

**CITY OF MONTEREY
GENERAL PLAN UPDATE
TRAFFIC STUDY**



Prepared for
The City of Monterey
Monterey County, California



TABLE OF CONTENTS

1 Introduction 1

1.1 Project Description..... 1

1.2 General Plan Development of the City of Monterey 1

2 Existing Road Network..... 2

2.1 Segments Analyzed for Existing Conditions 2

2.2 Intersections Analyzed for Existing Conditions 3

3 Existing Traffic Conditions 3

3.1 Existing Traffic Conditions - Segment Analysis Results 7

3.2 Existing Traffic Conditions - Intersection Analysis Results..... 9

3.3 Existing Traffic Conditions – Mitigation for Segments on State Highways 11

3.4 Existing Traffic Conditions – Mitigation for Segments on City Streets..... 11

3.5 Existing Traffic Conditions – Mitigation for Intersections on State Highways 12

3.6 Existing Traffic Conditions – Mitigation for Intersections on City Streets..... 13

4 General Plan (2020) Road Network..... 14

4.1 2020 Regional Road Network Improvements..... 15

4.2 2020 City of Monterey Road Network Improvements 15

4.3 Segments Studied for 2020 Conditions..... 17

4.4 Intersections Studied for 2020 Conditions..... 17

5 General Plan (2020) Traffic Conditions 18

5.1 2020 Traffic Conditions - Segment Analysis Results..... 18

5.2 2020 Traffic Conditions-Intersection Analysis Results..... 20

5.3 2020 Traffic Conditions – Mitigation of Segments on State Highways..... 22

5.4 2020 Traffic Conditions – Mitigation of Segments on City Streets 23

5.5 2020 Traffic Conditions – Mitigation at Intersections located on State
Highways 25

5.6 2020 Traffic Conditions – Mitigation at Intersections located on City Streets 25

6 Conclusions 27

6.1 Intersections 27

6.2 Segments..... 28

LIST OF TABLES

TABLE NO.	DESCRIPTION
1.	Intersections Studied for Existing Conditions
2.	City of Monterey LOS Standard Criteria
3.	LOS Standard for Roadway Segments
4.	LOS Standard for Intersections
5.	LOS Results for Segments
6a.	Existing Conditions: Segments Impacted and Mitigation Required on State Highways
6b.	Existing Conditions: Segments Impacted and Mitigation Required on City Streets
6c.	Existing Conditions: Intersections Impacted and Mitigation Required on State Highways
6d.	Existing Conditions: Intersections Impacted and Mitigation Required on City Streets
7.	Segments Studied for the 2020 Conditions
8.	Intersections Studied for the 2020 Conditions
9a.	2020 Conditions: Segments Impacted and Mitigation Required on State Highways
9b.	2020 Conditions: Segments Impacted and Mitigation Required on City Streets
9c.	2020 Conditions: Intersections Impacted and Mitigation Required on State Highways
9d.	2020 Conditions: Intersections Impacted and Mitigation Required on City Streets

LIST OF EXHIBITS

EXHIBIT NO.	DESCRIPTION
1.	CITY OF MONTEREY VICINITY MAP
1a.	CITY OF MONTEREY STREET MAP
2.	MAP SHOWING EMPLOYEE GROWTH BY TRAFFIC ANALYSIS ZONE
3.	MAP SHOWING DWELLING UNIT GROWTH
4.	MAP SHOWING DWELLING UNIT DISTRIBUTION BY TRAFFIC ANALYSIS ZONE
5.	EXISTING AVERAGE DAILY TRAFFIC VOLUMES
6.	EXISTING ROADWAY LEVELS OF SERVICE
7.	EXISTING CONDITIONS AM PEAK HOUR VOLUMES
8.	EXISTING CONDITIONS PM PEAK HOUR VOLUMES
9.	INTERSECTION LEVEL OF SERVICE SUMMARY
10.	2020 AVERAGE DAILY TRAFFIC VOLUMES

11. 2020 ROADWAY LEVELS OF SERVICE SUMMARY
12. 2020 CONDITIONS AM PEAK HOUR VOLUMES
13. 2020 CONDITIONS PM PEAK HOUR VOLUMES

LIST OF APPENDICES

APPENDIX

NO.	TITLE
A.	LEVEL OF SERVICE DESCRIPTION – SIGNALIZED INTERSECTIONS
B.	LEVEL OF SERVICE DESCRIPTION TWO-WAY STOP CONTROLLED INTERSECTION
C.	LEVEL OF SERVICE THRESHOLD VOLUMES FOR VARIOUS ROADWAY TYPES
D1.	EXISTING AM PEAK HOUR SYNCHRO ANALYSIS SHEETS
D2.	EXISTING PM PEAK HOUR SYNCHRO ANALYSIS SHEETS
E.	EXISTING CONDITIONS MITIGATED ANALYSIS WORKSHEETS
F.	FUTURE ROAD NETWORK PROJECTS
G1.	FUTURE AM PEAK HOUR SYNCHRO ANALYSIS SHEETS
G2.	FUTURE PM PEAK HOUR SYNCHRO ANALYSIS SHEETS
H.	FUTURE CONDITIONS MITIGATED ANALYSIS WORKSHEETS
I.	TRAFFIC MODEL VOLUMES FOR THE BASEYEAR (2000)
J.	TRAFFIC MODEL VOLUMES FOR THE FUTURE YEAR
K.	CITY OF MONTEREY ROADWAY CALSSIFICATION SYSTEM
L.	SEGMENT OPERATIONAL ANALYSIS WORKSHEETS

1 Introduction

1.1 Project Description

The City of Monterey is a historic town on the west coast located in the scenic Monterey Peninsula. It has approximately 30,000 residents. The City has many historic sites and buildings and the City aims to protect these sites and preserve its historic character. Highway 1 is the major regional north-south route through the City and Highway 68 links the City to the Salinas Valley and Highway 101 in the east. **Exhibit 1** is the vicinity map. **Exhibit 1a** is the city street map.

The City of Monterey is updating the current General Plan. The update is not a build-out scenario, but instead an incentive based development scenario.

The incentive based development in the City is anticipated to be located primarily in the City's "mixed use districts". These districts include Downtown, East Downtown, Lighthouse Avenue/Cannery Row and North Fremont. The primary corridors in these areas include Lighthouse Avenue, Del Monte Avenue and North Fremont Street. Subsequently the roadways and intersections that were selected for analysis in this traffic study are primarily located along these corridors. A few additional intersections were also included in the project.

This traffic study incorporates a detailed analysis of the City's existing road network within the anticipated development areas. Based on the estimated growth, trips were distributed on the road network and a traffic flow scenario developed for 2020 and analyzed.

The City has identified Capital Improvement Projects and these have been included in the 2020 scenario. Based on the analysis results additional improvements have been identified for both the existing and 2020 conditions.

1.2 General Plan Development of the City of Monterey

The City of Monterey has not grown significantly over the past 20 years and this trend is not expected to change for this General Plan update. It is expected that some growth over the next 20 years would occur in the City's "mixed use districts". The "mixed use districts" are primarily located along the Lighthouse Avenue/Cannery Row corridor, Downtown and East Downtown, and North Fremont Street corridor.

Employment Growth

Exhibit 2 shows the anticipated employee growth by Traffic Analysis Zone (TAZ) in the City. Only two TAZ's are expected to grow appreciably in employment (by between 5% and 17%). These are the military areas within the City located at the

Presidio of Monterey with 1,533 additional employees and the United States Navy Post Graduate School with 1,104 additional employees. A few zones are expected to grow in employment between 1% and 5%. The majority of zones are expected to grow less than 1%.

It is expected that a total of 8,903 new employment opportunities would be created in the City within the next 20 years. There are currently approximately 33,700 jobs within the City of Monterey.

Dwelling Unit Growth

Exhibit 3 shows the anticipated dwelling unit growth by TAZ. It is expected that the City will grow by 1,906 dwelling units (Refer to General Plan Land Use Element). These units would consist of mixed-use villages, multi-family neighborhoods and military housing units and their location is indicated in **Exhibit 4**.

2 Existing Road Network

It is expected that growth would occur in the City's mixed-use districts over the next 20 years. The following existing roadways were subsequently selected for analysis. Segments where improvements are anticipated are also included.

2.1 Segments Analyzed for Existing Conditions

Several segments have been analyzed and these are listed in Table 3. The City has a roadway classification system, which is attached as **Appendix K** to the report.

The classification includes:

- Freeways
- Major Arterials
- Minor Arterials
- Collectors
- Local Streets

The majority of intersections studied are located along the arterials where traffic is expected to increase because of land use growth for the General Plan update.

