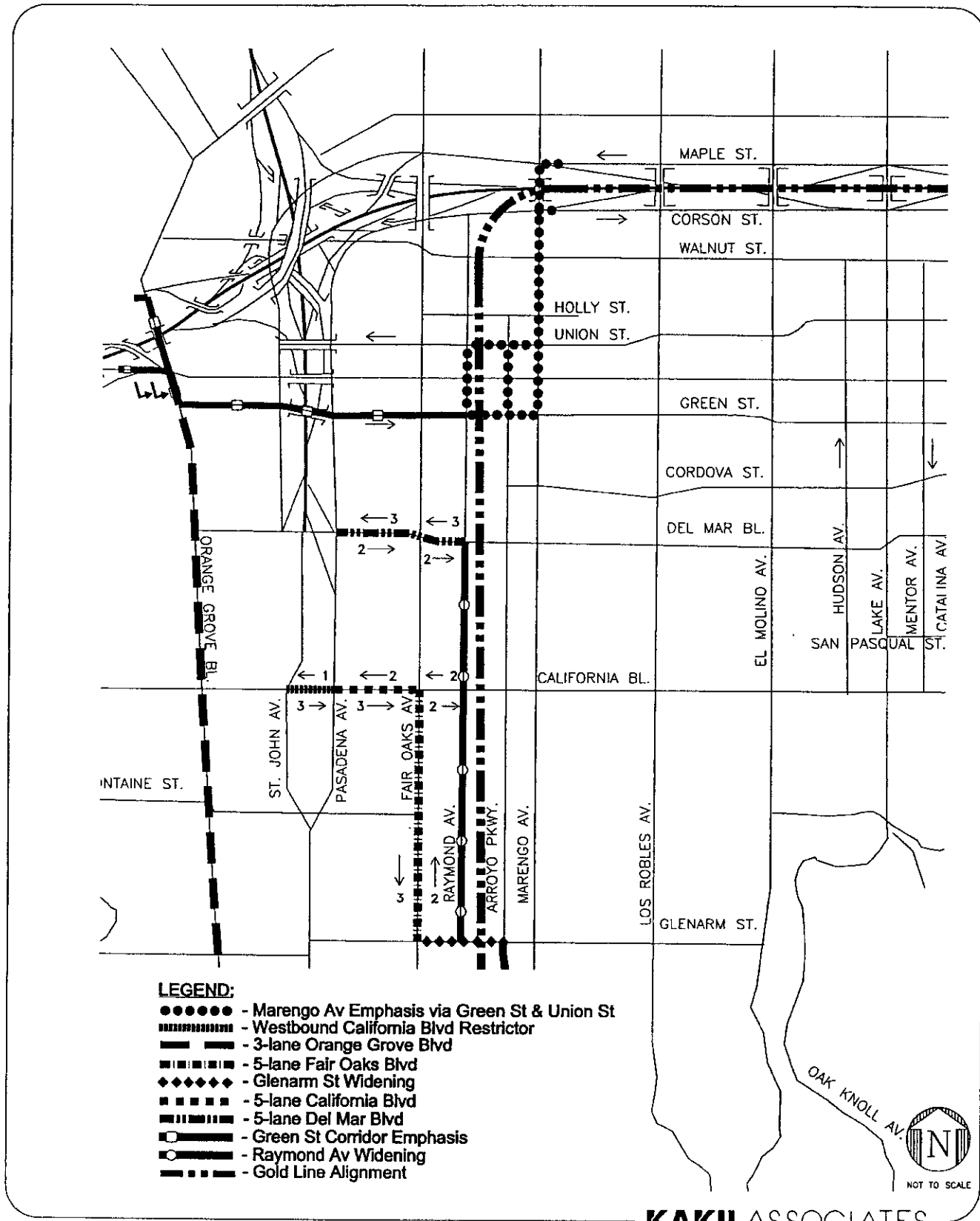


**FIGURE 4**  
**SOUTHWEST NEIGHBORHOOD TRAFFIC STUDY**  
**ALTERNATIVE B**





**FIGURE 6**  
**SOUTHWEST NEIGHBORHOOD TRAFFIC STUDY**  
**ALTERNATIVE D**

### III. ANALYSIS

This chapter summarizes the test results of the Southwest Neighborhood alternatives described in the previous chapter.

#### MEASURES OF EFFECTIVENESS

The difference between the alternatives was evaluated using two key measures of effectiveness. First, the number of lane miles operating at each Level of Service was summarized for each alternative. The "lane-mile" criterion was used because it reflects a good measure of the performance of the street system. A two-mile section of four-lane road operating at Level of Service D, for example, is more serious than Level of Service D operation on the same two-mile length on a two-lane road. Thus the number of lane-miles operating at each Level of Service is a better performance measure than total miles of street operating at each Level of Service.

The second performance measure involved the increase or reduction in afternoon peak hour traffic flow for each alternative. The traffic assignment for each alternative was compared to the "Future Base" traffic assignment to track the shift in traffic. A graphical summary of the traffic shifts allows the reviewer to see the streets where traffic increases and decreases as a result of the elements of each alternative.

#### ANALYSIS RESULTS

##### Level of Service Performance

The performance of the roadway alternatives tested is summarized below. The key streets in the Southwest Neighborhood were included in the analysis of the system performance.

Approximately 23 lane-miles along these key streets were included in the analysis. The Appendix of this report contains the summary of each street segment in the study area.

The "Future Base" conditions would result in 88% of the lane miles operating at acceptable Levels of Service (i.e., LOS A-D) while 12% would operate at LOS E or F. This translates to approximately 1.2 lane-miles operating at LOS E and 1.5 lane-miles operating at LOS F. As described in the General Plan Update process, the transportation system in general delivers an acceptable level of performance. However, there will be street segments where congestion will occur.

The results are as follows:

**Without Orange Grove Lane Reduction**

Alternative	Description	Lane Miles at	
		LOS A-D	LOS E or F
Future Base		88%	12%
A	One-Way Pair	91%	9%
B	5-lane Del Mar	90%	10%
C	6-lane California	90%	10%
D	5-lane Del Mar & California	90%	10%

The one-way pair alternative performs the best of the four alternatives with 91% of the system operating at LOS A-D. The remaining three alternatives improve the system performance from 88% at LOS A-D to 90% of the system operating at acceptable levels. Although these alternatives appear to have the same overall results, the 5-lane Del Mar requires a longer 5-lane Fair Oaks Avenue and therefore would require more blocks of Fair Oaks Avenue with permanent parking restrictions.

With Orange Grove Boulevard reduced, the traffic shifts create a slightly different pattern of movement, and the street system LOS ratings also change. The results with Orange Grove reduced are:

### With Orange Grove Lane Reduction

Alternative	Description	Lane Miles at	
		LOS A-D	LOS E or F
Future Base		88%	12%
Future Base	With Orange Grove Lane Reduction	85%	15%
A	One-Way Pair	86%	14%
B	5-lane Del Mar	86%	14%
C	6-lane California	85%	15%
D	5-lane Del Mar & California	87%	13%

Under the conditions with Orange Grove Boulevard reduced, the 5-lane Del Mar & California alternative works the best. This occurs because the lane reduction of Orange Grove causes some additional traffic to move to the Del Mar and California corridors, and the new capacity added by the widening of the streets compensates for the increase in traffic.

The lane reduction of Orange Grove Boulevard causes some degradation in the overall system. In fact, the biggest difference in the "with and without" lane reduction program occurs along Orange Grove Boulevard itself. The majority of the through traffic using Orange Grove will not divert to another route until conditions on Orange Grove reach or exceed capacity (i.e., LOS E or F). Thus, the amount of through traffic along Orange Grove only decreases as a result of the congestion along the corridor increasing to the point that another route becomes faster. The Orange Grove residents could see a decrease in traffic of about 600 vehicles per hour in the afternoon peak hour as a result of the lane reduction project, but this decrease in traffic would come at a cost of an increase in congestion along the corridor.

#### **Traffic Shifts**

Figures 7-10 show the afternoon peak hour traffic shifts that would result from the implementation of the four alternatives. These figures assume that Orange Grove Boulevard is not reduced. Again, the increases and decreases shown in Figures 7-14 are as compared to the Future Base

conditions. Most, if not all, segments of key streets in the Southwest Neighborhood will experience increased traffic levels over the next 15 years. The green lines show the street segments where the alternative being tested resulted in a traffic decrease *when compared to the Future Base condition*. This should not be interpreted as a decrease over existing traffic levels. The red lines show the street segments that would experience increased traffic levels (again as compared to the Future Base conditions) as a result of the changes brought about by the alternative being tested.

Figure 7 shows that the one-way pair would reduce traffic along California and along Del Mar and Colorado. The one-way pair adds traffic to the Fair Oaks and Raymond corridors as intended by the DAG proposal.

Figures 8 and 9 show the expected increases in traffic along either Del Mar or California, depending on which street is being emphasized in that alternative.

Figure 10 shows that the combination of California and Del Mar decreases traffic in the off-direction of these two streets, and it adds enough capacity to the system that the traffic levels along Orange Grove decrease slightly even without the lane reduction project.

