts can be seen in Appendix A. Existing traffic counts can be seen in Figure Three.

Smith's Fuel Center Candelaria and Palo Verde
Vicinity Map

Figure One

FALCON TRAFFIC ENGINEERING
9221 SOUTH FALCON WAY, SANDY, UT 84093
Phone: 801-395-4064 Fax: 801-942-7552

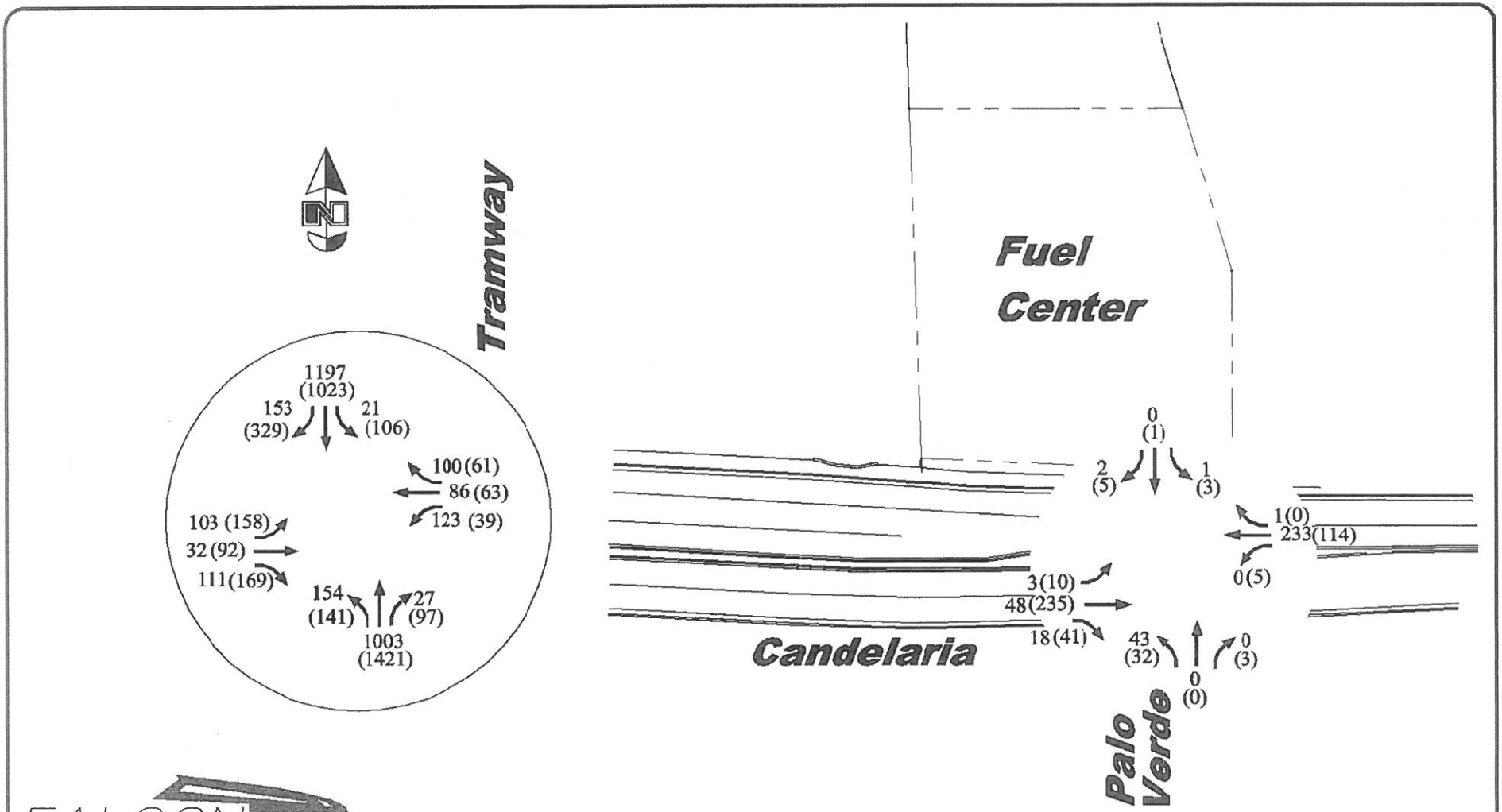


FALCON TRAFFIC

FALCON TRAFFIC ENGINEERING
9221 SOUTH FALCON WAY, SANDY, UT 84093
Phone: 801-395-4054 Fax: 801-942-7552

Figure Two

Smith's Fuel Center Candelaria and Palo Verde
Conceptual Site Plan



FALCON TRAFFIC

FALCON TRAFFIC ENGINEERING
9221 SOUTH FALCON WAY, SANDY, UT 84093
Phone: 801-395-4654 Fax: 801-942-7552

Figure Three

Smith's Fuel Center Candelaria and Palo Verde
Existing traffic counts

III. Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation (Eighth Edition) handbook was used to estimate trips for the land uses. The proposed land uses are noted in the following list by type and size.

- Smith's Fuel Center 10 Fueling Positions

Tables One through Two show the AM/PM peak hour trips generated.

Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic Study
Table One
Peak Hour Trip Generation

Facility	ITE Land Use	Fueling Positions	Trip Rate	Trips
AM Peak Hour				
Smith's Fuel Center	944	10	12.07	121
PM Peak Hour				
Smith's Fuel Center	944	10	13.86	139

Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic Study
Table Two
Peak Hour Total Development Trips and Primary Trips

Facility	External Trips	Percent In	Percent Out	Total In	Total Out
AM Peak Hour					
Smith's Fuel Center	121	50%	50%	61	61
PM Peak Hour					
Smith's Fuel Center	139	50%	50%	70	70

IV. Origin/Destination and Trip Distribution

Based on the existing intersection and access counts, the following origin/destination assumptions were made:

- North 50%
- South 20%
- East 15%
- West 15%

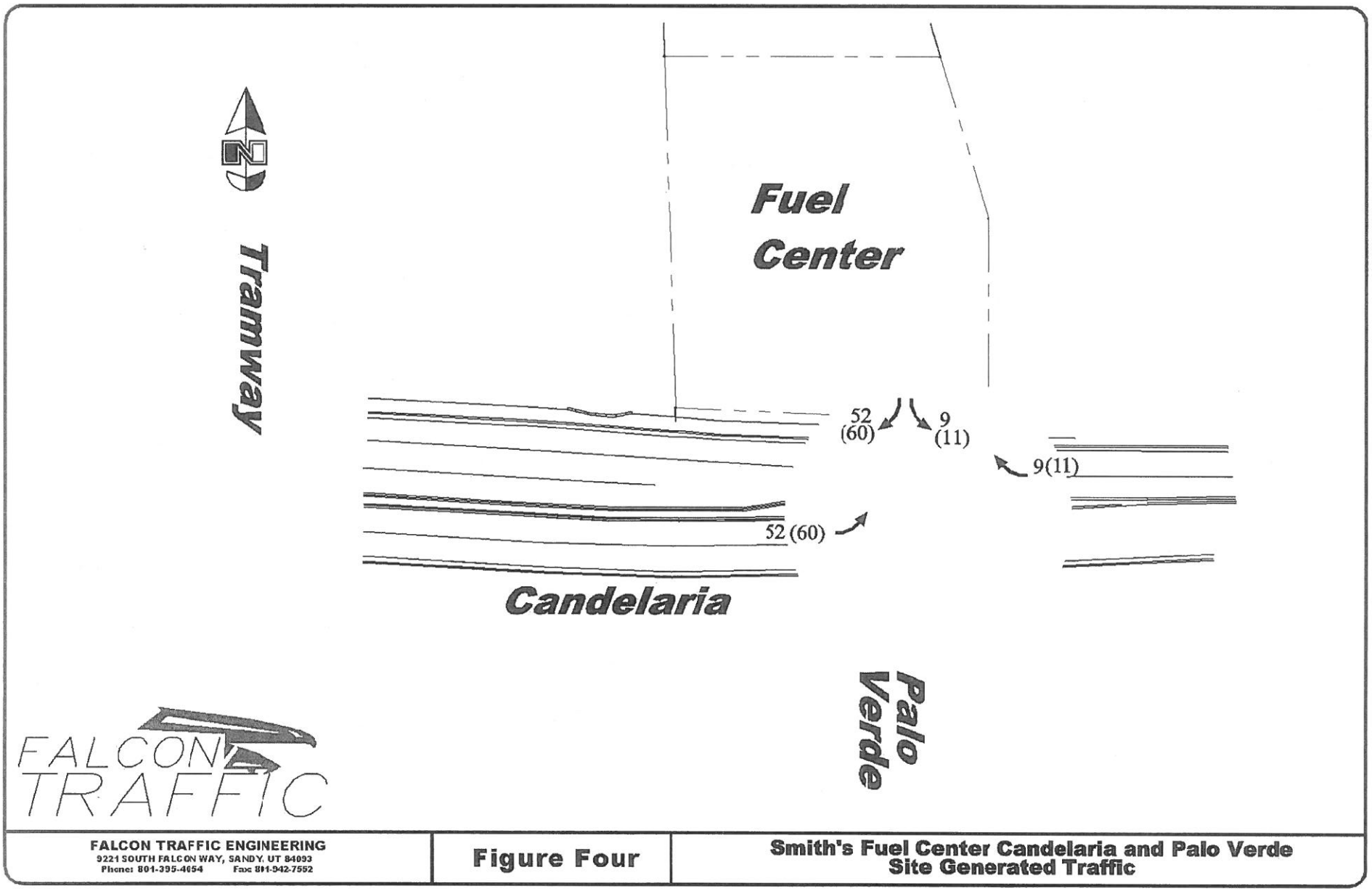
Table Three shows the projected site generated traffic.

Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic Study
Table Three
Site Generated Traffic

	Tramway and Calendaria						Site Access			
	In			Out			In		Out	
	SB Left	EB Thru	NB Right	WB Left	WB Thru	WB Right	EB Left	WB Right	SB Left	SB Right
AM Peak										
	31	9	12	12	9	31	52	9	9	52
PM Peak										
	35	11	14	14	11	35	60	11	11	60

Figure Four shows the projected site generated traffic.

Figure Five shows the projected site generated traffic plus the existing traffic.

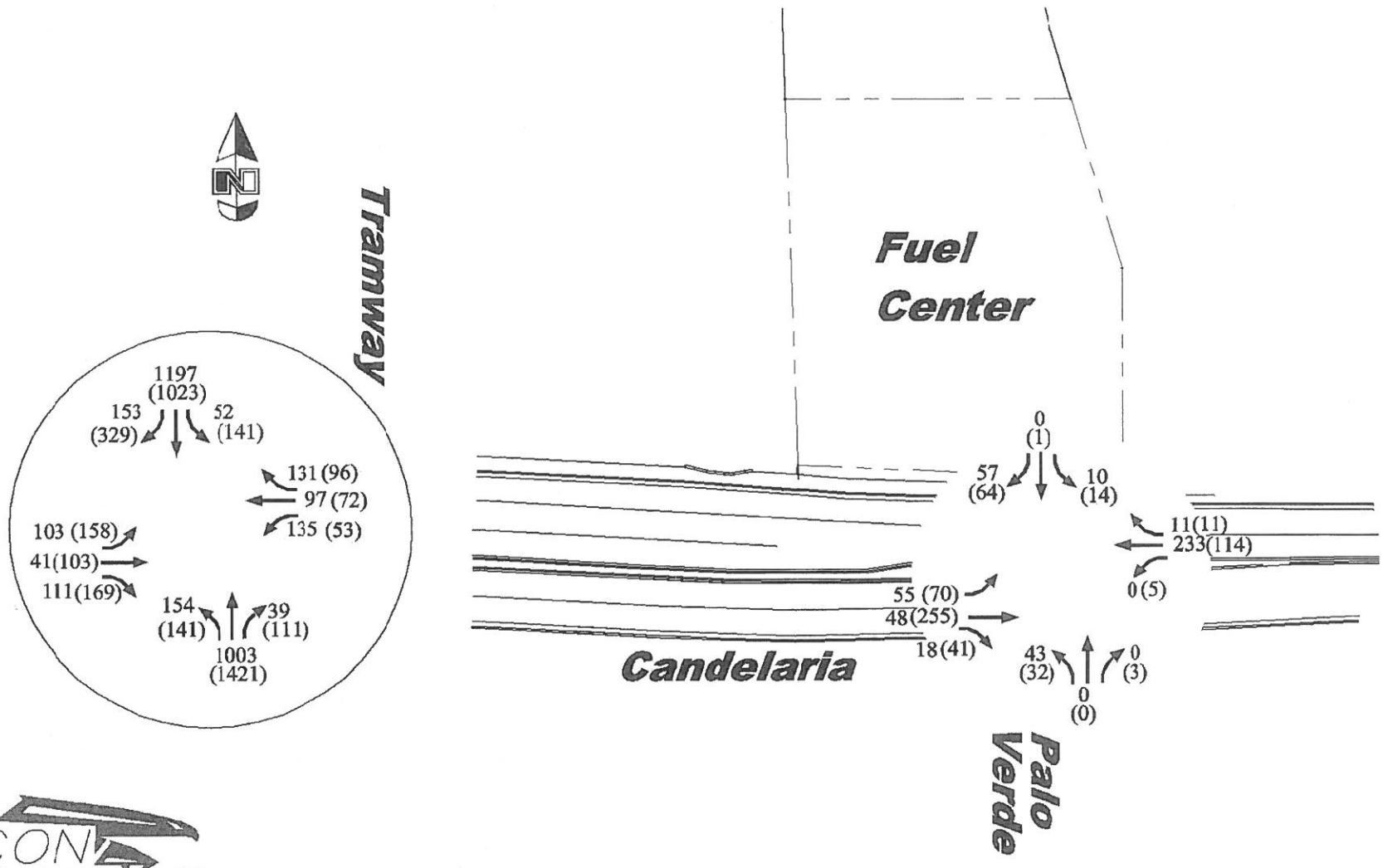


FALCON TRAFFIC

FALCON TRAFFIC ENGINEERING
9221 SOUTH FALCON WAY, SANDY, UT 84093
Phone: 801-395-4654 Fax: 801-942-7552

Figure Four

Smith's Fuel Center Candelaria and Palo Verde Site Generated Traffic



FALCON TRAFFIC

FALCON TRAFFIC ENGINEERING 9221 SOUTH FALCON WAY, SANDY, UT 84093 Phone: 801-395-4654 Fax: 801-942-7552	**Figure Five**	**Smith's Fuel Center Candelaria and Palo Verde** **Site Generated Plus Existing**