A few isolated intersections were also selected for analysis due to existing and/or future anticipated operational issues. The intersections include Highway 1 Southbound Off Ramp/Holman Highway (Highway 68), Highway 68/Olmsted Road, Highway 68/Ragsdale Drive, and Highway 68/York Road.

2.2 Intersections Analyzed for Existing Conditions

The following intersections were selected for analysis.

Table 1: Intersections Studied for Existing Conditions

#	Intersection
	STATE HIGHWAYS
13	Highway 68 / Ragsdale Drive
14	Highway 68 / York Road
15	Highway 1 SB Off Ramp/ Holman Highway
19	Highway 68 / Olmsted Road
	CITY STREETS
1	Lighthouse Avenue / David Avenue
2	Foam Street / Reeside Avenue
3	Pacific Street / Franklin Street
4	Del Monte Avenue / Washington Street
5	Lighthouse Avenue / Reeside Avenue
6	Del Monte Avenue / Camino El Estero
7	Del Monte Avenue / Camino Aguajito
8	Del Monte Avenue / Sloat Avenue
9	Fremont Street / Abrego Street
10	Fremont Street / Camino Aguajito
11	Munras Avenue / Soledad Drive
12	Lighthouse Avenue / Hoffman Avenue
16	Lighthouse Avenue / Prescott Avenue
17	Del Monte Avenue / Figueroa Street
18	Fremont Street / Casanova Avenue

3 Existing Traffic Conditions

The City provided the majority of the intersection turning volume count information for both the AM and PM peak periods. Higgins Associates counted the intersections of Munras /Soledad and Highway 1 Southbound Off Ramp/Holman Highway. Recent traffic studies were conducted at the Highway 68/Ragsdale Drive and Highway 68/Olmsted Road intersections and the available count data was used for the existing analysis. All the counts were conducted between June 2002 and December 2003. Signal timing plan information was also obtained from the City for the AM and PM peak hours.

Exhibit 5 indicates the existing Average Daily Traffic (ADT) on the street segments. **Exhibit 7** indicates the existing study intersection turning volumes for the AM peak period and **Exhibit 8** the turning volumes for the PM peak period.

Synchro 5 software was utilized in evaluating the operational levels of service at the study intersections. The analysis was performed for the weekday AM and PM peak hours using the 2000 Highway Capacity Manual (HCM) methodology. **Appendix A** summarizes the Level of Service (LOS) criteria for the signalized intersections as provided in the 2000 HCM. **Appendix B** summarizes the Level of Service (LOS) criteria for the unsignalized intersections as provided in the 2000 HCM.

LOS A represents free-flow un-congested traffic conditions. LOS F represents highly congested traffic conditions with unacceptable delay to vehicles at the intersections and on the road segments. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes.

Factors that may affect traffic flow conditions on roadway segments include intersection channelization design, type of traffic control devices, bicycle and pedestrian volumes, driveway activities, and on-street parking activities. Furthermore, urban street levels of service are based on through-vehicle travel speed for the segment or for the entire street under consideration. Travel speed is the basic service measure for urban streets.

Intersection operations are based upon the average vehicular delay at the intersection. The average delay is then correlated to a level of service. For two-way stop controlled intersections, the vehicle delay for side street traffic is analyzed. LOS for each side street movement is based on the distribution of gaps in the major street traffic stream and driver judgment in selecting gaps.

Highway 1 and the intersection along Highway 68 (Holman Highway and Highway 1 SB Off Ramp, Ragsdale Drive and Highway 68, York Road and Highway 68, and Olmsted Road and Highway 68) fall under Caltrans jurisdiction and thus Caltrans LOS Standards would apply. The existing LOS standard for Caltrans facilities is LOS C.

The City of Monterey operational standard varies by type and classification of roadways: For roadways that do not adequately serve alternative modes of transportation, the level of service standard is LOS D. For roadways that are served by alternative modes of transport, the level of service standard is LOS E and F as indicated in the following table.

Table 2: City of Monterey LOS Standard Criteria

Roadway Segment	Roadway has a Class I/II bike route connecting to the Recreation Trail	Road is served by transit with headway of less than 20 minutes and operates during the AM and PM peak hours year round	LOS Standard
1. Auto Corridor	No	No	D
2. Bicycle Corridor	Yes	No	E
3. Transit Corridor	No	Yes	E
4. Multimodal Corridor	Yes	Yes	F-2*

*Note: F-2 denotes that LOS F conditions are not exceeded two consecutive hours at any time during the day under typical weekday conditions.

Based on the above table, the following segment LOS standards would apply to the analysis in this study.

Table 3: LOS Standard for Roadway Segments

#	Segment	LOS Criteria
1	Abrego Street	D
2	Airport Road	D
3	Camino Aguajito	D
4	Camino El Estero	D
5	Casa Verde	D
6	David Avenue	D
7	Del Monte Avenue	D
8	El Dorado	D
9	Foam Street	D
10	Franklin Avenue	D
11	Garden Road	D
12	General Jim Moore	D
13	Hawthorne	D
14	Hawthorne Street	D
15	Highway 1	C
16	Highway 218	C
17	Highway 68	C
18	Josselyn Canyon	D
19	Lighthouse Avenue	D
20	Mar Vista	D

21	Mark Thomas	D
22	Munras Avenue	D
23	North Fremont Street	E
24	Olmstead	C
25	Pacific	D
26	Pearl	D
27	Pine	D
28	Prescott	D
29	Ragsdale	C
30	Reeside	D
31	Ryan Ranch	D
32	Skyline Drive	D
33	Skyline Forest	D
34	Sloat	D
35	Soledad	D
36	Tyler	D
37	Washington	D
38	Wave	D

Based on the criteria in Table 2, the following intersection LOS standards would apply in this study.

Table 4: LOS Standard for Intersections

#	Intersection	LOS Criteria
1	Lighthouse Avenue / David Avenue	D
2	Foam Street / Reeside Avenue	D
3	Pacific Street / Franklin Street	D
4	Del Monte Avenue / Washington Street	D
5	Lighthouse Avenue / Reeside Avenue	D
6	Del Monte Avenue / Camino El Estero	D
7	Del Monte Avenue / Camino Aguajito	D
8	Del Monte Avenue / Sloat Avenue	D
9	Fremont Street / Abrego Street	D
10	Fremont Street / Camino Aguajito	D
11	Munras Avenue / Soledad Drive	D
12	Lighthouse Avenue / Hoffman Avenue	D
13	Highway 68 / Ragsdale Drive (unsignalized)	C (E on worst approach)
14	Highway 68 / York Road	C
15	Highway 1 SB Off Ramp/ Holman	C

	Highway	
16	Lighthouse Avenue / Prescott Avenue	D
17	Del Monte Avenue / Figueroa Street	D
18	Fremont Street / Casanova Avenue	D
19	Highway 68 / Olmstead Road	C

3.1 Existing Traffic Conditions - Segment Analysis Results

Planning level analysis was performed to determine the LOS for the study segments. This level of analysis uses the 2000 Highway Capacity Manual volume thresholds to determine the levels of service on segments. **Appendix C** indicates the volume thresholds for the LOS analysis.

Exhibit 6 summarizes detail for the study segments. The LOS results are based on Average Daily Traffic (ADT). The ADT volumes were obtained from the base year model (Year 2000) for the City of Monterey. **Table 5** indicates the analysis results for the segments for existing conditions. **Appendix I** indicates more detailed ADT volumes for the base year model.

Table 5: Existing Conditions: LOS Analysis for Segments

Street	From:	To:	Existing Level of Service	Mitigation Required
STATE HIGHWAYS				
Highway 1	Munras Ave	Hwy 68 (Holman)	C	
Highway 1	Soledad	Aguajito	D	X
Highway 1	Fremont Avenue	Highway 68	F	X
Highway 1	Highway 218	Fremont Ave.	E	X
Highway 1	Del Monte	Hwy 218	F	X
Highway 218	North-South Rd	Hwy 68	D	X
Highway 218	N Street	Fremont	A	
Highway 68	Highway 1	Chomp Driveway	E	X
Highway 68	Garden Rd.	Josselyn Cyn	E	X
Highway 68	York Rd.	Ragsdale	E	X
CITY STREETS				
Abrego St	Fremont	El Dorado	A	
Airport Rd	Euclid	Fairground	A	
Camino Aguajito	Third	Second	A	
Camino Aquajito	Via Lavendera	Fremont	A	
Camino El Estero	Del Monte	Franklin	C	
Camino El Estero	Webster	Fremont	A	
Casa Verde	Hwy 1	Encina	B	
David	Cypress	Filmore	A	
David	Dickman	Foam	A	