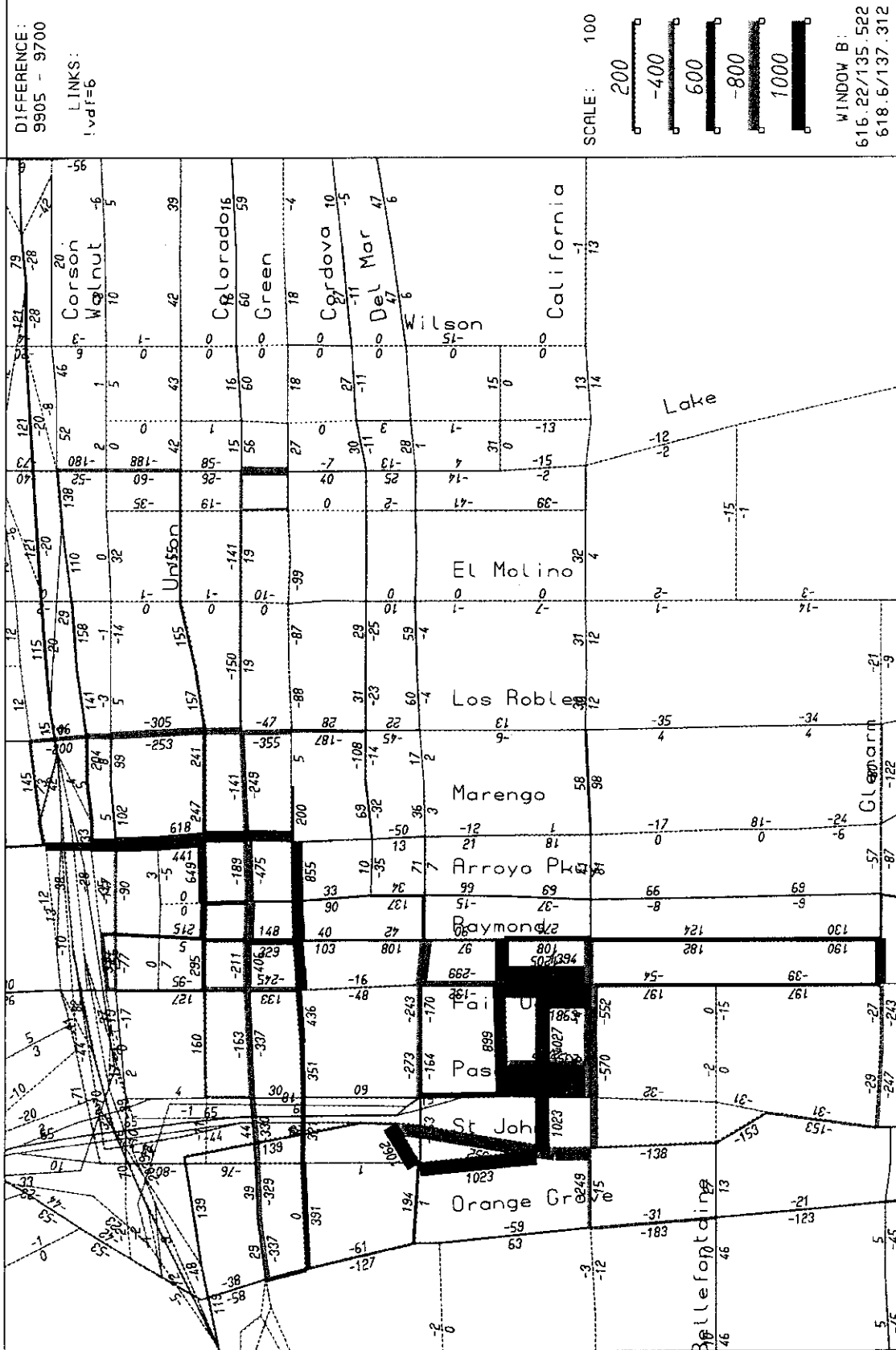
A similar set of traffic shifts are documented in Figures 11-14, except that these graphics illustrate the shifts with Orange Grove reduced.

The results of the tests with Orange Grove reduced are similar to the results above, except that traffic levels along Orange Grove itself are significantly lower (as much as 700 vehicles per hour). The reduction in traffic along Orange Grove increases traffic along Fair Oaks and Raymond and slightly increase traffic along Arroyo Parkway. The effects of the lane reduction on Orange Grove are not felt east of Arroyo Parkway in that traffic volumes along the Marengo, Los Robles, El Molino, and Lake corridors are virtually the same with or without the widening.

emr/2

# AUTO VOLUMES

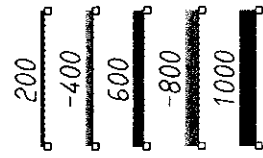
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DIFFERENCE:  
9905 - 9700

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SCALE: 100



WINDOW B:  
616.22/135.522  
618.6/137.312

02-01-17 11:23  
MODULE: 6.13  
KAKU.....fsh

Figure 7  
Alt A w/o Orange Grove Reduction

EMME/2 PROJECT: Pasadena Mobility Element Update - 2000  
SCENARIO 9905: 2015 w/ Bellevue & Palmetto - no Orange Grove  
SCENARIO 9700: 2015 Reclassified Streets (Updated)



# AUTO VOLUMES

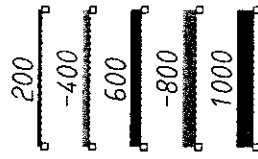
DIFFERENCE SCENARIO 10215 - SCENARIO 9700

emme/2

DIFFERENCE:  
10215 - 9700

LINKS:  
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SCALE: 100



WINDOW B:  
616.22/135.522  
618.6/137.312

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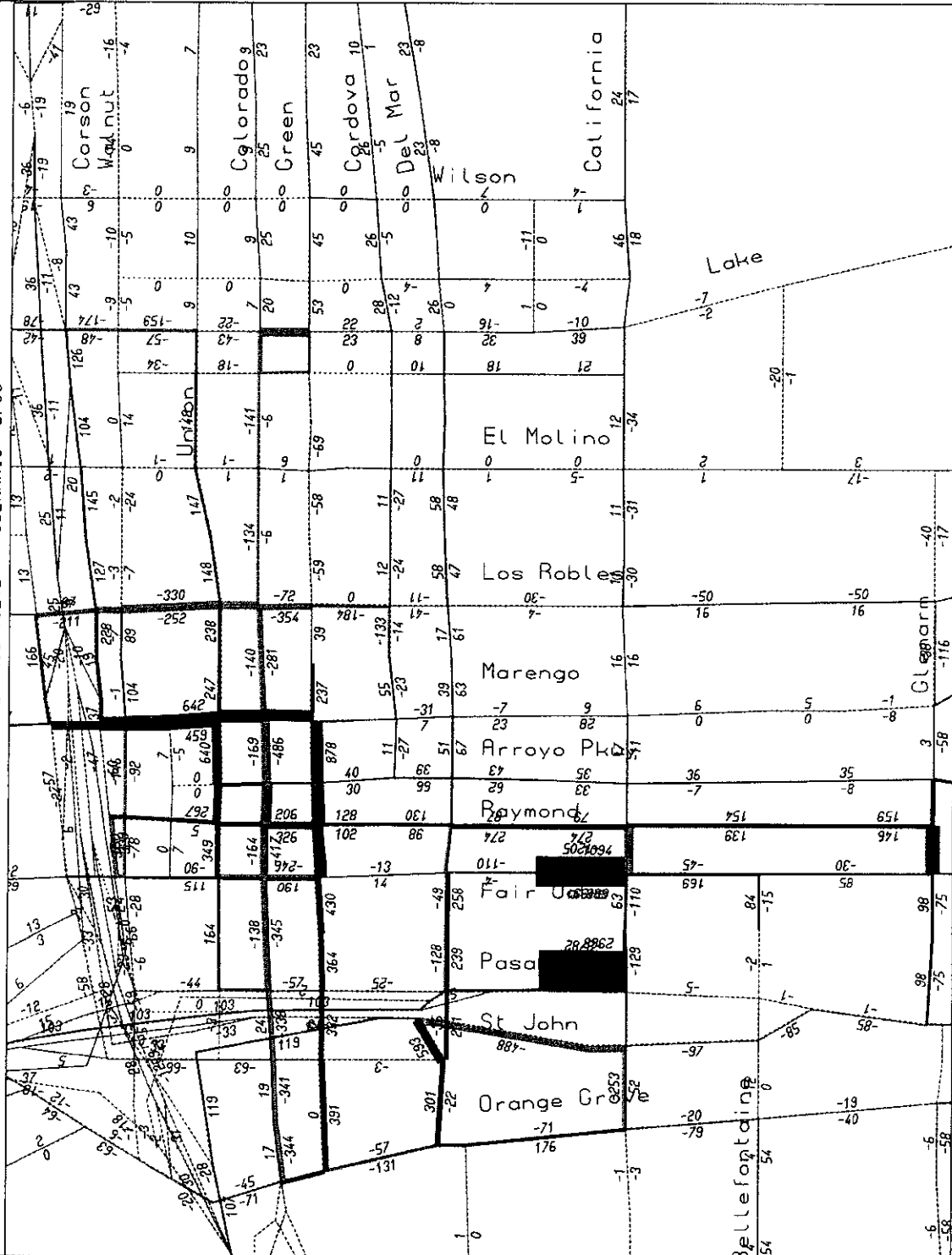