V. Traffic Analysis

The unsignalized and signalized accesses and intersections are analyzed using the Highway Capacity Manual (HCM) software to evaluate the impacts of the project on the surrounding traffic network. Table Four shows the Level of Service delay ranges for unsignalized/signalized intersections.

Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic Study
Table Four
Intersection LOS-Delay Relationship

Level of Service	Unsignalized	Signalized
A	≤ 5.0	≤10.0
B	> 5.0 and ≤ 15.0	>10.0 and ≤20.0
C	> 15.0 and ≤ 25.0	>20.0 and ≤35.0
D	> 25.0 and ≤ 35.0	> 35.0 and ≤ 55.0
E	> 35.0 and ≤ 45.0	> 55.0 and ≤ 80.0
F	> 45.0	> 80.0

A. Accesses to the Fuel Center

Table Five shows the HCM Delay / LOS Evaluation for the Candelaria Road access and Palo Verde intersection to the development. Detailed data can be seen in the HCS Analysis in Appendix B.

Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic Study
Table Five
HCM AM/PM Peak Period Access Analysis –
Delay/LOS Evaluation with Site Trips

Delay / LOS (in sec)	Candelaria Access (AM)	Candelaria Access (PM)
Eastbound Left	7.9/A	7.6/A
Westbound Left	7.3/A	7.9/A
Northbound Left	12.9/B	13.8/B
Southbound Left	11.4/B	12.8/B
Southbound Thru/Right	10.0/B	9.2/A

The unsignalized analysis for these accesses shows that the proposed fuel center will not have a significant negative affect on traffic service levels.

B. Tramway Boulevard and Calendaria Road

Table Six shows the Tramway Boulevard and Calendaria Road intersection with both existing traffic and the projected opening day traffic analyzed with the HCS signalized analysis. Signal cycle lengths and phasing were based on information from the New Mexico Department of Transportation. Detailed data can be seen in the HCS Analysis in Appendix B.

Smith's Fuel Center –
Candelaria Road and Palo Verde Drive Traffic Study
Table Six
HCM Delay / LOS Analysis for Signalized Intersection

Delay / LOS (in sec)	**Tramway Boulevard and Candelaria Road**			
	Existing (AM)	**Existing (PM)**	**With Site (AM)**	**With Site (PM)**
Eastbound Left	32.7/C	35.5/D	32.9/C	35.8/D
Eastbound Thru	39.1/D	40.2/D	39.2/D	40.4/D
Eastbound Right	29.8/C	29.8/C	29.8/C	29.8/C
Westbound Left	32.7/C	29.7/C	33.4/C	30.2/C
Westbound Thru	43.1/D	41.6/D	43.8/D	42.2/D
Westbound Right	31.1/C	30.2/C	32.0/C	31.1/C
Northbound Left	27.1/C	16.3/B	27.1/C	16.3/B
Northbound Thru	15.5/B	20.5/C	15.5/B	20.5/C
Northbound Right	5.0/A	5.3/A	5.0/A	5.3/A
Southbound Left	9.2/A	30.9/C	10.3/A	52.7/D
Southbound Thru	17.4/B	15.7/B	17.4/B	15.7/B
Southbound Right	5.4/A	6.3/A	5.4/A	6.3/A
Intersection	19.2/B	19.5/B	19.5/B	20.7/C

The analysis for the Tramway Boulevard and Candelaria Road shows that the proposed fuel center will not have a significant negative affect on traffic service levels.

C. Queue Analysis

From the HCS software, projected queue lengths are provided. The critical movements for this study are the eastbound left turn into the site and the westbound left, through and right turn movements. For the signalized intersection, the 85 percentile queue is shown below. For the unsignlized intersection, only the 95 percentile queue is available, so that is shown below. Queue lengths are based on 25 feet per vehicle which should be conservative. The following queues are based on the HCS analysis:

	Cars Queued	Queue Length
Eastbound Left Turn		
AM Peak	0.15	4'
PM Peak	0.17	4'
Westbound Left Turn		
AM Peak	5.9	148'
PM Peak	2.3	58'
Westbound Thru		
AM Peak	5.0	125'
PM Peak	3.7	93'
Westbound Right Turn		
AM Peak	3.8	95'
PM Peak	2.2	55'

D. Alternatives Analysis

There was concern voiced from local residents about traffic, so this study and alternatives analysis has been completed. The above analysis shows that from a traffic perspective, the addition of a Smith's Fuel Center will not have an adverse impact. For the purposes of this study, several alternative lane configurations were considered. None of the lane configurations change the above traffic analysis significantly. The alternatives presented work from a traffic and level-of-service standpoint. These are presented conceptually for the City and DOT so they can indicate what their preferences are with respect to lanes configurations, signing and striping. The lane configurations shown in the alternatives are conceptual for review purposes.