David Ave	Pine	Hawthorne	A	
Del Monte Ave	Parking Garage	Tyler	A	
Del Monte Ave	Figueroa	Washington	A	
Del Monte Ave	Camino Aguajito	Camino El Estero	F	X
Del Monte Ave	Naval Post Gate	Sloat	F	X
Del Monte Ave	Casa Verde	Palo Verde	F	X
Del Monte Ave	Casa Verde	Hwy 1	E	X
El Dorado	Munras Ave	Cass	A	
Foam	Drake	Dickman	A	
Foam	Reeside	Lighthouse	C	
Foam	McClellan	Hoffman	D	
Franklin	Clay	Monroe	A	
Franklin	Alvarado	Tyler	C	
Franklin	Pacific	Van Buren	A	
Fremont	Airport Rd.	Ramona	B	
Fremont	Camino Aquajito	Hwy 1	C	
Garden Rd	Henderson	Sky Park Way	A	
General Jim Moore	Canyon Del Rey	S. Boundary Road	A	
Hawthorne	Prescott	David	B	
Hawthorne	Prescott	Hoffman	B	
Hawthorne	Dickman	Reeside	C	
Josselyn Cyn	Mark Thomas Dr.	Hwy 68	A	
Lighthouse	Prescott	David	E	X
Lighthouse	Foam	Reeside	F	X
Lighthouse Curve	Foam	Pacific	F	X
Lighthouse Tunnel	Del Monte	Pacific	D	
Mar Vista	Soledad	Skyline	A	
Mark Thomas	Old Salinas Rd.	Josselyn Cyn	D	
Mark Thomas Dr	Sylvan	Sloat	D	
Munras	Fremont	Webster	A	
Munras	Del Monte Shopping Ctr.	Soledad Dr	B	
N Fremont	Casonova	Ramona	C	
Olmstead Rd.	Hwy 68	Garden Road	A	
Pacific Street	Soledad	Alameda	A	
Pacific Street	Alameda	Grove	A	
Pacific Street	Jefferson	Madison	B	
Pacific Street	Franklin	Del Monte	C	
Pearl	Abrego	Tyler	A	
Pine	David	Irving	A	
Prescott	Oak	Pine	A	
Prescott	Lotte	Tyler	D	
Ragsdale	Hwy 68	Lower Ragsdale	B	
Reeside	Foam	Lighthouse	A	
Ryan Ranch	Park Rd.	Hwy 68	B	
Skyline Dr	Mar Vista	Vets Park	A	
Skyline Forest	Holman Hwy	Skyline Dr.	A	
Sloat	Fifth	Third	B	
Sloat	Pearl	Del Monte	A	

Soledad	Munras Ave	Pacific	D	
Tyler	Bonifacio	Franklin	A	
Washington	Franklin	Del Monte	A	
Wave	McClellan	Drake	A	

3.2 Existing Traffic Conditions - Intersection Analysis Results

Synchro 5 software was utilized in evaluating the Existing operational levels of service at the study intersections.

The study intersections were analyzed during the AM peak hour and the PM peak hour. **Exhibit 9a** for State Highways and **Exhibit 9b** for City Streets is a summary of the LOS results for the intersection analysis for both the AM and PM peak hours.

The signalized intersection of the Lighthouse Avenue / David Avenue operates at LOS B during the AM peak hour and LOS D during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Foam Street / Reeside Avenue operates at LOS A during the AM peak hour and LOS B during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Pacific Street / Franklin Street operates at LOS B during both the AM and the PM peak hours, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Del Monte Avenue / Washington Street operates at LOS D during the AM peak hour and LOS E during the PM peak hours, thus with an LOS standard of D mitigation is required.

The signalized intersection of the Lighthouse Avenue / Reeside Avenue operates at LOS D during the AM peak hour and LOS C during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Del Monte Avenue / Camino El Estero operates at LOS C during the AM peak hour and LOS D during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Del Monte Avenue / Camino Aguajito operates at LOS A during the AM peak hour and LOS D during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Del Monte Avenue / Sloat Avenue operates at LOS A during the AM peak hour and LOS B during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Fremont Street / Abrego Street operates at LOS B during the AM peak hour and LOS B during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Fremont Street / Camino Aguajito operates at LOS D during the AM peak hour and LOS F during the PM peak hour and mitigation is required.

The signalized intersection of the Munras Avenue / Soledad Drive operates at LOS C during the AM peak hour and LOS F during the PM peak hour and mitigation is required.

The signalized intersection of the Lighthouse Avenue / Hoffman Avenue operates at LOS A during both the AM and the PM peak hours, thus with an LOS standard of D no mitigation is required.

The unsignalized intersection of the Highway 68 / Ragsdale Drive operates at LOS E during the AM peak hour and LOS F during the PM peak hour on the worst approaches, respectively. With a LOS standard of C mitigation is recommended.

The signalized intersection of the Highway 68 / York Road operates at LOS B during the AM peak hour and LOS C during the PM peak hour, thus with an LOS standard of C no mitigation is required.

The signalized intersection of the Highway 1 SB Off Ramp/ Holman Highway operates at LOS F during both the AM and the PM peak hours and mitigation is required.

The signalized intersection of the Lighthouse Avenue / Prescott Avenue operates at LOS B during the AM peak hour and LOS B during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Del Monte Avenue / Figueroa Street operates at LOS B during the AM peak hour and LOS B during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Fremont Street / Casanova Avenue operates at LOS D during the AM peak hour and LOS D during the PM peak hour, thus with an LOS standard of D no mitigation is required.

The signalized intersection of the Highway 68 / Olmsted Road operates at LOS C during the AM peak hour and LOS C during the PM peak hour, thus with an LOS standard of C no mitigation is required.

The attached **Appendix D1** and **D2** contain the level of service calculation sheets of the Existing operational LOS analysis at the study intersections.

3.3 Existing Traffic Conditions – Mitigation for Segments on State Highways

The segments in Table 6a are located on State Highways and operate at unacceptable LOS standards. The theoretical number of lanes that would be required to mitigate the street segments is indicated as well as the corresponding LOS. Alternative measures are available to mitigate the impacts. These include Intelligent Transportation System type improvements and Travel Demand Management type measures. These measures could reduce the impacts to "less than significant" if implemented.

Table 6a: Existing Conditions: Segments Impacted and Mitigation Required on State Highways

Street	From:	To:	Level Of Service	Theoretical Mitigated with Lane Capacity Only		Mitigation Alternative	Result
				No. of Lanes Required	Level of Service		
Highway 1	Soledad	Aguajito	D	6	B	Regional Impact Fee	Less than Significant Impact
Highway 1	Fremont Avenue	Highway 68	F	6	D		
Highway 1	Highway 218	Fremont Ave.	E	6	C		
Highway 1	Del Monte	Hwy. 218	F	6	C		
Highway 218	North-South Rd.	Hwy. 68	D	4	A		
Highway 68	Highway 1	Chomp Driveway	E	4	A		
Highway 68	Garden Rd.	Josselyn Cyn.	E	4	A		
Highway 68	York Road	Ragsdale	E	4	A		

3.4 Existing Traffic Conditions – Mitigation for Segments on City Streets

The segments in Table 6b are located on State Highways and operate at unacceptable LOS standards. The theoretical number of lanes that would be required to mitigate the street segments is indicated as well as the corresponding LOS. Alternative measures are available to mitigate the impacts. These include Intelligent Transportation System type improvements and Travel Demand Management type measures. It is not included in the scope of this study to quantify the result of such measures. These measures could reduce the impacts to "less than significant" if implemented.

Table 6b: Existing Conditions: Segments Impacted and Mitigation Required on City Streets

Street	From:	To:	Level of Service	Theoretical Mitigated with Lane Capacity Only		Mitigation Alternative	Result
				No. of Lanes Required	Level of Service		
Del Monte Ave	Camino Aguajito	Camino El Estero	F	6	C	Improve Transit Service Apply ITS and TDM	Less than Significant Impact
Del Monte Ave	Naval Post Gate	Sloat	F	6	C		
Del Monte Ave	Casa Verde	Palo Verde	F	6	C		
Del Monte Ave	Casa Verde	Hwy 1	E	6	C		
Lighthouse	Prescott	David	E	6	A		
Lighthouse	Foam	Reeside	F	6	C		
Lighthouse Curve	Foam	Pacific	F	8	D		

3.5 Existing Traffic Conditions – Mitigation for Intersections on State Highways

Based on the existing conditions analysis, the following intersections require mitigation:

- Highway 68 / Ragsdale Drive
- Highway 1 SB Off Ramp/ Holman Highway

Mitigation required for the intersections are indicated in **Exhibit 9a** for State Highways and **Exhibit 9b** for City Streets. The corresponding LOS is also indicated. All intersections would operate at acceptable levels of service for the existing conditions if the improvements were implemented. The LOS worksheets are attached in **Appendix E**.