Figure 8  
Alt B w/o Orange Grove Reduction

EMME/2 PROJECT: Pasadena Mobility Element Update - 2000  
SCENARIO 10215: 2015 w/ 5-Ln Del Mar - no Orange Grove  
SCENARIO 9700: 2015 Reclassified Streets (Updated)

# AUTO VOLUMES

DIFFERENCE SCENARIO 10225 - SCENARIO 9700

emme/2

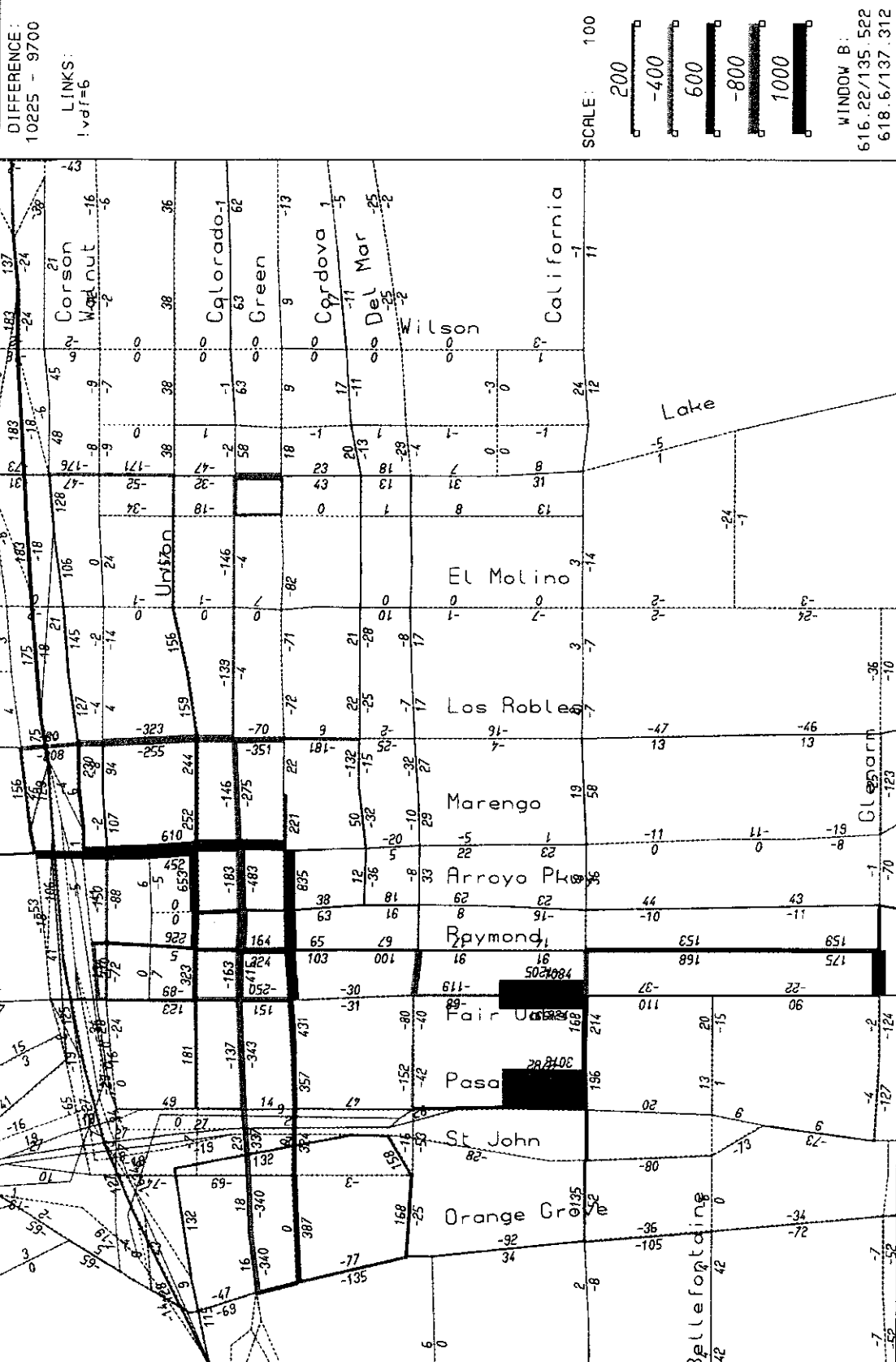
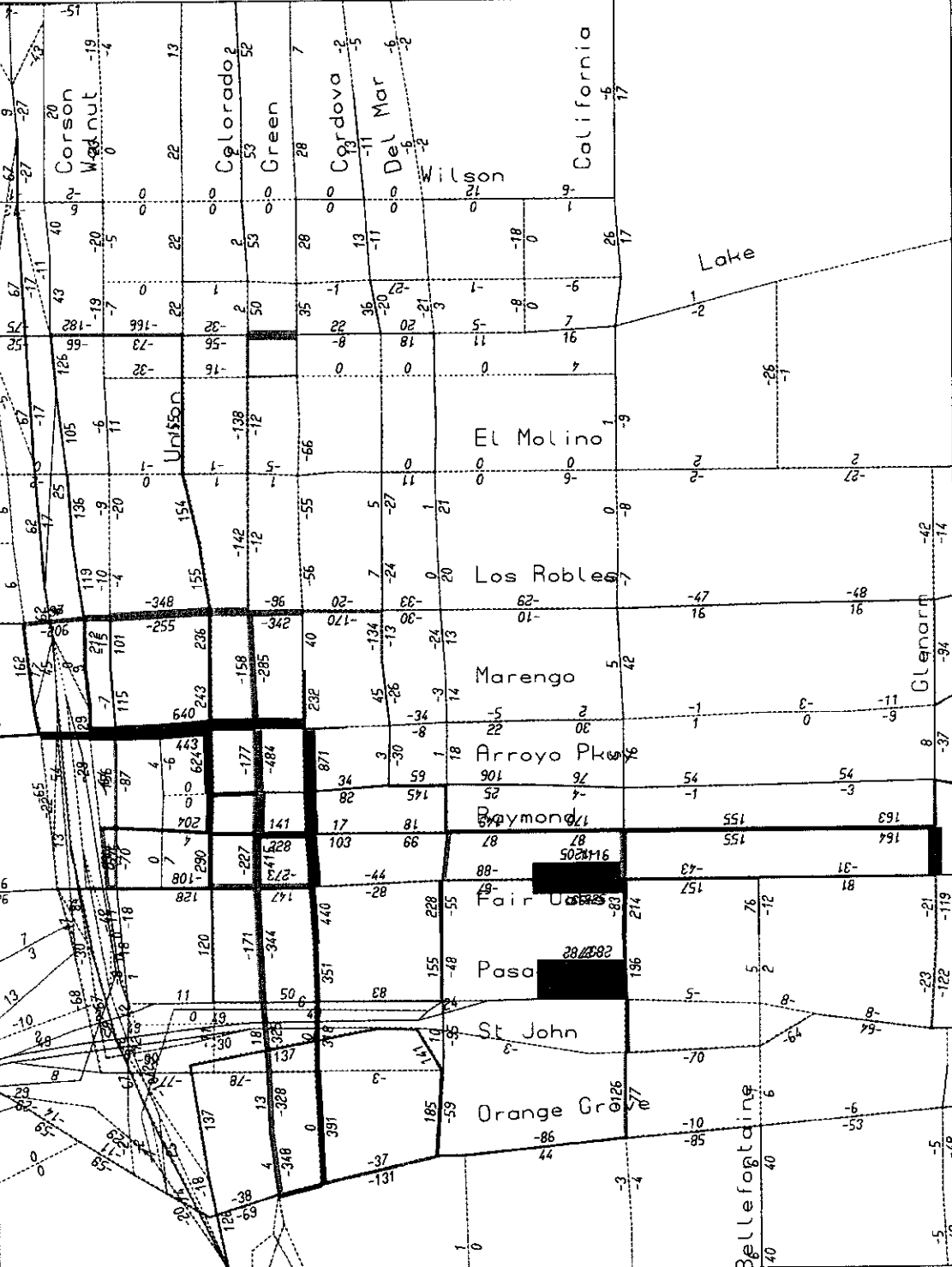


Figure 9  
Alt C w/o Orange Grove Reduction

emme/2

# AUTO VOLUMES

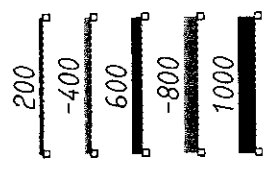
DIFFERENCE SCENARIO 10207 - SCENARIO 9700