1. Alternative 1 – No Action Alternative – Eastbound Left/Thru and Thru/Right Lanes

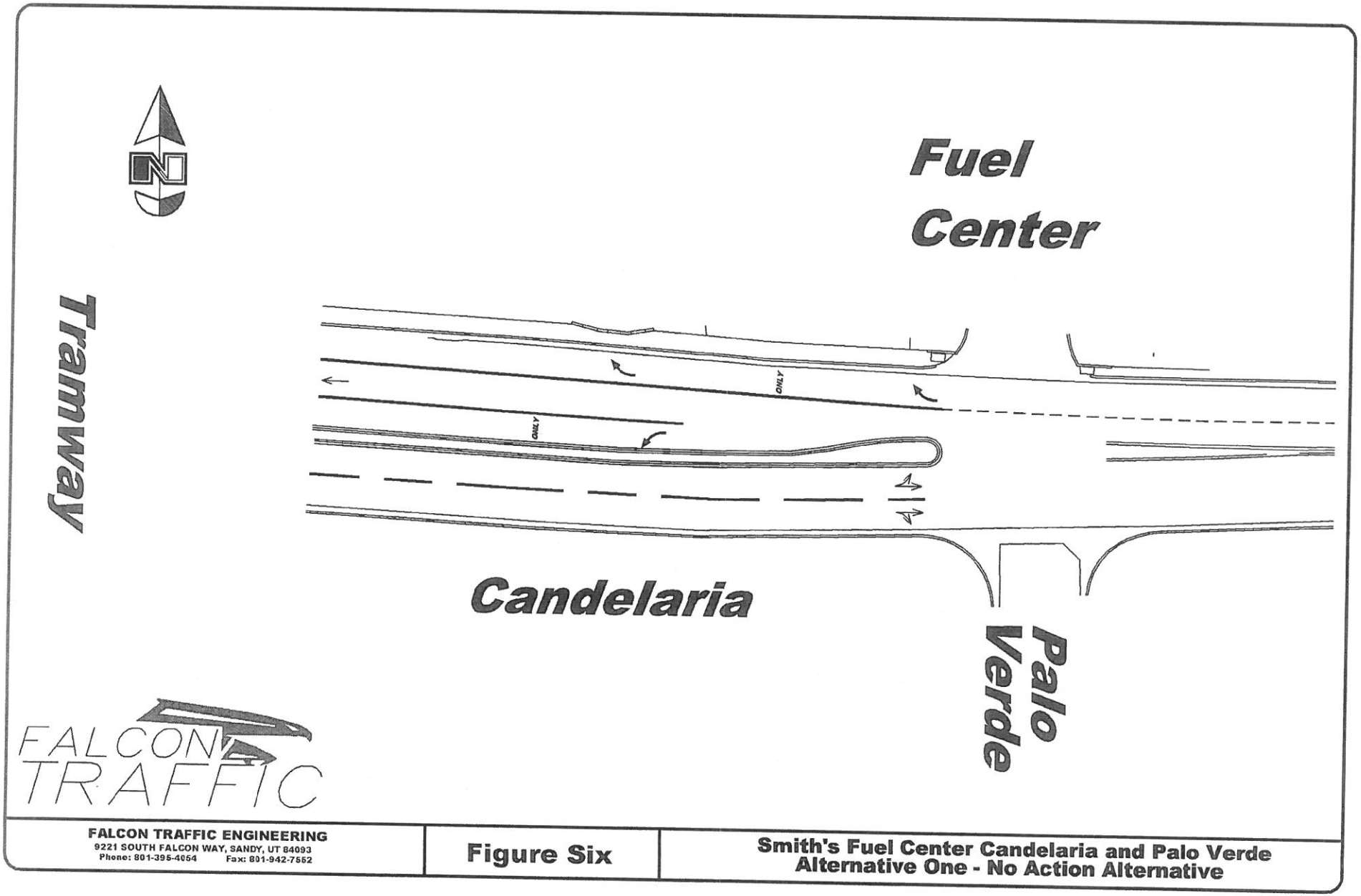
Alternative 1 assumes that the travel lanes remain as presently configured. This has two lanes eastbound, a left/thru lane and right/thru lane. The thru lanes merge into one immediately after Palo Verde Drive. There is signing that indicates a merge ahead for the outside lane. This alternative does not provide for an exclusive left turn lane into the site. As traffic volumes are not considerably high on Candelaria Road, the eastbound left turns into the Smith's Fuel Center access are not projected to have high levels of delay or queuing. If the City feels comfortable with this current configuration and how it has operated, it is felt that additional traffic from the Smith's Fuel Center should not be an issue. Figure Six shows this alternative.

2. Alternative 2 – Signing/Striping Alternative – Exclusive Eastbound Left Turn Lane and Thru/Right Lanes

Alternative 2 does not involve any structural reconfiguration of the roadway or islands. This would take the eastbound inside lane (that currently has no restrictions) and restrict it as a left turn only. This could be done by adding a "Left Turn Only" sign in the island median starting 50 – 100 feet to the west of the Tramway/Candelaria Intersection. An additional "Left Turn Only" could be located further to the east. Left turn arrows could also be painted inside this lane. While signage/striping for the thru/right turn lane is not considered here, this could be included at the City's direction. There would be vehicles that would have to merge from the inside left turn lane to the outside lane if they wished to go straight or right while traveling eastbound. This merge is the main difference over what is currently in place. Figure Seven shows this alternative.

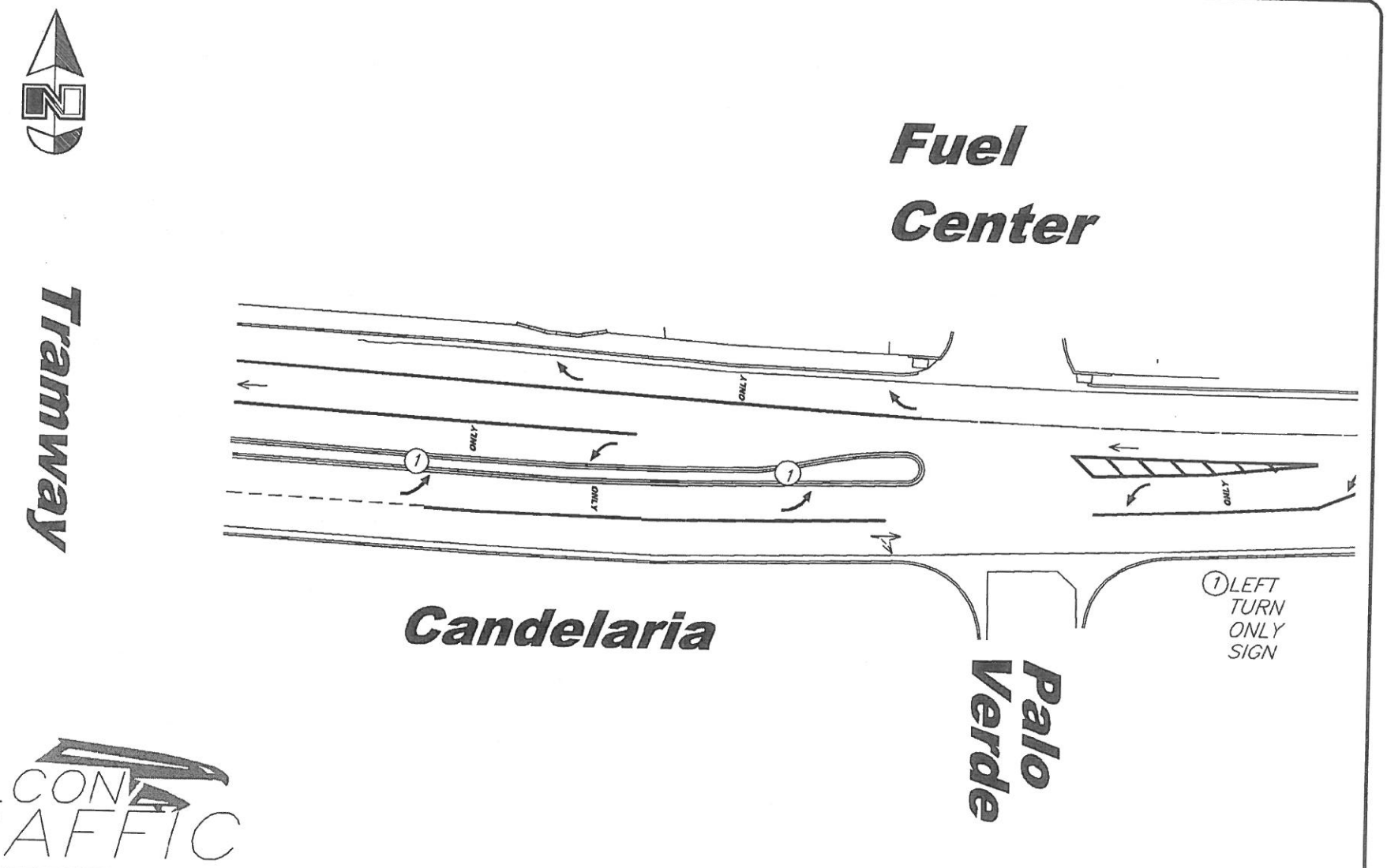
3. Alternative 3 – Island Reconfiguration Alternative – Eastbound Left Turn Pocket, a Through Lane and a Through/Right Turn lane