Table 6c is a summary of the State Highway impacted intersections and the mitigation required.

Table 6c: Existing Conditions: Intersections Impacted and Mitigation Required on State Highways

Intersection	Existing LOS for Worse Case	Mitigation Required	Mitigated LOS
Highway 68 / Ragsdale Drive	F	Install half-signal and widen Hwy 68 to 4 lanes (Regional Impact Fee)	A
Highway 1 SB Off Ramp/ Holman Highway	F	Add SBL and Free SBR and change signal timing to eliminate split phase operation	B

Widening Highway 68 from Highway 218 to Ragsdale Drive and installing a half signal at the Highway 68 / Ragsdale Drive intersection is fully funded. The project is in the final design phase and construction is scheduled to begin in the spring of 2004 and is expected to be completed by the end of 2004. The signalized intersection would operate at LOS A during the AM peak hour and LOS A during the PM peak hour.

The signalized intersection of the Highway 1 SB Off Ramp/ Holman Highway has 728 SBR movements during the PM peak hour. Only one lane serves this high movement during a permitted signal phase. The result is that queues form on the southbound off-ramp on Highway 1 and on Highway 68 westbound from the interchange. Due to existing geometric constraints and an anticipated growth in this movement in the future it is recommended that the SBR movement be constructed to allow free southbound right-turn movements. This mitigation measure would also require the widening of Holman Highway to the west of the interchange. The intersection would operate at LOS B during both the AM and PM peak hour.

3.6 Existing Traffic Conditions – Mitigation for Intersections on City Streets

Based on the existing conditions analysis, the following intersections require mitigation:

- Fremont Street / Camino Aguajito
- Munras Avenue / Soledad Drive

Mitigation required for the intersections are indicated in **Exhibit 9a** for State Highways and **Exhibit 9b** for City Streets. The corresponding LOS is also indicated. All intersections would operate at acceptable levels of service for the

existing conditions if the improvements were implemented. The LOS worksheets are attached in **Appendix E**.

Table 6d a summary of the City street impacted intersections and mitigation required.

Table 6d: Existing Conditions: Intersections Impacted and Mitigation Required on City Streets

Intersection	Existing LOS for Worst Case	Mitigation Required	Mitigated LOS for Worst Case
Fremont Street / Camino Aguajito	F	2 nd SBL-lane	D
Munras Avenue / Soledad Drive	F	New signal timing plan	D
Washington/Del Monte	E	Planned City Improvements – eliminate north-south traffic movements	D

The PM peak hour SBL turn volume is 385 vehicles and a second left-turn lane is required at the intersection of Fremont Street / Camino Aguajito. If this lane is provided and the NBL and SBL turn movements operate in a protected phase, the intersection would be mitigated. The northbound lane geometry would also have to be changed to consist of 1NBL, 1 NBT and 1 NBR. This shared NBL/T would thus be re-stripped. The intersection would operate at LOS D during both the AM and PM peak hours.

If the splits at the intersection of Munras Avenue / Soledad Drive are optimized and the cycle length increased to 100 seconds for the PM peak hour, the intersection would be mitigated. The intersection would then operate at LOS D during the PM peak hour.

The City plans to improve the intersection of Del Monte Avenue/Washington Avenue. The improvements would include the elimination of northbound through movements from Washington Avenue to Lighthouse Curve. Westbound traffic from Del Monte to Lighthouse Curve would then be uncontrolled. A pedestrian bridge is also planned across Lighthouse Curve.

4 General Plan (2020) Road Network

It is anticipated that the incentive growth scenario developed in the General Plan Update would be fully developed by 2020. The 2020 traffic volumes are thus the maximum

traffic that would be expected on the City of Monterey road network based on the assumptions for development within the next 20 years.

4.1 2020 Regional Road Network Improvements

The 2002 Monterey County Regional Transportation Plan (RTP) of the Transportation Agency for Monterey County (TAMC) was adopted in February 2002. This report contains roadway improvement projects in and around the City of Monterey. Staff members from AMBAG, TAMC and the City of Monterey identified these projects, together with some unfunded projects to be analyzed in the City's traffic model for the future year traffic analysis. The detailed project list is included in **Appendix F**.

The following projects are located within the City of Monterey:

The projects include the following:

1. Holman Highway (State Route 68) widening from Highway 1 to CHOMP (Community Hospital of the Monterey Peninsula)
2. Construct a connector road between Upper Ragsdale Drive and South Boundary Road
3. Widening Del Monte between Camino El Estero and Sloat Avenue (See section 4.2 for detail)
4. Fremont Street/Camino Aguajito improvements (See section 4.2 for detail)
5. Del Monte Avenue/Figueroa Street improvements (See section 4.2 for detail)
6. Lighthouse Avenue/David Avenue improvements (See section 4.2 for detail)
7. Del Monte Avenue/ Washington Avenue improvements (See section 4.2 for detail)

4.2 2020 City of Monterey Road Network Improvements

The following Capital Improvement Program (CIP) projects for the City have been included in the 2020 scenario. These are included in the City of Monterey Model Network for 2020.

Del Monte Widening (Camino El Estero – Sloat Avenue)

The project includes the widening of the roadway and the addition of lanes at the intersections along Del Monte Avenue between Camino El Estero and Sloat Avenue. Del Monte would have three eastbound lanes and two westbound lanes on this section with a raised median. The signalized intersection of Del Monte Avenue and Camino El Estero would have the following lane configuration.

- 2NBL, 1NBR on Camino El Estero
- 1EBL, 3EBT, 1EBR on Del Monte Avenue

- 1WBL, 3WBT on Del Monte Avenue

The signalized intersection of Del Monte Avenue and Sloat Avenue would have the following lane configuration.

- 2NBL, 1NBR on Sloat Avenue
- 2EBT, 1EBT/R on Del Monte Avenue
- 1 WBL, 2 WBT on Del Monte Avenue

The unsignalized intersections of Del Monte Avenue with Park Avenue and Ocean Avenue would be controlled on the minor approaches. No left-turn would be allowed on Del Monte Avenue, except for an eastbound left turn on Del Monte to the extension of Park Avenue to the north. A median break and separate turn pocket would be provided for this movement.

Fremont Street/Camino Aguajito intersection improvements

The improved lane configuration for this intersection would be as follows.

- 2NBL, 1NBT, 1NBR on Camino Aguajito
- 2SBL, 1SBT, 1SBR on Camino Aguajito
- 1EBL, 2EBT, 1EBR on Fremont Street
- 1WBL, 3WBT, 1WBR on Fremont Street

Del Monte Avenue/Figueroa Street intersection improvements

The improved lane configuration for this intersection would be as follows.

- 2NBL, 1NBT/R on Figueroa Street
- 2SBL, 1SBT, 1SBR on Figueroa Street
- 1EBL, 3EBT/R on Del Monte Avenue
- 1WBL, 3WBT, 1WBR on Del Monte Avenue

Lighthouse Avenue/David Avenue intersection improvements

The improved lane configuration for this intersection would be as follows.

- 1NBL, 1NBT, 1NBR on Lighthouse Street
- 1SBL, 1SBT/R on Lighthouse Street
- 1EBL, 1EBT, 1EBR on David Avenue
- 1WBL, 1WBT, 1WBR on David Avenue

This improvement has been implemented since the study was initiated and the traffic counts conducted. It is thus not a planned project for further General Plan purposes.

The City also plans to improve the intersection of Del Monte Avenue/Washington Avenue. The improvements would include the elimination of northbound through movements from Washington Avenue to Lighthouse Curve. Westbound traffic from Del Monte to Lighthouse Curve would then be uncontrolled. A pedestrian bridge is also planned across Lighthouse Curve.

4.3 Segments Studied for 2020 Conditions

The following future segments were studied as part of the project. The selection of these segments are based on improvements that would occur on the segments as well as where traffic volumes have increased based on the anticipated land-use growth.

The segments that have been analyzed are listed in **Table 3**. The City has a roadway classification system, which is attached as **Appendix K** to the report.