DIFFERENCE:  
10207 - 9700

LINKS:  
vd1=6

SCALE: 100



WINDOW 8:  
616.22/135.522  
618.6/137.312

02-01-17 13:15  
MODULE: 6.13  
...KAKU... fsb

Figure 10  
Alt D w/o Orange Grove Reduction

EMME/2 PROJECT: Pasadena Mobility Element Update - 2000  
SCENARIO 10207: 2015 w/ 5-in Del Mar & CA - no Orange Grove  
SCENARIO 9700: 2015 Reclassified Streets (Updated)

# AUTO VOLUMES

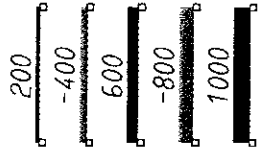
DIFFERENCE SCENARIO 11000 - SCENARIO 9700

emme/2

DIFFERENCE:  
11000 - 9700

LINKS:  
i\vdI=6

SCALE: 100



WINDOW B:  
616.22/135.522  
618.6/137.312

01-12-21 10:16  
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KAKU

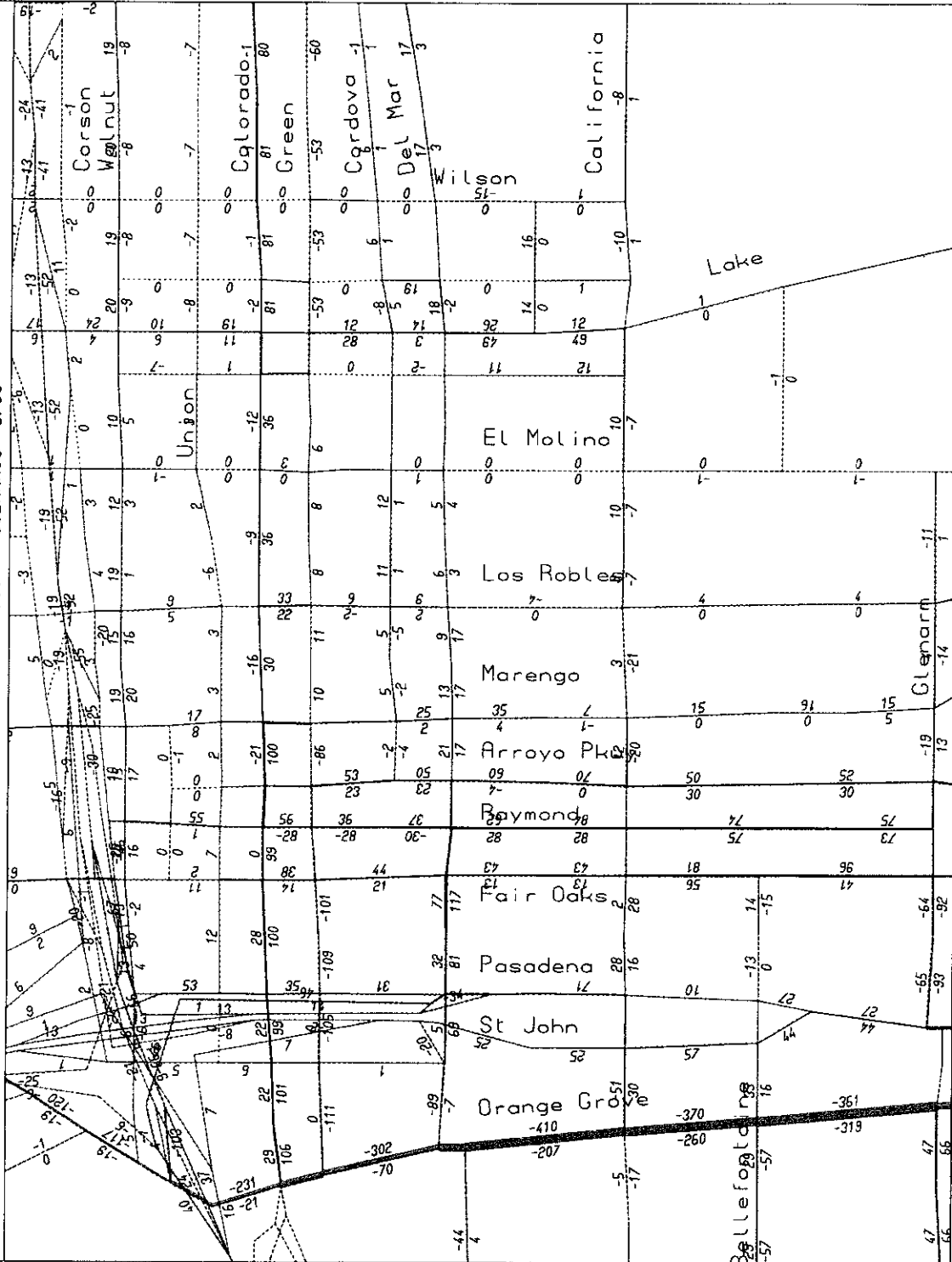


Figure X  
Effects of Orange Grove Narrowing

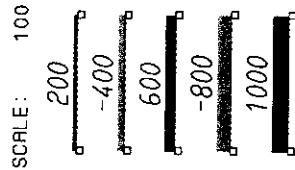
EMME/2 PROJECT: Pasadena Mobility Element Update - 2000  
SCENARIO 11000: 2015 Reclassified w/ Orange Grove (Updated)  
SCENARIO 9700: 2015 Reclassified Streets (Updated)

# AUTO VOLUMES

DIFFERENCE SCENARIO 9907 - SCENARIO 9700

emme/2

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9907 - 9700  
LINKS:  
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WINDOW B:  
616.22/135.522  
618.6/137.312