It can be seen from the previous two alternatives that there is additional width near the eastbound left turn into the Smith's access. This width is taken up with a bulb on the existing island. In looking at the width of the intersection near the project access, it can be seen that there is enough width to add a narrow exclusive left turn pocket that will allow eastbound left turns to queue. To alleviate having to impact the queue lengths available for the back-to-back left turn (the westbound left turn pocket for the Tramway/Calendaria Intersection), it is felt that this bulb/island could be eliminated for approximately 50 feet. This would continue to provide the 150 feet of stacking that is required for the westbound left turn lane. By doing this, it would still allow the westbound left turns for the Tramway/Calendaria intersection to continue to stack if they needed to. While it is unlikely that this will happen, it provides flexibility and if this long length of westbound queuing were to occur, then the intersection would default back to closer to the No Action Alternative.



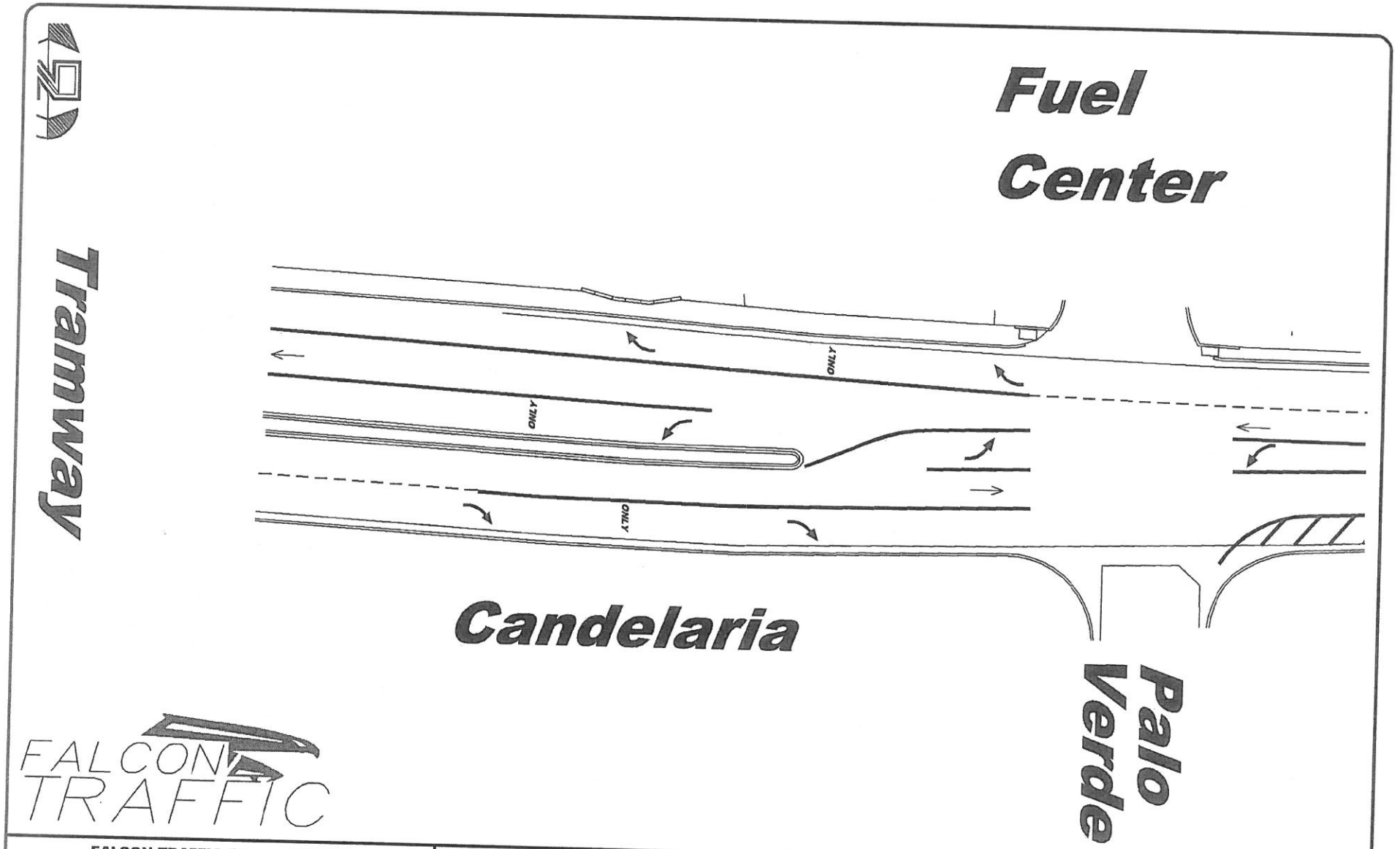
FALCON TRAFFIC

FALCON TRAFFIC ENGINEERING 9221 SOUTH FALCON WAY, SANDY, UT 84093 Phone: 801-395-4054 Fax: 801-942-7552	**Figure Six**	**Smith's Fuel Center Candelaria and Palo Verde** **Alternative One - No Action Alternative**



FALCON TRAFFIC

FALCON TRAFFIC ENGINEERING 9221 SOUTH FALCON WAY, SANDY, UT 84093 Phone: 801-395-4054 Fax: 801-942-7552	**Figure Seven**	**Smith's Fuel Center Candelaria and Palo Verde** **Alternative Two - Signing/Striping Alternative**



FALCON TRAFFIC

FALCON TRAFFIC ENGINEERING 9221 SOUTH FALCON WAY, SANDY, UT 84093 Phone: 801-396-4054 Fax: 801-942-7562	**Figure Eight**	**Smith's Fuel Center Candelaria and Palo Verde** **Alternative Three - Island Reconfiguration Alternative**

VI. Conclusions

The results of the study show that the intersections operate at an acceptable level of service. This study is meant to provide the City and DOT with alternatives to determine which lane configuration alternative best fits the City's typical striping/signing/lane configurations and driver's expectations. As part of this study, it is recommended that:

- All improvements, signing and striping must conform with the City of Albuquerque Drawings, other City requirements, AASHTO, or MUTCD, as appropriate.
- The access to the site has been shown to operate at a reasonable level of service with the addition of the fuel center.
- The internal stacking available for the Fuel Center access is projected to be adequate.
- The alternatives for Calendaria Road show that either the "No Action Alternative" or either of the restriping or reconfiguration alternatives work from a traffic standpoint. The alternatives were presented to give the City different options so that they can indicate their preferences with respect to striping, signing and lane configuration.