The classification includes:

- Freeways
- Major Arterials
- Minor Arterials
- Collectors
- Local Streets

4.4 Intersections Studied for 2020 Conditions

The following intersections were studied for the future scenario:

Table 7: Intersections Studied for the 2020 Conditions

#	Intersection
	STATE HIGHWAYS
13	Highway 68 / Ragsdale Drive
14	Highway 68 / York Road
15	Highway 1 SB Off Ramp/ Holman Highway
19	Highway 68 / Olmsted Road
	CITY STREETS
1	Lighthouse Avenue / David Avenue
2	Foam Street / Reeside Avenue
3	Pacific Street / Franklin Street
4	Del Monte Avenue / Washington Street
5	Lighthouse Avenue / Reeside Avenue
6	Del Monte Avenue / Camino El Estero

7	Del Monte Avenue / Camino Aguajito
8	Del Monte Avenue / Sloat Avenue
9	Fremont Street / Abrego Street
10	Fremont Street / Camino Aguajito
11	Munras Avenue / Soledad Drive
12	Lighthouse Avenue / Hoffman Avenue
16	Lighthouse Avenue / Prescott Avenue
17	Del Monte Avenue / Figueroa Street
18	Fremont Street / Casanova Avenue

5 General Plan (2020) Traffic Conditions

Planning level analysis was performed to determine the LOS for the study segments. This level of analysis uses the 2000 Highway Capacity Manual volume thresholds to determine the levels of service on segments. **Appendix C** indicates the volume thresholds for the LOS analysis.

Intersection and roadway segment traffic operations are evaluated using the Level of Service (LOS) concept. LOS is a qualitative description of an intersection and roadway's operation, ranging from LOS A to LOS F. LOS descriptions for signalized intersections are shown in **Appendix A**.

Exhibit 10 indicates the 2020 Average Daily Traffic (ADT) on the street segments. **Exhibit 12** indicates the 2020 study intersection turning volumes for the AM peak period and **Exhibit 13** the turning volumes for the PM peak period.

5.1 2020 Traffic Conditions - Segment Analysis Results

Planning level analysis was performed to determine the LOS for the study segments. The scope of the study did not allow for HCS operational analysis.

Exhibit 11 summarizes the analysis detail for the study segments. The LOS results are based on Average Daily Traffic (ADT). The ADT volumes were obtained from the future year model (Year 2020) for the City of Monterey. **Appendix J** indicates future volumes in more detail. **Table 8** indicates the LOS analysis results.

Table 8: LOS Analysis for Segments

Street	From:	To:	Level of Service	Mitigation Required
STATE	HIGHWAYS			
Highway 1	Munras Ave	Hwy 68 (Holman)	D	
Highway 1	Soledad	Aguajito	E	X
Highway 1	Fremont Avenue	Highway 68	C	
Highway 1	Highway 218	Fremont Ave.	D	X
Highway 1	Del Monte	Hwy 218	F	X
Highway 218	General Jim Moore Blvd	Hwy 68	D	X
Highway 218	N Street	Fremont	A	
Highway 68	Highway 1	Chomp Driveway	B	
Highway 68	Garden Rd.	Josselyn Cyn	E	X
Highway 68	York Rd.	Ragsdale	E	X
CITY	STREETS			
Abrego St	Fremont	El Dorado	A	
Airport Rd	Euclid	Fairground	A	
Camino Aguajito	Third	Second	B	
Camino Aquajito	Via Lavendera	Fremont	A	
Camino El Estero	Del Monte	Franklin	B	
Camino El Estero	Webster	Fremont	A	
Casa Verde	Hwy 1	Encina	A	
David Ave	Cypress	Filmore	B	
David Ave	Dickman	Foam	C	
David Ave	Pine	Hawthorne	B	
Del Monte	Parking Garage	Tyler	A	
Del Monte Ave	Figueroa	Washington	C	
Del Monte Ave	Camino Aguajito	Camino El Estero	E	X
Del Monte Ave	Naval Post Gate	Sloat	F	X
Del Monte Ave	Casa Verde	Palo Verde	F	X
Del Monte Ave	Casa Verde	Hwy 1	F	X
El Dorado	Munras Ave	Cass	B	
Foam	Drake	Dickman	A	
Foam	Reeside	Lighthouse	D	
Foam	McClellan	Hoffman	D	
Franklin	Clay	Monroe	A	
Franklin	Alvarado	Tyler	D	
Franklin	Pacific	Van Buren	A	
Fremont	Airport Rd.	Ramona	A	
Fremont	Camino Aquajito	Hwy 1	E	
Garden Rd	Henderson	Sky Park Way	A	
General Jim Moore	Canyon Del Rey	S. Boundary Road	A	
Hawthorne	Prescott	David	B	
Hawthorne	Hoffman	Prescott	C	
Hawthorne	Dickman	Reeside	C	
Josselyn Cyn	Mark Thomas Dr.	Hwy 68	A	

Lighthouse	Prescott	David	F	X
Lighthouse	Foam	Reeside	F	X
Lighthouse Curve	Foam	Pacific	F	X
Lighthouse Tunnel	Del Monte	Pacific	E	X
Mar Vista	Soledad	Skyline	A	
Mark Thomas	Old Salinas Rd.	Josselyn Cyn	D	
Mark Thomas Dr	Sylvan	Sloat	B	
Munras	Fremont	Webster	C	
Munras	Del Monte Shopping Ctr.	Soledad Dr	C	
N Fremont	Casanova	Ramona	D	
Olmstead Rd.	Hwy 68	Garden Road	B	
Pacific Street	Soledad	Alameda	B	
Pacific Street	Alameda	Grove	B	
Pacific Street	Jefferson	Madison	C	
Pacific Street	Franklin	Del Monte	E	X
Pearl	Abrego	Tyler	A	
Pine	David	Irving	A	
Prescott	Oak	Pine	A	
Prescott	Lotte	Tyler	C	
Ragsdale	Hwy 68	Lower Ragsdale	A	
Reeside	Foam	Lighthouse	A	
Ryan Ranch	Park Rd.	Hwy 68	B	
Skyline Dr	Mar Vista	Vets Park	A	
Skyline Forest	Holman Hwy	Skyline Dr.	A	
Sloat	Fifth	Third	B	
Sloat	Pearl	Del Monte	A	
Soledad	Munras Ave	Pacific	A	
Tyler	Bonifacio	Franklin	A	
Washington	Franklin	Del Monte	A	
Wave	McClellan	Drake	A	

5.2 2020 Traffic Conditions-Intersection Analysis Results

Synchro 5 software was utilized in evaluating the 2020 operational levels of service at the study intersections.

The study intersections were analyzed during the AM peak hour and the PM peak hour. The LOS results are summarized in **Exhibit 9a** for State Highways and **Exhibit 9b** for City Streets. The analysis worksheets are attached in **Appendix G1 and G2**.

The signalized intersection of the Lighthouse Avenue / David Avenue would operate at LOS B during the AM peak hour and LOS D during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Foam Street / Reeside Avenue would operate at LOS B during the AM peak hour and LOS C during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Pacific Street / Franklin Street would operate at LOS B during the AM peak hour and LOS D during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Del Monte Avenue / Washington Street would operate at LOS C during the AM peak hour and LOS C during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Lighthouse Avenue / Reeside Avenue would operate at LOS F during both the AM peak and the PM peak hours with a LOS standard of D. Thus, mitigation is required.

The signalized intersection of the Del Monte Avenue / Camino El Estero would operate at LOS D during both the AM and the PM peak hours with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Del Monte Avenue / Camino Aguajito would operate at LOS B during both the AM and the PM peak hours with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Del Monte Avenue / Sloat Avenue operates at LOS A during the AM peak hour and LOS B during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Fremont Street / Abrego Street would operate at LOS B during the AM peak hour and LOS C during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Fremont Street / Camino Aguajito would operate at LOS E during the AM peak hour and LOS F during the PM peak hour and mitigation is required.

The signalized intersection of the Munras Avenue / Soledad Drive would operate at LOS C during the AM peak hour and LOS D during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Lighthouse Avenue / Hoffman Avenue would operate at LOS B during both the AM and the PM peak hours with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Highway 68 / Ragsdale Drive would operate at LOS B during both the AM and the PM peak hours with a LOS standard of C. Thus, no mitigation is required.

The signalized intersection of the Highway 68 / York Road would operate at LOS C during the AM peak hour and LOS E during the PM peak hour with a LOS standard of C and mitigation is required.

The signalized intersection of the Highway 1 SB Off Ramp/ Holman Highway would operate at LOS C during both the AM and the PM peak hours with a LOS standard of C. Thus, no additional mitigation over and above the mitigation identified in the existing conditions is required.

The signalized intersection of the Lighthouse Avenue / Prescott Avenue would operate at LOS B during the AM peak hour and LOS C during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Del Monte Avenue / Figueroa Street would operate at LOS B during the AM peak hour and LOS C during the PM peak hour with a LOS standard of D. Thus, no mitigation is required.

The signalized intersection of the Fremont Street / Casanova Avenue would operate at LOS B during the AM peak hour and LOS E during the PM peak hour with a LOS standard of D and mitigation is required.

The signalized intersection of the Highway 68 / Olmsted Road would operate at LOS E during the AM peak hour and LOS E during the PM peak hour with a LOS standard of C and mitigation is required.