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MODULE: 6.13  
KAKU.....fsb

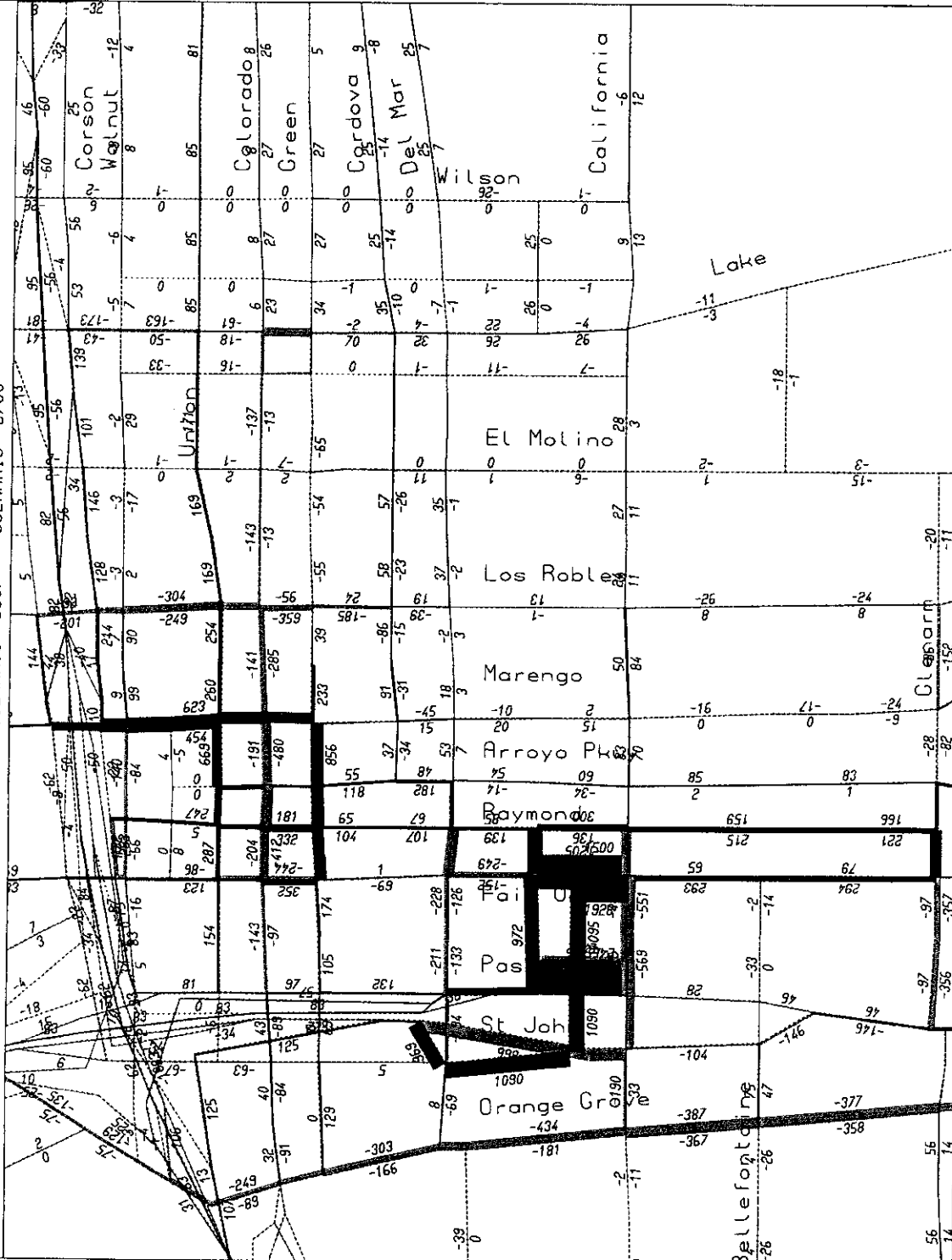
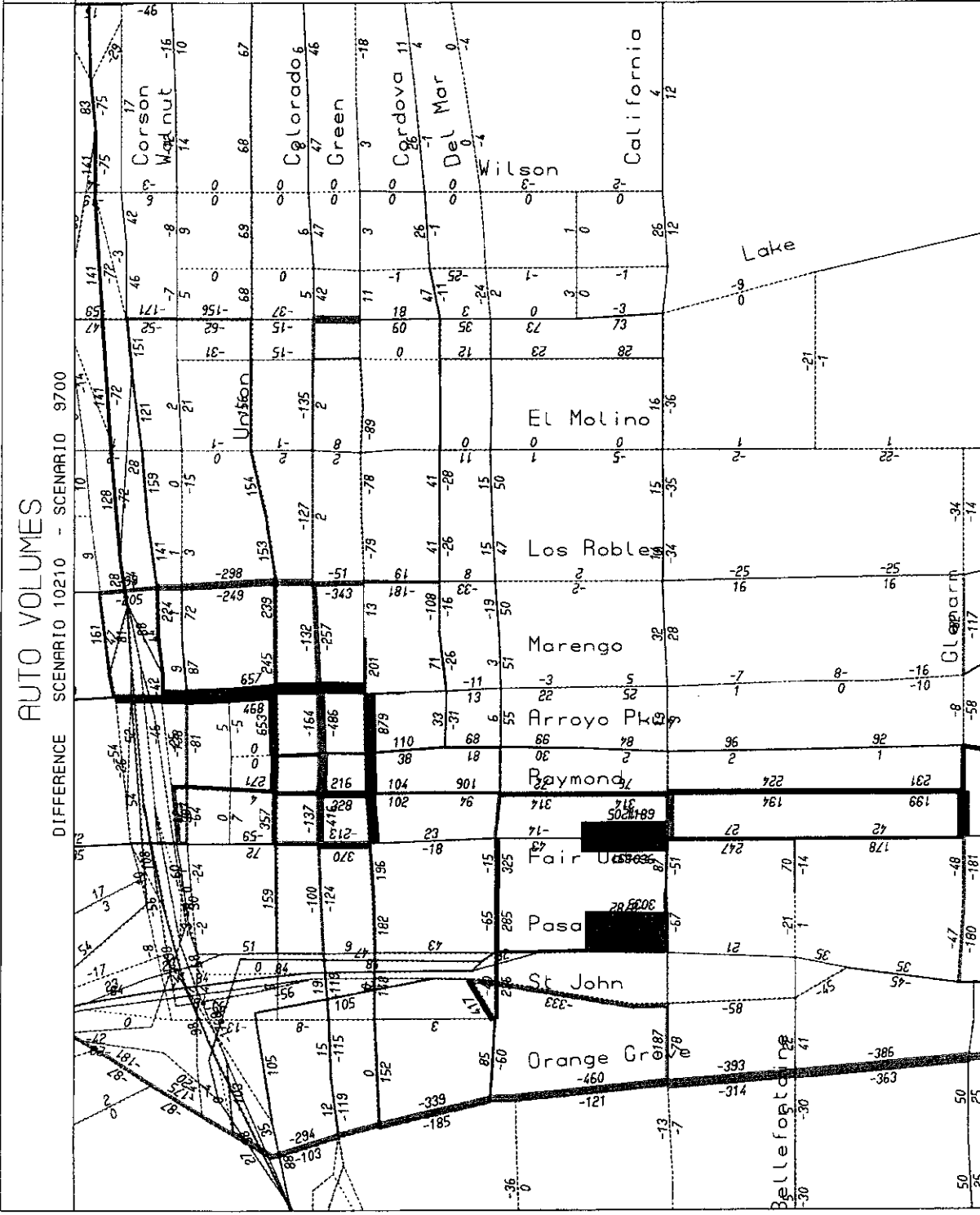


Figure 11  
Alt A w/ Orange Grove Reduction

EMME/2 PROJECT: Pasadena Mobility Element Update - 2000  
SCENARIO 9907: 2015 w/ Bellevue & Palmetto  
SCENARIO 9700: 2015 Reclassified Streets (Updated)

emme/2



DIFFERENCE:  
10210 - 9700

LINKS:  
vdif=6

SCALE: 100

WINDOW B:  
616.22/135.522  
618.6/137.312

EMME/2 PROJECT: Pasadena Mobility Element Update - 2000  
SCENARIO 10210: 2015 w/ 5-in Del Mar  
SCENARIO 9700: 2015 Reclassified Streets (Updated)

Figure 12  
Alt B w/ Orange Grove Reduction

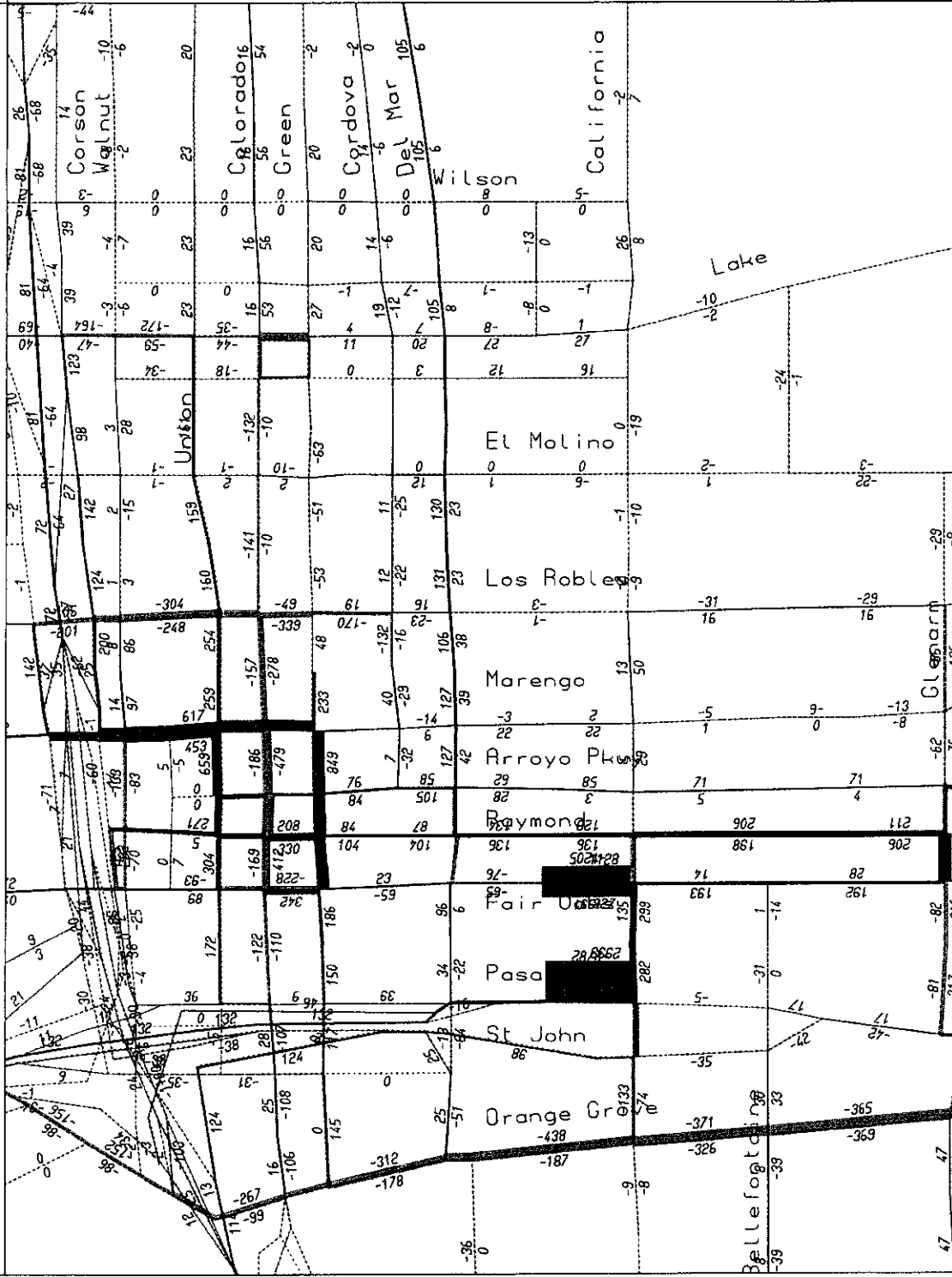
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KAKU feb

# AUTO VOLUMES

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emme2

DIFFERENCE:  
10220 - 9700  
LINKS:  
1 vdf=6



SCALE: 100  
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400  
600  
800  
1000