APPENDICES

Appendix A	Traffic Counts
Appendix B	HCM Traffic Analyses

Appendix A Traffic Counts

Study Name: Tramway - Candelaria
Start Date: 09/09/2010
Start Time: 6:45 AM
Site Code:

	Tramway Blvd Southbound			Candelaria Rd Westbound			Tramway Blvd Northbound			Candelaria Rd Eastbound						
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
6:45 AM	1	204	17	14	11	11	18	150	2	9	3	14	454			
7:00 AM	6	229	18	22	17	30	20	255	1	26	3	18	645			
7:15 AM	4	317	22	33	24	30	20	235	3	27	6	25	746			
7:30 AM	2	310	25	32	17	25	36	264	10	26	9	33	789			
7:45 AM	6	316	50	29	23	26	53	263	4	24	5	24	823	3003	7:00 AM	8:00 AM
8:00 AM	9	254	56	29	22	19	45	241	5	26	12	29	747	3105	7:15 AM	8:15 AM
8:15 AM	8	218	53	26	16	16	47	192	9	28	10	30	653	3012	7:30 AM	8:30 AM
8:30 AM	6	191	64	29	31	14	45	230	5	16	9	26	666	2889	7:45 AM	8:45 AM
8:45 AM	5	213	62	12	20	21	31	183	5	20	9	20	601	2667	8:00 AM	9:00 AM
9:00 AM	10	182	41	17	13	19	24	173	5	14	4	20	522	2442	8:15 AM	9:15 AM
9:15 AM	3	159	34	15	12	10	25	146	7	16	8	17	452	2241	8:30 AM	9:30 AM
9:30 AM	8	158	46	16	7	8	19	155	3	18	11	18	467	2042	8:45 AM	9:45 AM
9:45 AM	7	163	39	6	14	11	22	153	5	18	6	28	472	1913	9:00 AM	11:00 AM
11:00 AM	6	129	36	19	16	9	21	142	3	22	18	22	443	1834	9:15 AM	11:15 AM
11:15 AM	8	132	42	16	10	4	19	157	9	20	9	27	453	1835	9:30 AM	11:30 AM
11:30 AM	15	149	33	7	13	10	25	170	8	23	8	34	495	1863	9:45 AM	11:45 AM
11:45 AM	8	167	43	9	21	10	19	159	6	22	18	21	503	1894	11:00 AM	12:00 PM
12:00 PM	7	172	30	10	8	11	17	176	19	25	23	30	528	1979	11:15 AM	12:15 PM
12:15 PM	10	177	34	7	10	5	15	173	14	27	9	26	507	2033	11:30 AM	12:30 PM
12:30 PM	12	167	35	7	15	8	26	164	4	24	15	24	501	2039	11:45 AM	12:45 PM
12:45 PM	8	167	46	9	14	9	22	168	10	38	10	20	521	2057	12:00 PM	1:00 PM
1:00 PM	9	181	38	8	5	13	18	165	15	26	14	23	515	2044	12:15 PM	1:15 PM
1:15 PM	8	182	48	9	7	7	17	201	13	28	18	21	559	2096	12:30 PM	1:30 PM
1:30 PM	9	162	46	18	8	13	16	155	13	21	14	21	496	2091	12:45 PM	1:45 PM
1:45 PM	17	171	40	11	8	15	20	182	5	23	17	26	535	2105	1:00 PM	3:00 PM
3:00 PM	17	197	65	23	16	16	32	205	12	31	16	33	663	2253	1:15 PM	3:15 PM
3:15 PM	19	216	58	15	12	16	38	230	19	38	19	40	720	2414	1:30 PM	3:30 PM
3:30 PM	19	209	68	19	10	9	22	241	21	26	22	49	715	2633	1:45 PM	3:45 PM
3:45 PM	15	215	60	12	15	4	27	259	18	36	20	42	723	2821	3:00 PM	4:00 PM
4:00 PM	25	243	87	7	10	8	28	237	19	40	26	32	762	2920	3:15 PM	4:15 PM
4:15 PM	23	208	80	9	21	12	31	294	13	42	27	46	806	3006	3:30 PM	4:30 PM
4:30 PM	25	215	58	14	11	10	27	268	21	52	27	32	760	3051	3:45 PM	4:45 PM
4:45 PM	26	237	83	9	17	10	33	303	29	37	23	53	860	3188	4:00 PM	5:00 PM
5:00 PM	26	263	94	13	16	17	25	360	28	35	17	35	929	3355	4:15 PM	5:15 PM
5:15 PM	32	235	110	9	14	17	42	409	20	45	24	34	991	3540	4:30 PM	5:30 PM
5:30 PM	22	288	42	8	16	17	41	349	20	41	28	47	919	3699	4:45 PM	5:45 PM
5:45 PM	27	283	44	17	14	14	32	323	23	41	27	38				
4:45 - 5:45	106	1023	329	39	63	61	141	1421	97	158	92	169		3699		
	21	1197	153	33 123	86	30 100	154	1003	22	103	32	111				

COORDINATION TIMING PLAN DATA

1/15/2012 10:55 PM

Intersection # and Name: **914 - Candelaria & Tramway**

COORDINATOR OPTIONS

SPLIT UNITS	%	ACT CRD PHASE	X
OFFSET UNITS	%	ACT WALK/REST	.
INTERCNT FMT	PLAN	INHIBIT MAX	X
INTERCNT SRC	NIC	MAX2 SELECT	.
RESYNC COUNT	0	MULTISYNC	.
TRANSITION	SMOOTH	FLOAT FORCE OFF	.
DEWLL PERIOD	0%		