Exhibit 9a for State Highways and **Exhibit 9b** for City Streets summarizes the average delays and LOS for study intersections during the AM and PM peak hours under the Future conditions. The attached **Appendix G1** and **G2** contain the level of service calculation sheets of the Existing operational LOS analysis at the study intersections.

5.3 2020 Traffic Conditions – Mitigation of Segments on State Highways

The segments in **Table 9a** would operate at unacceptable LOS standards. The theoretical number of lanes that would be required to mitigate the street segment is indicated as well as the corresponding LOS. Alternative measures are available to mitigate the impacts. These include Intelligent Transportation System type improvement projects and Travel Demand Management type measures. The impacts could be reduced to "less than significant" if these measures are implemented. The planned improvement projects listed earlier would also contribute towards mitigating the impacts and these are indicated as such.

Table 9a: 2020 Conditions: Segments Impacted and Mitigation Required on State Highways

Street	From:	To:	Level of Service	Theoretical Mitigated with Lane Capacity Only		Mitigation Alternative	Result
				No. of Lanes Required	Level of Service		
Highway 1	Soledad	Aguajito	E	6	C	Regional Impact Fee Improvements	Less than Significant Impact
Highway 1	Highway 218	Fremont Ave.	D	8	C		
Highway 1	Del Monte	Hwy 218	F	8	C		
Highway 218	General Jim Moore	Hwy 68	D	4	A		
Highway 68	Garden Rd.	Josselyn Cyn	E	4	A		
Highway 68	York Rd.	Ragsdale	E	4	B		

5.4 2020 Traffic Conditions – Mitigation of Segments on City Streets

The segments in **Table 9b** would operate at unacceptable LOS standards. The theoretical number of lanes that would be required to mitigate the street segment is indicated as well as the corresponding LOS. Alternative measures are available to mitigate the impacts. These include Intelligent Transportation System type improvement projects and Travel Demand Management type measures. The impacts could be reduced to "less than significant" if these measures are implemented. The planned improvement projects listed earlier would also contribute towards mitigating the impacts and these are indicated as such.

Table 9b: 2020 Conditions: Segments Impacted and Mitigation Required on City Streets

Street	From:	To:	Level of Service	Theoretical Mitigated with Lane Capacity Only		Planned and Additional Alternative Improvements	Mitigation Alternative	Result
				No. of Lanes Required	Level of Service			
Del Monte Ave	Camino Aguajito	Camino El Estero	E	8	C	Widen Del Monte ¹	Improve Transit Services, Apply ITS and TDM and Implement Planned and Additional	Less than Significant Impacts
Del Monte Ave	Naval Post Gate	Sloat	F	8	B			
Del Monte Ave	Casa Verde	Palo Verde	F	8	C			
Del Monte Ave	Casa Verde	Hwy 1	F	8	C			
Fremont	Camino Aquajito	Hwy 1	E	6	D	See Note ²		
Lighthouse	Prescott	David	F	6	B			
Lighthouse	Foam	Reeside	F	8	C	Re-stripe Pacific ³		
Lighthouse Curve	Foam	Pacific	F	8	C			
Lighthouse Tunnel	Pacific	Del Monte	E	6	C			
Pacific Street	Franklin	Del Monte	E	4	A	Improve-ments		

Notes:

1. The project includes the widening of the roadway and the addition of lanes at the intersections along Del Monte Avenue between Camino El Estero and Sloat Avenue. Del Monte would have three eastbound lanes and two westbound lanes on this section with a raised median. The signalized intersection of Del Monte Avenue and Camino El Estero would have the following lane configuration.

- 2NBL, 1NBR on Camino El Estero
- 1EBL, 3EBT, 1EBR on Del Monte Avenue
- 1WBL, 3WBT on Del Monte Avenue

The signalized intersection of Del Monte Avenue and Sloat Avenue would have the following lane configuration.

- 2NBL, 1NBR on Sloat Avenue
- 2EBT, 1EBT/R on Del Monte Avenue
- 1 WBL, 2 WBT on Del Monte Avenue

The unsignalized intersections of Del Monte Avenue with Park Avenue and Ocean Avenue would be controlled on the minor approaches. No left-turn would be allowed on Del Monte Avenue, except for an eastbound left turn on Del Monte to the extension of Park Avenue to the north. A median break and separate turn pocket would be provided for this movement.

The improvements would include the elimination of northbound through movements from Washington Avenue to Lighthouse Curve. Westbound traffic from Del Monte to Lighthouse Curve would then be uncontrolled. A pedestrian bridge is also planned across Lighthouse Curve.

2. The improvement includes the widening of the northbound on-ramp from the intersection to Highway 1.
3. The improvement includes the provision of a 2nd SBL turn lane between Franklin and Del Monte, which could be striped if the on-street parking is eliminated.

5.5 2020 Traffic Conditions – Mitigation at Intersections located on State Highways

Based on the future conditions analysis, the following intersections require mitigation:

- Highway 68 / Olmsted Drive
- Highway 68 / York Road

The analysis worksheets for the mitigated intersection are attached in **Appendix H**.

Table 9d: 2020 Conditions: Intersections Impacted and Mitigation Required on State Highways

Intersection	Existing LOS for Worst Case	Mitigation Planned/Required	Mitigated LOS for Worst Case
Highway 68 / Olmstead	E	Re-stripe SB and NB and widen Hwy 68 to 4 lanes (Regional Impact Fee)	C
Highway 68 / York	E	Add SBL and Free SBR and change signal operation to eliminate split phase operation (Regional Impact Fee)	C

5.6 2020 Traffic Conditions – Mitigation at Intersections located on City Streets

Based on the future conditions analysis, the following intersections require mitigation:

- Lighthouse Avenue / Reeside Avenue
- Fremont Street / Camino Aguajito
- Fremont Street / Casanova Avenue

The analysis worksheets for the mitigated intersection are attached in **Appendix H**.

Table 9d: 2020 Conditions: Intersections Impacted and Mitigation Required on City Streets

Intersection	Existing LOS for Worst Case	Mitigation Planned/Required	Mitigated LOS for Worst Case
Lighthouse Avenue / Reeside Avenue	F	See Note ¹ for geometric layout.	D
Fremont Street / Camino Aguajito	F	See Note ² for geometric layout	D
Fremont Street / Casanova Avenue	E	Optimize signal timing for the PM peak hour and coordinate with Highway 218 intersection at Fremont	C

Note: 1. It is planned to establish a one-way pair between Reeside and Dickman. The split phase signal operation at Reeside would then be eliminated and the signal would operate at acceptable LOS.

2. New configuration: 1-EBL, 3-EBT, 1-EBR, 2-WBL, 3-WBT, 1-WBR, 2-NBL, 2-NBT, 1-NBR, 3-SBL, 1-SBT/R.

By converting Reeside Avenue and Dickman Avenue into one-way pairs, the split phase signal operation at Lighthouse/Reeside could be eliminated at sufficient capacity would be available to accommodate the future volumes at this intersection. The intersection LOS will improve from LOS F with a delay of 139.3 seconds to LOS C with a delay of 26.2 seconds during the PM peak hour.

Significant improvements are required at the intersection of the Fremont Street / Camino Aguajito. These improvements are different from the CIP improvements identified for the intersection. The following lane layout would result in a LOS D for the intersection.

- 1EBL, 3EBT, 1EBR
- 2WBL, 3WBT, 1WBR
- 2NBL, 2NBT, 1NBR
- 3SBL, 1SBT/R

It is also recommended that the NBR lane be lengthened up to the Glenwood/Via Lavandera to accommodate the merge maneuvers on this approach and to prevent right turn vehicles from blocking through movements.

The signal timing for the intersection of the Fremont Street / Casanova Avenue would have to be optimized to increase the capacity at acceptable LOS.

The northbound and southbound approaches at the signalized intersection of the Highway 68 / Olmsted Road should be re-stripped to accommodate separate left-

turns and the signal timing be changed to include protected left-turns. Also, the eastbound and westbound approaches should have 2 through lanes in each direction to mitigate the intersection to operate at acceptable LOS C.

The southbound approach at the intersection of the Highway 68 / York Road should be reconfigured to accommodate the following lane configuration:

- 1SBL, 1SBL/T/R, 1SBR

The intersection would then operate at acceptable LOS.

6 Conclusions

6.1 Intersections

The majority of the intersections analyzed would operate at acceptable levels of service for both the existing and the General Plan traffic conditions. The intersections analyzed fall within the City of Monterey and Caltrans jurisdiction.