WINDOW B:  
616.22/135.522  
618.6/137.312

Figure 13  
Alt C w/ Orange Grove Reduction

EMME2 PROJECT: Pasadena Mobility Element Update - 2000  
SCENARIO 10220: 2015 w/ 6-in California  
SCENARIO 9700: 2015 Reclassified Streets (Updated)

# AUTO VOLUMES

DIFFERENCE SCENARIO 10204 - SCENARIO 9700

emme/2

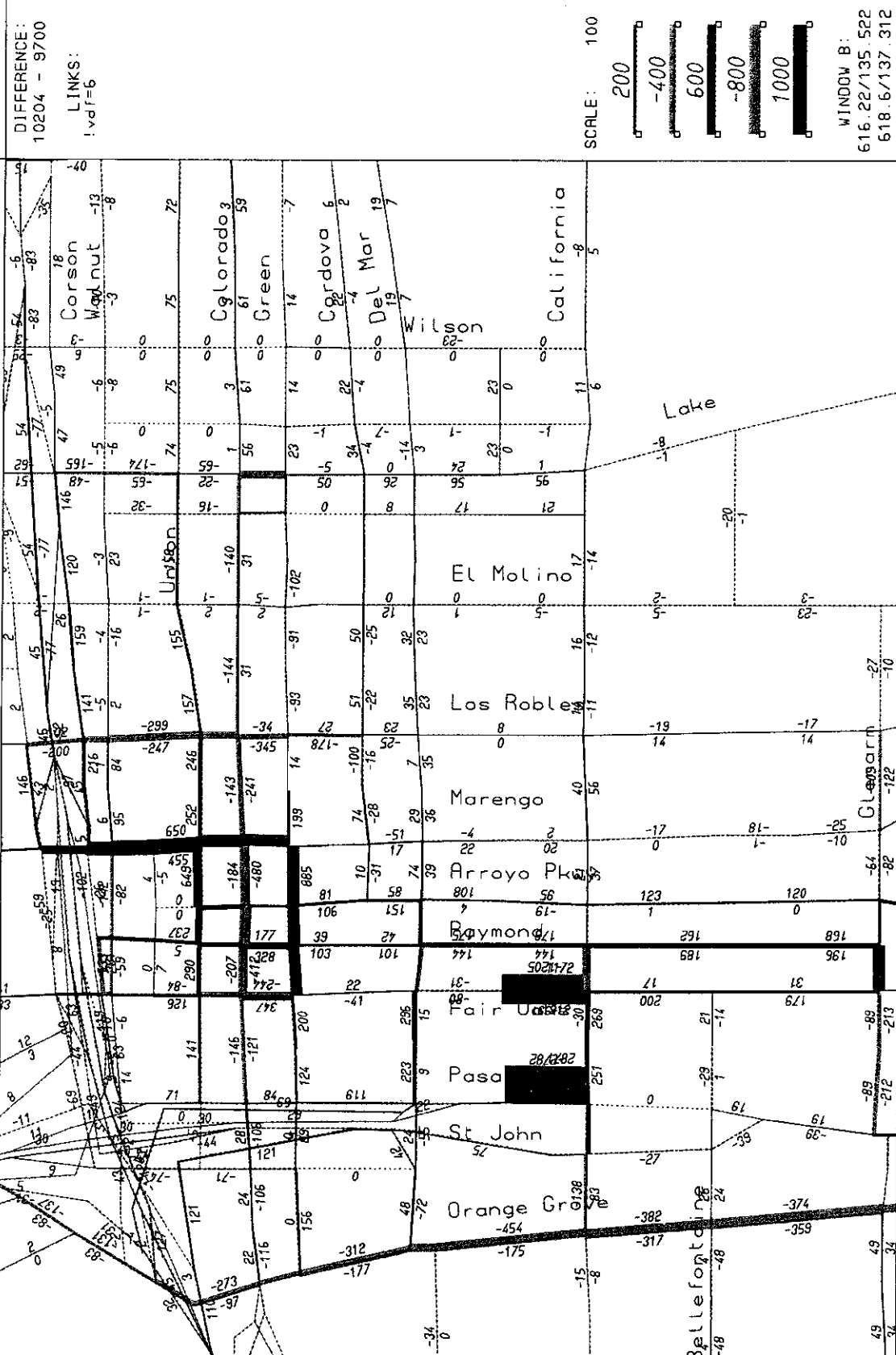


Figure 14  
Alt D w/ Orange Grove Reduction

EMME/2 PROJECT: Pasadena Mobility Element Update - 2000  
 SCENARIO 10204: 2015 w/ 5-ln Del Mar & California  
 SCENARIO 9700: 2015 Reclassified Streets (Updated)



### **Fair Oaks Widening Alternative**

Alternative D was also tested with a six-lane cross-section on Fair Oaks Boulevard between Del Mar Boulevard and Glenarm Street. The provision of three northbound through lanes on Fair Oaks attracts northbound traffic away from Orange Grove Boulevard and away from Raymond Avenue. The summary of the systemwide performance is shown on the table on the following page.

The alternatives to increase the number of lanes in the Fair Oaks corridor would reduce the LOS E/F from 15% to 13% to 11% of the lane miles in the system if Orange Grove lanes were reduced. If the current Orange Grove cross section is maintained, the wider Fair Oaks would reduce the LOS E/F lane miles from 12% to 10% to 5% of the system (i.e. 4-lane vs. 5-lane vs. 6-lane cross sections.)

However, the 6-lane improvement along Fair Oaks would require a 10-12 foot wide widening along the entire length of this corridor. This level of physical widening is inconsistent with the current General Plan and is therefore not likely to occur in the foreseeable future.

**PERFORMANCE OF ALTERNATE D  
UNDER VARIOUS CONFIGURATIONS  
OF ORANGE GROVE BOULEVARD AND FAIR OAKS AVENUE**

Fair Oaks Cross Section	Lane Miles at	Orange Grove Cross Section	
		Existing	With Lane Reduction
4-Lane	LOS A-D	88%	85%
	LOS E	5%	2%
	LOS F	7%	13%
5-Lane	LOS A-D	90%	87%
	LOS E	6%	5%
	LOS F	4%	8%
6-Lane	LOS A-D	95%	89%
	LOS E	2%	4%
	LOS F	3%	7%

Future Base Conditions

#### IV. CONCLUSIONS

The Southwest Neighborhood of Pasadena experiences high volumes of peak period traffic and high proportions of through traffic as a result of the gap in Interstate 710. The future traffic forecasts being conducted as a part of the General Plan Mobility Element update indicate that this condition will continue in the foreseeable future.

A number of alternatives have been studied to manage both through and local traffic in the Southwest Neighborhood. A number of traffic improvements have been evaluated and generally agreed upon by the community. The Design Advisory Group has formulated a number of specific improvements in the area, and the General Plan Mobility Element update has discussed even more improvements with the community. Where consensus has been reached, the improvements have been included in the Mobility Element update recommendations.

There are however some key alternative improvements where consensus has not yet been reached, and this report presents the results of tests on those alternatives.

There are two basic treatments for Orange Grove Boulevard: leave the street in its present four-lane configuration or restripe it to a three-lane configuration (one through lane in each direction and add a center two-way left turn lane).

Four alternatives have been investigated for the shifting of traffic from the Pasadena/St. John corridors to the Fair Oaks/Raymond/Arroyo Parkway corridors. These include a one-way pair, an emphasis of Del Mar, an emphasis of California, and a combination Del Mar/California directional plan.

The results of the technical tests show that the street system in the Southwest Neighborhood can tolerate the lane reduction of Orange Grove from Green to Glenarm, but not without some increased traffic occurring along other streets in the neighborhood. Of the traffic shifting

alternatives tested, the 5-lane Del Mar & California alternative works the best if Orange Grove is reduced and can likely be implemented with less disruption than any of the other three alternatives.

This is an informational report written to assist the community in the selection of the appropriate Orange Grove alternative and the best traffic shifting alternative.