FREE ALT SEQUENCE	A	B	C	D	E	F

COORDINATION PATTERN DATA PATTERN 1

CYCLE LENGTH: 110 OFFSET: 95 PLAN: 21

PHASE	1	2	3	4
DIRECTION	S-E	NB	W-S	EB
SPLITS	8	63	11	18

PHASE	5	6	7	8
DIRECTION	N-W	SB	E-N	WB
SPLITS	14	57	11	18

PHASE	1	2	3	4	5	6	7	8
COORD PHASE		X				X		
VEH RECALL								
MAX RECALL		X				X		

ALT SEQUENCE	A	B	C	D	E	F

COORDINATION PATTERN DATA PATTERN 3

CYCLE LENGTH: 110 OFFSET: 4 PLAN: 23

PHASE	1	2	3	4
DIRECTION	S-E	NB	W-S	EB
SPLITS	9	62	11	18

PHASE	5	6	7	8
DIRECTION	N-W	SB	E-N	WB
SPLITS	9	62	11	18

PHASE	1	2	3	4	5	6	7	8
COORD PHASE		X				X		
VEH RECALL								
MAX RECALL		X				X		

ALT SEQUENCE	A	B	C	D	E	F

COORDINATION TIMING PLAN DATA

COORDINATION PATTERN DATA PATTERN 5

CYCLE LENGTH	110					PLAN	25	
OFFSET	98							
PHASE	1		2		3		4	
DIRECTION	S-E		NB		W-S		EB	
SPLITS	10		46		9		35	
PHASE	5		6		7		8	
DIRECTION	N-W		SB		E-N		WB	
SPLITS	11		45		9		35	

PHASE	1	2	3	4	5	6	7	8
COORD PHASE		X				X		
VEH RECALL								
MAX RECALL		X				X		

	A	B	C	D	E	F
ALT SEQUENCE						

CLOCK / CALENDAR

DATE SET:	CURRENT DATE
TIME SET:	CURRENT TIME

SYNC REFERENCE TIME: 3:30

WEEKLY PROGRAM

WEEK	SUN	MON	TUE	WED	THU	FRI	SAT
1	1	2	2	2	2	2	3
2	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1

NIC PROGRAM STEPS

STEP	PGM	TIME	PATTERN
1	1	7:00	3
2	1	22:00	0
3	2	6:30	21
4	2	9:00	23
5	2	15:00	25
6	2	18:30	23
7	2	22:00	0
8	3	7:00	3
9	3	22:00	0

File Name: C:\Users\Sandy\Desktop\Candelaria_Palo Verde.ppd
Start Date: 01/05/2012
Start Time: 7:00:00 AM
Site Code: 00000000
Comment 1: Default Comments
Comment 2: Change These in The Preferences Window
Comment 3: Select File/Preference in the Main Scree
Comment 4: Then Click the Comments Tab

	PALO VERDE From North				CANDELARIA From East				PALO VERDE From South				CANDELARIA From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
07:00 AM	0	0	0	0	0	45	0	0	1	0	12	0	4	15	0	0
07:15 AM	0	0	1	0	0	54	0	0	0	0	12	0	5	9	1	0
07:30 AM	1	0	0	0	0	60	0	0	0	0	14	0	3	12	1	0
07:45 AM	0	0	0	0	1	58	0	0	0	0	9	0	6	16	0	0
08:00 AM	1	0	0	0	0	61	0	0	0	0	8	0	4	11	1	0
08:15 AM	1	0	0	0	0	48	0	0	0	0	5	0	8	14	0	0
08:30 AM	1	0	0	0	0	36	0	0	0	0	6	0	4	22	1	0
08:45 AM	0	0	0	0	0	39	1	0	0	0	9	0	4	12	1	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	2	0	0	0	1	26	0	0	2	1	12	0	12	41	0	0
04:15 PM	5	0	1	0	0	26	1	0	0	0	3	0	2	41	3	0
04:30 PM	3	0	0	0	1	26	0	0	0	0	3	0	15	45	1	0
04:45 PM	1	0	1	0	0	36	1	0	1	0	6	0	7	60	3	0
05:00 PM	3	1	0	0	0	25	0	0	1	0	11	0	10	56	3	0
05:15 PM	0	0	1	0	0	23	3	0	1	0	7	0	8	52	1	0
05:30 PM	1	0	1	0	0	30	1	0	0	0	8	0	16	67	3	0
05:45 PM	0	0	0	0	0	31	0	0	0	0	4	0	13	46	0	0

Appendix B HCM Traffic Analyses

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Falcon Traffic*
Agency/Co.	
Date Performed	*12/17/2011*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Access and Candelaria*
Jurisdiction	
Analysis Year	*2011 WITH SITE*

Project Description *Smith's Fuel Center*

East/West Street: *Candelaria* | North/South Street: *Access*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*55*	*48*	*18*	*0*	*233*	*11*
Peak-hour factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate (veh/h)	*61*	*53*	*20*	*0*	*258*	*12*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*0*	--	--
Median type	*Raised curb*					
RT Channelized?			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*43*	*0*	*0*	*14*	*0*	*57*
Peak-hour factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate (veh/h)	*47*	*0*	*0*	*15*	*0*	*63*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*	*L*		*TR*	*L*		*TR*
Volume, v (vph)	*61*	*0*	*47*		*0*	*15*		*63*
Capacity, c_m (vph)	*1305*	*1540*	*501*			*579*		*780*
v/c ratio	*0.05*	*0.00*	*0.09*			*0.03*		*0.08*
Queue length (95%)	*0.15*	*0.00*	*0.31*			*0.08*		*0.26*
Control Delay (s/veh)	*7.9*	*7.3*	*12.9*			*11.4*		*10.0*
LOS	*A*	*A*	*B*			*B*		*B*
Approach delay (s/veh)	--	--				*10.3*		
Approach LOS	--	--				*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Falcon Traffic*	Intersection	*Access and Candelaria*
Agency/Co.		Jurisdiction	
Date Performed	*12/17/2011*	Analysis Year	*2011 WITH SITE*
Analysis Time Period	*PM Peak*		

Project Description *Smith's Fuel Center*

East/West Street: *Candelaria*	North/South Street: *Access*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*70*	*235*	*41*	*5*	*114*	*11*
Peak-hour factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate (veh/h)	*77*	*261*	*45*	*5*	*126*	*12*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*0*	--	--
Median type	*Raised curb*					
RT Channelized?			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*32*	*0*	*3*	*14*	*0*	*65*
Peak-hour factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate (veh/h)	*35*	*0*	*3*	*15*	*0*	*72*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*	*L*		*TR*	*L*		*TR*
Volume, v (vph)	*77*	*5*	*35*		*3*	*15*		*72*
Capacity, c_m (vph)	*1458*	*1266*	*444*		*760*	*477*		*923*
v/c ratio	*0.05*	*0.00*	*0.08*		*0.00*	*0.03*		*0.08*
Queue length (95%)	*0.17*	*0.01*	*0.26*		*0.01*	*0.10*		*0.25*
Control Delay (s/veh)	*7.6*	*7.9*	*13.8*		*9.8*	*12.8*		*9.2*
LOS	*A*	*A*	*B*		*A*	*B*		*A*
Approach delay (s/veh)	--	--	*13.5*			*9.8*		
Approach LOS	--	--	*B*			*A*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	Falcon Traffic	Intersection	Tramway and Candelaria
Agency or Co.		Area Type	All other areas
Date Performed	12/17/2011	Jurisdiction	
Time Period	AM Peak	Analysis Year	2011
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	1	1	1	1	1	2	1	1	2	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	103	32	0	123	86	100	154	1003	27	21	1197	153
% Heavy vehicles, %HV	0	0	0	0	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		45	0		13	0		50
Lane width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 11.0	G = 18.0	G =	G =	G = 8.0	G = 63.0	G =	G =
	Y = 2	Y = 3	Y =	Y =	Y = 2	Y = 3	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	114	36	0	137	96	61	171	1114	16	23	1330	114
Lane group capacity, c	359	592	426	422	311	426	256	2072	1130	319	2072	1130
v/c ratio, X	0.32	0.06	0.00	0.32	0.31	0.14	0.67	0.54	0.01	0.07	0.64	0.10