The following intersections require mitigation in the existing conditions:

1. Fremont Street / Camino Aguajito
2. Munras Avenue / Soledad Drive
3. Del Monte Avenue/ Washington Avenue
4. Highway 68 / Ragsdale Drive
5. Highway 1 SB Off Ramp/ Holman Highway

The following intersections require mitigation in the General Plan future conditions:

1. Lighthouse Avenue / Reeside Avenue
2. Fremont Street / Camino Aguajito
3. Fremont Street / Casanova Avenue
4. Highway 68 / Olmsted Drive
5. Highway 68 / York Road

Intersection improvements include the change of intersection control e.g. signalization, adding lanes and providing a layout that would cater for travel demand within the City.

6.2 Segments

The majority of the street segments analyzed operates at acceptable LOS for the existing conditions and would continue to operate at acceptable levels of service in the future conditions. The following street segments require mitigation in the existing conditions:

Street	From:	To:
Del Monte	Camino El Estero	Camino Aguajito
Highway 1	Aguajito	Soledad
Highway 1	Highway 68	Fremont Avenue
Highway 1	Highway 218	Fremont Ave.
Highway 1	Highway 218	Del Monte
Highway 218	Hwy 68	North-South Rd
Highway 68	Chomp Driveway	Highway 1
Highway 68	Josselyn Cyn	Garden Rd.
Highway 68	Ragsdale	York Rd.
Lighthouse	David	Prescott

The following street segments require mitigation in the future conditions:

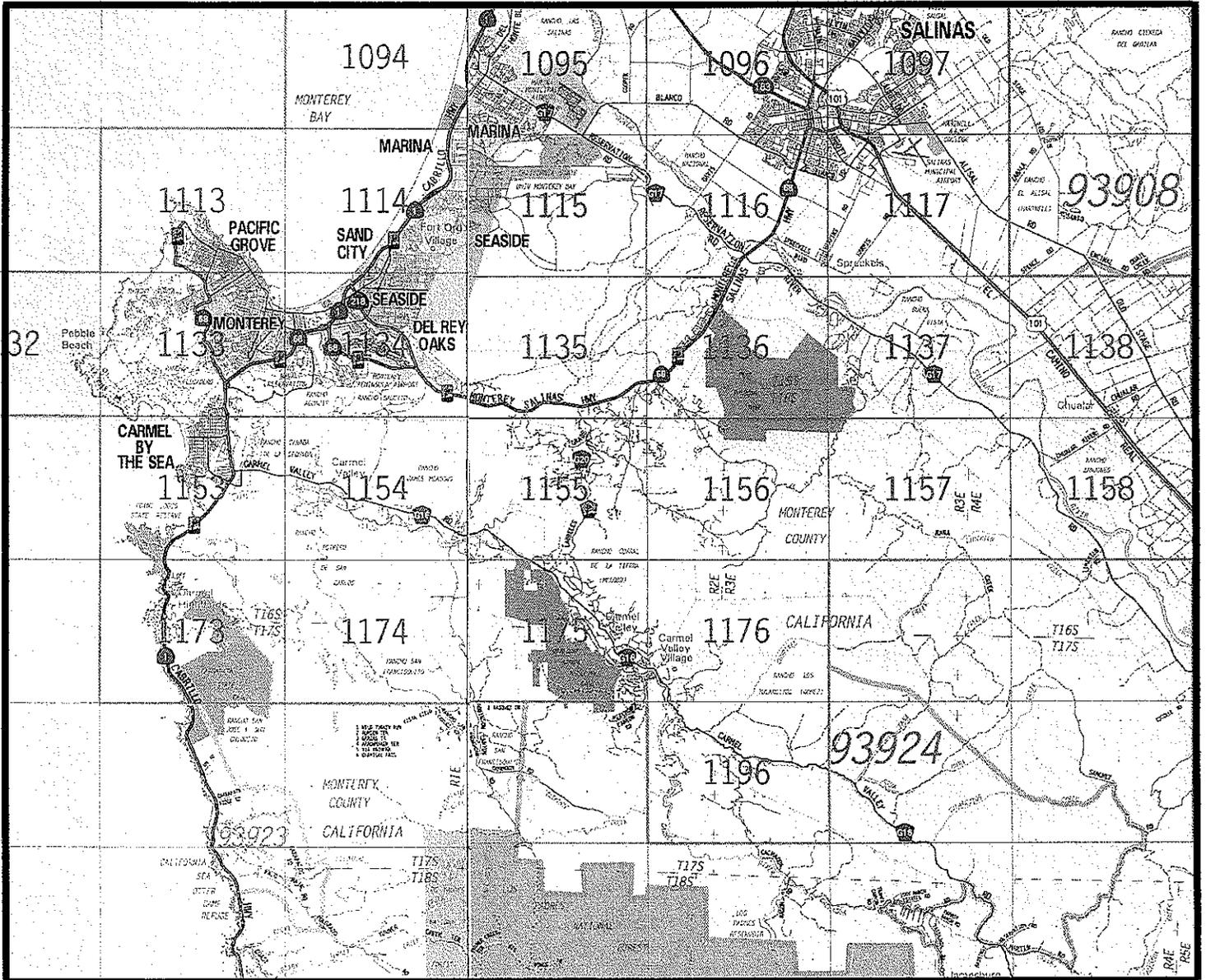
Street	From:	To:
Fremont	Hwy 1	Camino Aguajito
Highway 1	Aguajito	Soledad
Highway 1	Fremont Ave.	Highway 218
Highway 1	Hwy 218	Del Monte
Highway 218	Hwy 68	General Jim Moore
Highway 68	Josselyn Cyn	Garden Rd.
Highway 68	Ragsdale	York Rd.
Lighthouse Tunnel	Pacific	Del Monte
Lighthouse	David	Prescott
Pacific	Del Monte	Franklin

By promoting transit usage amongst road users and with streets operating at congested levels of service, trips could be converted to transit mode instead of private vehicle mode and thus private vehicle volumes could remain the same or reduce for future conditions.

To increase transit usage, the transit service would have to operate at levels of service that is better than that of the private vehicle levels of service both in operational and safety measures. To increase transit usage along the major corridors, transit priority lanes and transit priority intersection control would have to be provided.

Funds that would be required for roadway improvements could instead be used to promote the City's transit services to mitigate the impacts of the expected growth within the General Plan update.