**APPENDIX**

**TABLE A1  
LINK LEVEL OF SERVICE ANALYSIS  
WITHOUT ORANGE GROVE NARROWING**

Street	Between		Future 2015 Base		Alternative A		Alternative B		Alternative C		Alternative D	
			Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS
Colorado Bl	St. John - Pasadena	EB	0.24	A	0.24	A	0.24	A	0.24	A	0.24	A
		WB	0.24	C	0.24	C	0.24	C	0.24	C	0.24	C
Colorado Bl	Pasadena - Fair Oaks	EB	0.42	A	0.42	A	0.42	A	0.42	A	0.42	A
		WB	0.42	D	0.42	C	0.42	C	0.42	C	0.42	C
Colorado Bl	Fair Oaks - Raymond	EB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
		WB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
Colorado Bl	Raymond - Arroyo Pkwy	EB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
		WB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
Green St	St. John - Pasadena	EB	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A
Green St	Pasadena - Fair Oaks	EB	0.6	A	0.6	A	0.6	A	0.6	A	0.6	A
Green St	Fair Oaks - Raymond	EB	0.3	A	0.3	C	0.3	C	0.3	C	0.3	C
Green St	Raymond - Arroyo Pkwy	EB	0.21	A	0.21	C	0.21	C	0.21	C	0.21	C
Del Mar Bl	St. John - Pasadena	EB	0.24	B	0.24	A	0.36	A	0.24	B	0.24	A
		WB	0.12	A	0.12	A	0.12	A	0.12	A	0.12	A
Del Mar Bl	Pasadena - Fair Oaks	EB	0.46	A	0.46	A	0.69	A	0.46	A	0.46	A
		WB	0.46	F	0.46	D	0.46	E	0.46	E	0.69	C
Del Mar Bl	Fair Oaks - Raymond	EB	0.18	C	0.18	A	0.27	A	0.18	A	0.18	A
		WB	0.18	E	0.18	C	0.18	D	0.18	D	0.27	B
Del Mar Bl	Raymond - Arroyo Pkwy	EB	0.18	B	0.18	A	0.18	B	0.18	B	0.18	B
		WB	0.18	C	0.18	D	0.18	C	0.18	D	0.18	D
Bellevue Dr	Fair Oaks - Pasadena	WB	N/A	N/A	0.46	A	N/A	N/A	N/A	N/A	N/A	N/A
Bellevue Dr	Fair Oaks - Raymond	EB	N/A	N/A	0.18	A	N/A	N/A	N/A	N/A	N/A	N/A
		WB	N/A	N/A	0.18	A	N/A	N/A	N/A	N/A	N/A	N/A
Palmetto Dr	Pasadena - Fair Oaks	EB	N/A	N/A	0.46	A	N/A	N/A	N/A	N/A	N/A	N/A
California Bl	St. John - Pasadena	EB	0.18	A	0.27	A	0.27	A	0.27	A	0.27	A
		WB	0.18	A	0.09	A	0.09	A	0.09	A	0.09	A
California Bl	Pasadena - Fair Oaks	EB	0.46	A	0.59	A	0.46	A	0.69	A	0.69	A
		WB	0.46	A	0.46	A	0.46	B	0.69	A	0.46	A
California Bl	Fair Oaks - Raymond	EB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
		WB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
California Bl	Raymond - Arroyo Pkwy	EB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
		WB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
Glenarm St	Pasadena - Fair Oaks	EB	0.27	C	0.27	A	0.27	B	0.27	A	0.27	A
		WB	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A
Glenarm St	Fair Oaks - Raymond	EB	0.09	E	0.18	C	0.18	C	0.18	C	0.18	C
		WB	0.09	F	0.18	C	0.18	D	0.18	D	0.18	D
Glenarm St	Raymond - Arroyo Pkwy	EB	0.18	C	0.27	A	0.27	A	0.27	A	0.27	A
		WB	0.18	D	0.27	A	0.27	B	0.27	B	0.27	A
Orange Grove Bl	Green - Colorado	NB	0.14	C	0.14	C	0.14	C	0.14	C	0.14	C
		SB	0.14	C	0.14	E	0.14	E	0.14	E	0.14	E
Orange Grove Bl	Del Mar - Green	NB	0.46	C	0.46	C	0.46	C	0.46	C	0.46	C
		SB	0.46	A	0.46	A	0.46	A	0.46	A	0.46	A
Orange Grove Bl	Arbor St - Del Mar	NB	0.1	D	0.1	C	0.1	C	0.1	C	0.1	C
		SB	0.1	C	0.1	C	0.1	D	0.1	C	0.1	C
Orange Grove Bl	California - Arbor St	NB	0.6	E	0.6	E	0.6	E	0.6	E	0.6	E
		SB	0.6	C	0.6	C	0.6	D	0.6	C	0.6	C

**TABLE A1  
LINK LEVEL OF SERVICE ANALYSIS  
WITHOUT ORANGE GROVE NARROWING**

Street	Between		Future 2015 Base		Alternative A		Alternative B		Alternative C		Alternative D	
			Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS
St. John Dr	Colorado - Green	SB	0.27	A	0.27	A	0.27	A	0.27	A	0.27	A
St. John Dr	Green - Del Mar	SB	0.46	A	0.46	A	0.46	A	0.46	A	0.46	A
Pasadena Av	Green - Colorado	NB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
Pasadena Av	Del Mar - Green	NB	0.46	B	0.46	B	0.46	B	0.46	B	0.46	B
Pasadena Av	Bellevue - Del Mar	NB	0.4	F	0.4	F	0.4	F	0.4	F	0.4	F
Pasadena Av	California - Bellevue	NB	0.57	F	0.48	E	0.48	F	0.48	F	0.48	F
Fair Oaks Av	Green - Colorado	NB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
	Colorado - Green	SB	0.2	C	0.2	D	0.2	D	0.2	D	0.2	D
Fair Oaks Av	Del Mar - Green	NB	0.5	B	0.5	B	0.5	B	0.5	A	0.5	A
	Green - Del Mar	SB	0.5	A	0.5	A	0.5	A	0.5	A	0.5	A
Fair Oaks Av	Bellevue - Del Mar	NB	0.34	C	0.34	B	0.34	C	0.34	C	0.34	C
	Del Mar - Bellevue	SB	0.34	A	0.34	A	0.51	A	0.34	A	0.34	A
Fair Oaks Av	California - Bellevue	NB	0.34	B	0.34	C	0.34	B	0.34	B	0.34	B
	Bellevue - California	SB	0.34	A	0.45	A	0.51	A	0.34	A	0.34	A
Raymond Av	Green - Colorado	NB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
	Colorado - Green	SB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
Raymond Av	Del Mar - Green	NB	0.54	A	0.54	A	0.54	A	0.54	A	0.54	A
	Green - Del Mar	SB	0.54	A	0.54	A	0.54	A	0.54	A	0.54	A
Raymond Av	Bellevue - Del Mar	NB	0.30	D	0.30	C	0.30	D	0.30	D	0.30	E
	Del Mar - Bellevue	SB	0.30	A	0.30	B	0.30	C	0.30	B	0.30	B
Raymond Av	California - Bellevue	NB	0.34	C	0.34	E	0.34	C	0.34	C	0.34	D
	Bellevue - California	SB	0.34	A	0.34	B	0.34	C	0.34	B	0.34	B
Arroyo Parkway	Green - Colorado	NB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
	Colorado - Green	SB	0.18	B	0.18	B	0.18	B	0.18	B	0.18	B
Arroyo Parkway	Cordova - Green	NB	0.45	C	0.45	D	0.45	D	0.45	D	0.45	D
	Green - Cordova	SB	0.3	B	0.3	C	0.3	B	0.3	B	0.3	C
Arroyo Parkway	Del Mar - Cordova	NB	0.3	E	0.3	E	0.3	E	0.3	E	0.3	E
	Cordova - Del Mar	SB	0.3	C	0.3	D	0.3	C	0.3	C	0.3	D
Arroyo Parkway	Bellevue - Del Mar	NB	0.51	D	0.51	D	0.51	D	0.51	D	0.51	D
	Del Mar - Bellevue	SB	0.51	B	0.51	B	0.51	C	0.51	B	0.51	B
Arroyo Parkway	California - Bellevue	NB	0.48	C	0.48	C	0.48	C	0.48	C	0.48	C
	Bellevue - California	SB	0.48	B	0.48	B	0.48	B	0.48	B	0.48	B
Summary												
LOS A			10.54		12.32		10.40		11.07		11.35	
LOS B			3.19		3.11		3.44		3.60		3.06	
LOS C			4.60		4.53		4.84		4.21		4.56	
LOS D			1.51		2.10		2.52		2.00		2.16	
LOS A - D			19.84		22.06		21.20		20.88		21.13	
LOS E			1.17		1.86		1.50		1.50		1.34	
LOS F			1.52		0.40		0.88		0.88		0.88	
TOTAL			22.53		24.32		23.58		23.26		23.35	
LOS A - D %			88%		91%		90%		90%		90%	
LOS E %			5%		8%		6%		6%		6%	
LOS F %			7%		2%		4%		4%		4%	