Total green ratio, g/C	0.28	0.16	0.26	0.28	0.16	0.26	0.66	0.57	0.70	0.66	0.57	0.70
Uniform delay, d_1	30.4	38.9	29.8	30.7	40.5	31.0	14.0	14.5	5.0	8.7	15.9	5.3
Progression factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay calibration, k	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11
Incremental delay, d_2	2.3	0.2	0.0	2.0	2.6	0.2	13.0	1.0	0.0	0.4	1.5	0.0
Initial queue delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control delay	32.7	39.1	29.8	32.7	43.1	31.1	27.1	15.5	5.0	9.2	17.4	5.4
Lane group LOS	C	D	C	C	D	C	C	B	A	A	B	A
Approach delay	34.2			35.8			16.9			16.4		
Approach LOS	C			D			B			B		
Intersection delay	19.2			X_c = 0.64			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	Falcon Traffic	Intersection	Tramway and Candelaria
Agency or Co.		Area Type	All other areas
Date Performed	12/17/2011	Jurisdiction	
Time Period	PM Peak	Analysis Year	2011
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	1	1	1	1	1	2	1	1	2	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	158	92	0	39	63	61	141	1421	97	106	1023	329
% Heavy vehicles, %HV	0	0	0	0	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		45	0		13	0		50
Lane width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 11.0	G = 18.0	G =	G =	G = 8.0	G = 63.0	G =	G =
	Y = 2	Y = 3	Y =	Y =	Y = 2	Y = 3	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	176	102	0	43	70	18	157	1579	93	118	1137	310
Lane group capacity, c	381	592	426	385	311	426	311	2072	1130	200	2072	1130
v/c ratio, X	0.46	0.17	0.00	0.11	0.23	0.04	0.50	0.76	0.08	0.59	0.55	0.27

Total green ratio, g/C	0.28	0.16	0.26	0.28	0.16	0.26	0.66	0.57	0.70	0.66	0.57	0.70
Uniform delay, d_1	31.5	39.6	29.8	29.1	39.9	30.2	10.5	17.8	5.3	18.8	14.6	6.1
Progression factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay calibration, k	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11
Incremental delay, d_2	4.0	0.6	0.0	0.6	1.7	0.0	5.8	2.7	0.0	12.2	1.1	0.1
Initial queue delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control delay	35.5	40.2	29.8	29.7	41.6	30.2	16.3	20.5	5.3	30.9	15.7	6.3
Lane group LOS	D	D	C	C	D	C	B	C	A	C	B	A
Approach delay	37.2			36.1			19.4			15.0		
Approach LOS	D			D			B			B		
Intersection delay	19.5			X_c = 0.72			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	Falcon Traffic	Intersection	Tramway and Candelaria
Agency or Co.		Area Type	All other areas
Date Performed	12/17/2011	Jurisdiction	
Time Period	AM Peak	Analysis Year	2011 WITH SITE
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	1	1	1	1	1	2	1	1	2	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	103	41	0	135	97	131	154	1003	39	52	1197	153
% Heavy vehicles, %HV	0	0	0	0	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		45	0		13	0		50
Lane width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 11.0	G = 18.0	G =	G =	G = 8.0	G = 63.0	G =	G =
	Y = 2	Y = 3	Y =	Y =	Y = 2	Y = 3	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	114	46	0	150	108	96	171	1114	29	58	1330	114
Lane group capacity, c	349	592	426	416	311	426	256	2072	1130	319	2072	1130
v/c ratio, X	0.33	0.08	0.00	0.36	0.35	0.23	0.67	0.54	0.03	0.18	0.64	0.10

Total green ratio, g/C	0.28	0.16	0.26	0.28	0.16	0.26	0.66	0.57	0.70	0.66	0.57	0.70
Uniform delay, d_1	30.5	39.0	29.8	30.9	40.8	31.7	14.0	14.5	5.0	9.1	15.9	5.3
Progression factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay calibration, k	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11
Incremental delay, d_2	2.5	0.3	0.0	2.4	3.0	0.3	13.0	1.0	0.0	1.2	1.5	0.0
Initial queue delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control delay	32.9	39.2	29.8	33.4	43.8	32.0	27.1	15.5	5.0	10.3	17.4	5.4
Lane group LOS	C	D	C	C	D	C	C	B	A	B	B	A
Approach delay	34.7			36.2			16.8			16.2		
Approach LOS	C			D			B			B		
Intersection delay	19.5			X_c = 0.65			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	Falcon Traffic	Intersection	Tramway and Candelaria
Agency or Co.		Area Type	All other areas
Date Performed	12/17/2011	Jurisdiction	
Time Period	PM Peak	Analysis Year	2011 WITH SITE
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	1	1	1	1	1	2	1	1	2	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	158	103	0	53	72	96	141	1421	111	141	1023	329
% Heavy vehicles, %HV	0	0	0	0	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l_1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		45	0		13	0		50
Lane width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0	0	0	0	0	0	0	0	0	0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 11.0	G = 18.0	G =	G =	G = 8.0	G = 63.0	G =	G =
	Y = 2	Y = 3	Y =	Y =	Y = 2	Y = 3	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	176	114	0	59	80	57	157	1579	109	157	1137	310
Lane group capacity, c	372	592	426	379	311	426	311	2072	1130	200	2072	1130
v/c ratio, X	0.47	0.19	0.00	0.16	0.26	0.13	0.50	0.76	0.10	0.79	0.55	0.27

Total green ratio, g/C	0.28	0.16	0.26	0.28	0.16	0.26	0.66	0.57	0.70	0.66	0.57	0.70
Uniform delay, d_1	31.5	39.7	29.8	29.4	40.2	30.9	10.5	17.8	5.3	26.8	14.6	6.1
Progression factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay calibration, k	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11
Incremental delay, d_2	4.3	0.7	0.0	0.9	2.0	0.1	5.8	2.7	0.0	25.9	1.1	0.1
Initial queue delay, d_3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control delay	35.8	40.4	29.8	30.2	42.2	31.1	16.3	20.5	5.3	52.7	15.7	6.3
Lane group LOS	D	D	C	C	D	C	B	C	A	D	B	A
Approach delay	37.6			35.3			19.3			17.5		
Approach LOS	D			D			B			B		
Intersection delay	20.7			X_c = 0.73			Intersection LOS			C		