TABLE A2  
LINK LEVEL OF SERVICE ANALYSIS  
WITH ORANGE GROVE NARROWING

Street	Between		Future 2015 Base		Future 2015 w/ Narrowing		Alternative A		Alternative B		Alternative C		Alternative D	
			Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS
Colorado Bl	St. John - Pasadena	EB	0.24	A	0.24	A	0.24	A	0.24	A	0.24	A	0.24	A
		WB	0.24	C	0.24	C	0.24	C	0.24	C	0.24	C	0.24	C
Colorado Bl	Pasadena - Fair Oaks	EB	0.42	A	0.42	A	0.42	A	0.42	A	0.42	A	0.42	A
		WB	0.42	D	0.42	D	0.42	C	0.42	C	0.42	C	0.42	C
Colorado Bl	Fair Oaks - Raymond	EB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
		WB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
Colorado Bl	Raymond - Arroyo Pkwy	EB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
		WB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
Green St	St. John - Pasadena	EB	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A
Green St	Pasadena - Fair Oaks	EB	0.6	A	0.6	A	0.6	A	0.6	A	0.6	A	0.6	A
Green St	Fair Oaks - Raymond	EB	0.3	A	0.3	A	0.3	C	0.3	C	0.3	C	0.3	C
Green St	Raymond - Arroyo Pkwy	EB	0.21	A	0.21	A	0.21	C	0.21	C	0.21	C	0.21	C
Del Mar Bl	St. John - Pasadena	EB	0.24	B	0.24	B	0.24	A	0.36	A	0.24	B	0.24	B
		WB	0.12	A	0.12	A	0.12	A	0.12	A	0.12	A	0.12	A
Del Mar Bl	Pasadena - Fair Oaks	EB	0.46	A	0.46	B	0.46	A	0.69	A	0.46	A	0.46	A
		WB	0.46	F	0.46	F	0.46	E	0.46	F	0.46	F	0.89	C
Del Mar Bl	Fair Oaks - Raymond	EB	0.18	C	0.18	C	0.18	A	0.27	A	0.18	B	0.18	B
		WB	0.18	E	0.18	F	0.18	C	0.18	E	0.18	E	0.27	C
Del Mar Bl	Raymond - Arroyo Pkwy	EB	0.18	B	0.18	B	0.18	B	0.18	B	0.18	B	0.18	B
		WB	0.18	C	0.18	C	0.18	D	0.18	C	0.18	D	0.18	D
Bellevue Dr	Fair Oaks - Pasadena	WB	N/A	N/A	N/A	N/A	0.46	A	N/A	N/A	N/A	N/A	N/A	N/A
Bellevue Dr	Fair Oaks - Raymond	EB	N/A	N/A	N/A	N/A	0.18	A	N/A	N/A	N/A	N/A	N/A	N/A
		WB	N/A	N/A	N/A	N/A	0.18	A	N/A	N/A	N/A	N/A	N/A	N/A
Palmetto Dr	Pasadena - Fair Oaks	EB	N/A	N/A	N/A	N/A	0.46	B	N/A	N/A	N/A	N/A	N/A	N/A
California Bl	St. John - Pasadena	EB	0.18	A	0.18	A	0.27	A	0.27	A	0.27	A	0.27	A
		WB	0.18	A	0.18	A	0.09	A	0.09	A	0.09	A	0.09	A
California Bl	Pasadena - Fair Oaks	EB	0.46	A	0.46	A	0.59	A	0.46	A	0.69	A	0.69	A
		WB	0.46	A	0.46	B	0.46	A	0.46	B	0.69	A	0.46	A
California Bl	Fair Oaks - Raymond	EB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
		WB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
California Bl	Raymond - Arroyo Pkwy	EB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
		WB	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A	0.14	A
Glenarm St	Pasadena - Fair Oaks	EB	0.27	C	0.27	A	0.27	A	0.27	A	0.27	A	0.27	A
		WB	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A	0.28	A
Glenarm St	Fair Oaks - Raymond	EB	0.09	E	0.09	E	0.18	C	0.18	C	0.18	C	0.18	C
		WB	0.09	F	0.09	F	0.18	C	0.18	C	0.18	C	0.18	C
Glenarm St	Raymond - Arroyo Pkwy	EB	0.18	C	0.18	C	0.27	A	0.27	A	0.27	A	0.27	A
		WB	0.18	D	0.18	D	0.27	A	0.27	B	0.27	A	0.27	A
Orange Grove Bl	Green - Colorado	NB	0.14	C	0.07	F	0.07	F	0.07	E	0.07	F	0.07	F
		SB	0.14	C	0.07	F	0.07	F	0.07	F	0.07	F	0.07	F
Orange Grove Bl	Del Mar - Green	NB	0.46	C	0.23	F	0.23	F	0.23	E	0.23	E	0.23	E
		SB	0.46	A	0.23	C	0.23	B	0.23	B	0.23	B	0.23	B
Orange Grove Bl	Arbor St - Del Mar	NB	0.1	D	0.05	F	0.05	F	0.05	E	0.05	F	0.05	E
		SB	0.1	C	0.05	F	0.05	F	0.05	F	0.05	F	0.05	F
Orange Grove Bl	California - Arbor St	NB	0.6	E	0.3	F	0.3	F	0.3	F	0.3	F	0.3	F
		SB	0.6	C	0.3	F	0.3	F	0.3	F	0.3	F	0.3	F



TABLE A2  
LINK LEVEL OF SERVICE ANALYSIS  
WITH ORANGE GROVE NARROWING

Street	Between		Future 2015 Base		Future 2015 w/ Narrowing		Alternative A		Alternative B		Alternative C		Alternative D	
			Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS	Lane Miles	LOS
St. John Dr	Colorado - Green	SB	0.27	A	0.27	A	0.27	A	0.27	A	0.27	A	0.27	A
St. John Dr	Green - Del Mar	SB	0.46	A	0.46	A	0.46	A	0.46	A	0.46	A	0.46	A
Pasadena Av	Green - Colorado	NB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
Pasadena Av	Del Mar - Green	NB	0.46	B	0.46	B	0.46	C	0.46	B	0.46	B	0.46	B
Pasadena Av	Bellevue - Del Mar	NB	0.4	F	0.4	F	0.4	F	0.4	F	0.4	F	0.4	F
Pasadena Av	California - Bellevue	NB	0.57	F	0.57	F	0.48	F	0.48	F	0.48	F	0.48	F
Fair Oaks Av	Green - Colorado	NB	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A	0.2	A
	Colorado - Green	SB	0.2	C	0.2	C	0.2	E	0.2	E	0.2	E	0.2	E
Fair Oaks Av	Del Mar - Green	NB	0.5	B	0.5	B	0.5	B	0.5	B	0.5	B	0.5	B
	Green - Del Mar	SB	0.5	A	0.5	A	0.5	A	0.5	A	0.5	A	0.5	A
Fair Oaks Av	Bellevue - Del Mar	NB	0.34	C	0.34	D	0.34	B	0.34	C	0.34	C	0.34	C
	Del Mar - Bellevue	SB	0.34	A	0.34	A	0.34	A	0.51	A	0.34	A	0.34	A
Fair Oaks Av	California - Bellevue	NB	0.34	B	0.34	B	0.34	D	0.34	B	0.34	B	0.34	B
	Bellevue - California	SB	0.34	A	0.34	A	0.45	A	0.51	A	0.34	A	0.34	A
Raymond Av	Green - Colorado	NB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
	Colorado - Green	SB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
Raymond Av	Del Mar - Green	NB	0.54	A	0.54	A	0.54	A	0.54	A	0.54	A	0.54	A
	Green - Del Mar	SB	0.54	A	0.54	A	0.54	A	0.54	A	0.54	A	0.54	A
Raymond Av	Bellevue - Del Mar	NB	0.30	D	0.30	D	0.30	C	0.30	D	0.30	E	0.30	E
	Del Mar - Bellevue	SB	0.30	A	0.30	B	0.30	B	0.30	C	0.30	B	0.30	B
Raymond Av	California - Bellevue	NB	0.34	C	0.34	C	0.34	E	0.34	C	0.34	D	0.34	D
	Bellevue - California	SB	0.34	A	0.34	B	0.34	B	0.34	C	0.34	B	0.34	B
Arroyo Parkway	Green - Colorado	NB	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A	0.18	A
	Colorado - Green	SB	0.18	B	0.18	B	0.18	C	0.18	B	0.18	B	0.18	C
Arroyo Parkway	Cordova - Green	NB	0.45	C	0.45	D	0.45	D	0.45	D	0.45	D	0.45	D
	Green - Cordova	SB	0.3	B	0.3	B	0.3	C	0.3	B	0.3	C	0.3	C
Arroyo Parkway	Del Mar - Cordova	NB	0.3	E	0.3	E	0.3	E	0.3	E	0.3	E	0.3	E
	Cordova - Del Mar	SB	0.3	C	0.3	C	0.3	D	0.3	C	0.3	C	0.3	D
Arroyo Parkway	Bellevue - Del Mar	NB	0.51	D	0.51	D	0.51	D	0.51	D	0.51	D	0.51	D
	Del Mar - Bellevue	SB	0.51	B	0.51	B	0.51	B	0.51	B	0.51	B	0.51	B
Arroyo Parkway	California - Bellevue	NB	0.48	C	0.48	C	0.48	C	0.48	C	0.48	C	0.48	C
	Bellevue - California	SB	0.48	B	0.48	B	0.48	B	0.48	B	0.48	B	0.48	B
Summary														
LOS A			10.54		8.79		11.22		10.21		10.20		9.97	
LOS B			3.19		4.75		3.34		3.91		3.94		3.76	
LOS C			4.80		2.33		3.43		3.81		2.95		3.79	
LOS D			1.51		2.20		1.78		1.26		1.48		1.78	
LOS A - D			19.94		18.07		19.77		19.19		18.57		19.30	
LOS E			1.17		0.39		1.30		1.03		1.21		1.08	
LOS F			1.52		2.77		1.95		2.06		2.18		1.67	
TOTAL			22.53		21.23		23.02		22.28		21.96		22.05	
LOS A - D %			88%		85%		86%		86%		85%		88%	
LOS E %			5%		2%		6%		5%		6%		5%	
LOS F %			7%		13%		8%		9%		10%		8%	