CITY OF MONTEREY: GENERAL PLAN UPDATE



HIGGINS ASSOCIATES
CIVIL & TRAFFIC ENGINEERS

**EXHIBIT 1 –
CITY OF MONTEREY
VICINITY
MAP**

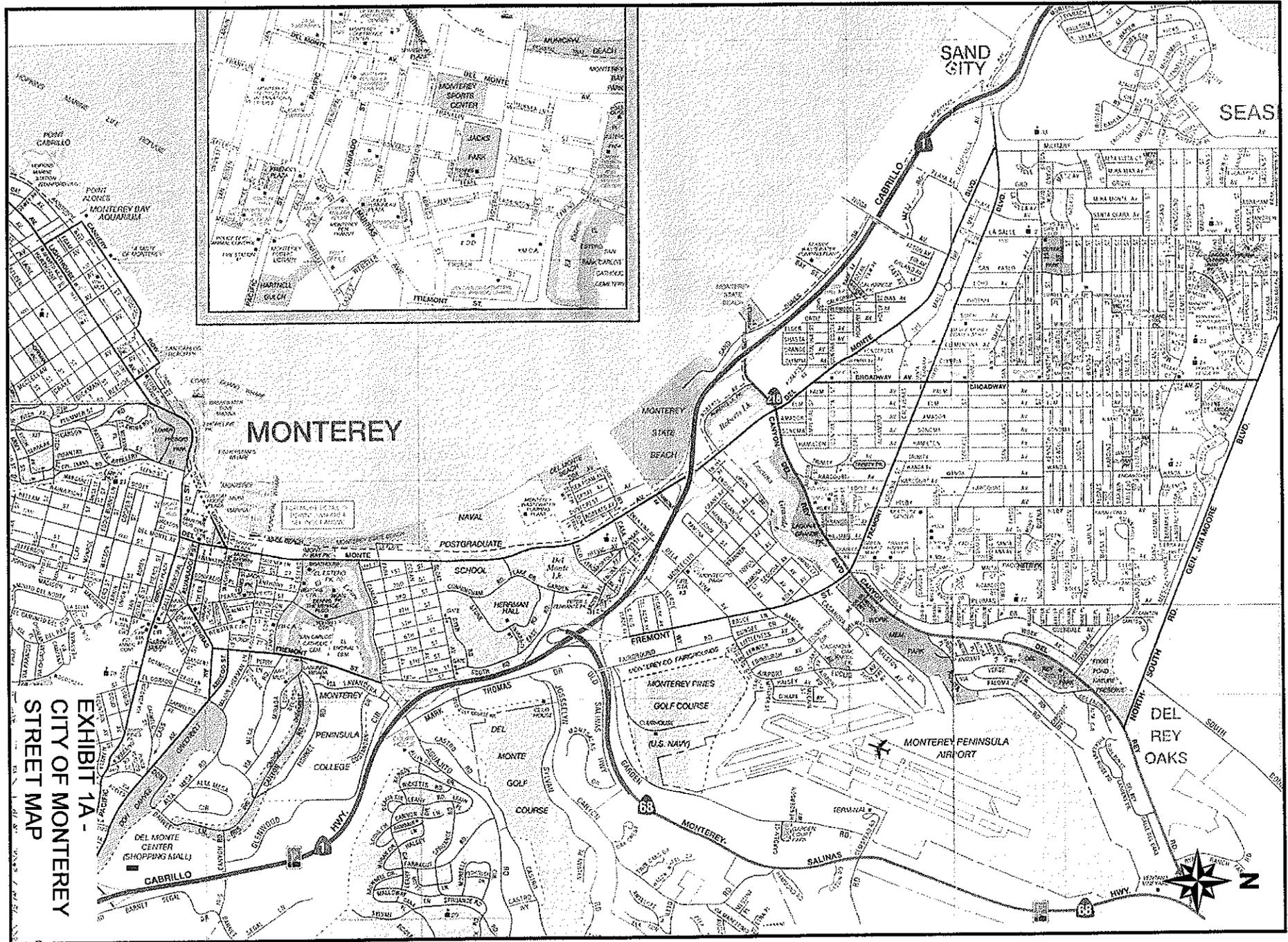


EXHIBIT 1A -
CITY OF MONTEREY
STREET MAP

MONTEREY

SAND CITY

SEAS

DEL REY OAKS

MONTEREY PENINSULA AIRPORT

MONTEREY FINES GOLF COURSE

(U.S. NAVY)

MONTEREY DO FARGO GOLF COURSE

MONTEREY GOLF COURSE

MONTEREY

SALINAS

MONTEREY

MONTEREY

MONTEREY

MONTEREY

MONTEREY



General Plan
of the
CITY OF MONTEREY

MAP X
SHOWING EMPLOYEE GROWTH
BY TRAFFIC ANALYSIS ZONE

CREATED BY THE
CITY OF MONTEREY
OCTOBER 2003

DRAFT

BAY OF MONTEREY

LEGEND

- City Boundary
 - General Plan Study Area
 - Ocean / Lake
- Percent Growth of Employees
- 0.00% - 0.50% (of Total)
 - 0.51% - 1.00%
 - 1.01% - 5.00%
 - 5.01% - 100.00%

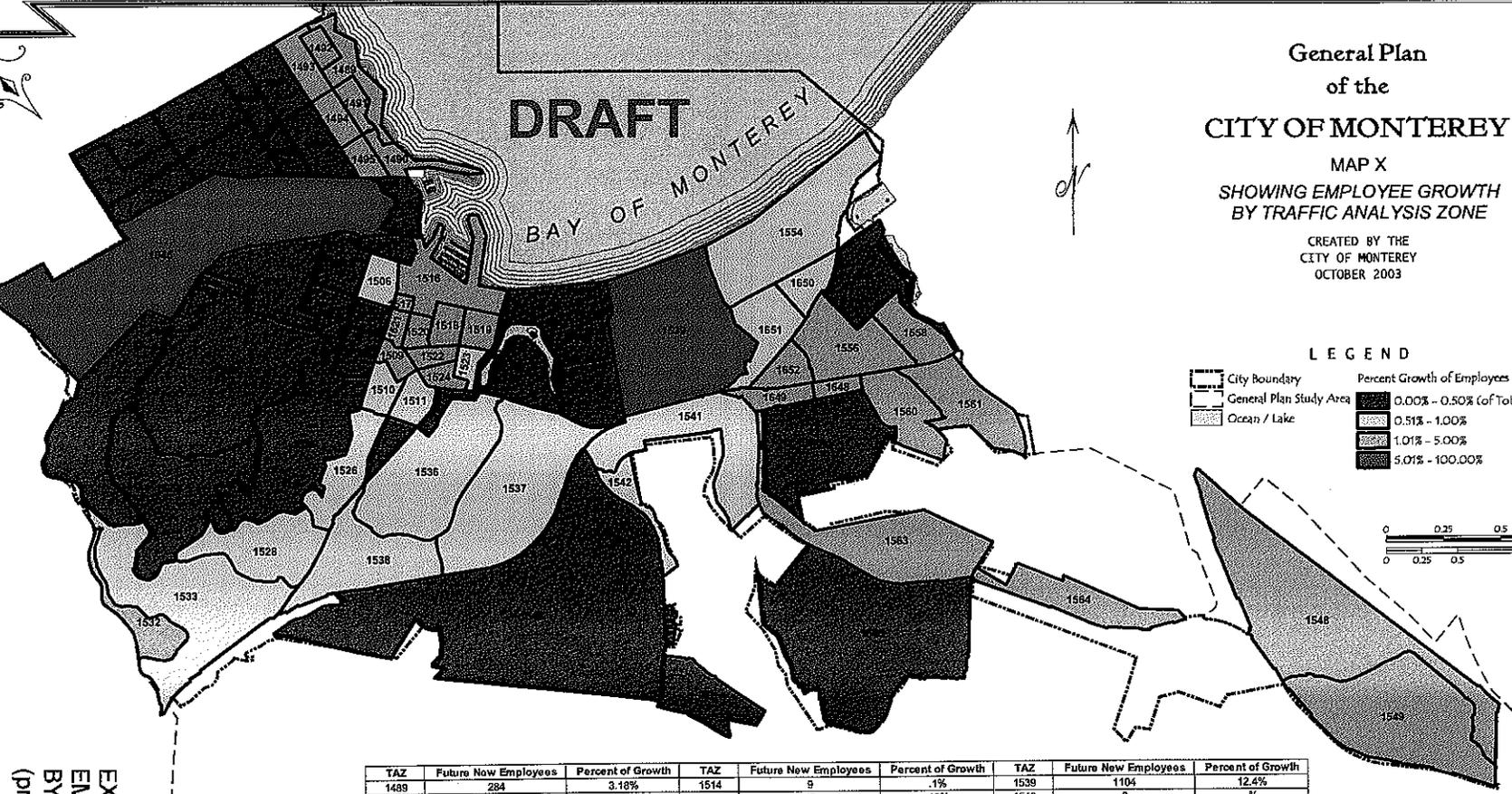
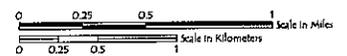


EXHIBIT 2 -
EMPLOYEE GROWTH
BY TAZ
(provided by City Staff)

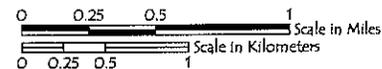
TAZ	Future New Employees	Percent of Growth	TAZ	Future New Employees	Percent of Growth	TAZ	Future New Employees	Percent of Growth
1488	284	3.18%	1514	9	.1%	1539	1104	12.4%
1490	150	1.68%	1515	12	.13%	1540	0	0%
1491	150	1.68%	1516	223	2.5%	1541	50	.56%
1492	150	1.68%	1517	150	1.68%	1542	84	.71%
1493	150	1.68%	1518	150	1.68%	1544	0	0%
1494	150	1.68%	1519	200	2.24%	1545	30	.33%
1495	150	1.68%	1520	150	1.68%	1546	11	.12%
1496	19	.21%	1521	150	1.68%	1548	409	4.58%
1497	12	.13%	1522	150	1.68%	1549	305	3.43%
1498	12	.13%	1523	82	.92%	1554	50	.56%
1499	8	.08%	1524	150	1.68%	1556	150	1.68%
1500	11	.12%	1525	10	.11%	1557	21	.23%
1501	8	.08%	1526	84	.94%	1558	150	1.68%
1502	10	.15%	1527	44	.49%	1559	9	.1%
1503	7	.7%	1528	50	.55%	1560	150	1.68%
1504	9	.1%	1529	18	.2%	1561	150	1.68%
1505	12	.13%	1530	24	.26%	1563	200	2.24%
1506	74	.83%	1531	16	.17%	1564	142	1.59%
1507	44	.49%	1532	202	2.28%	1646	1533	17.21%
1508	43	.48%	1533	76	.85%	1647	0	0%
1509	150	1.68%	1534	33	.37%	1648	100	1.12%
1510	61	.68%	1535	13	.14%	1649	100	1.12%
1511	58	.65%	1536	50	.56%	1650	60	.67%
1512	16	.17%	1537	67	.75%	1651	68	.76%
1513	9	.1%	1538	81	.9%	1652	100	1.12%

General Plan of the CITY OF MONTEREY

MAP X

SHOWING DWELLING UNIT DISTRIBUTION BY
TRAFFIC ANALYSIS ZONE

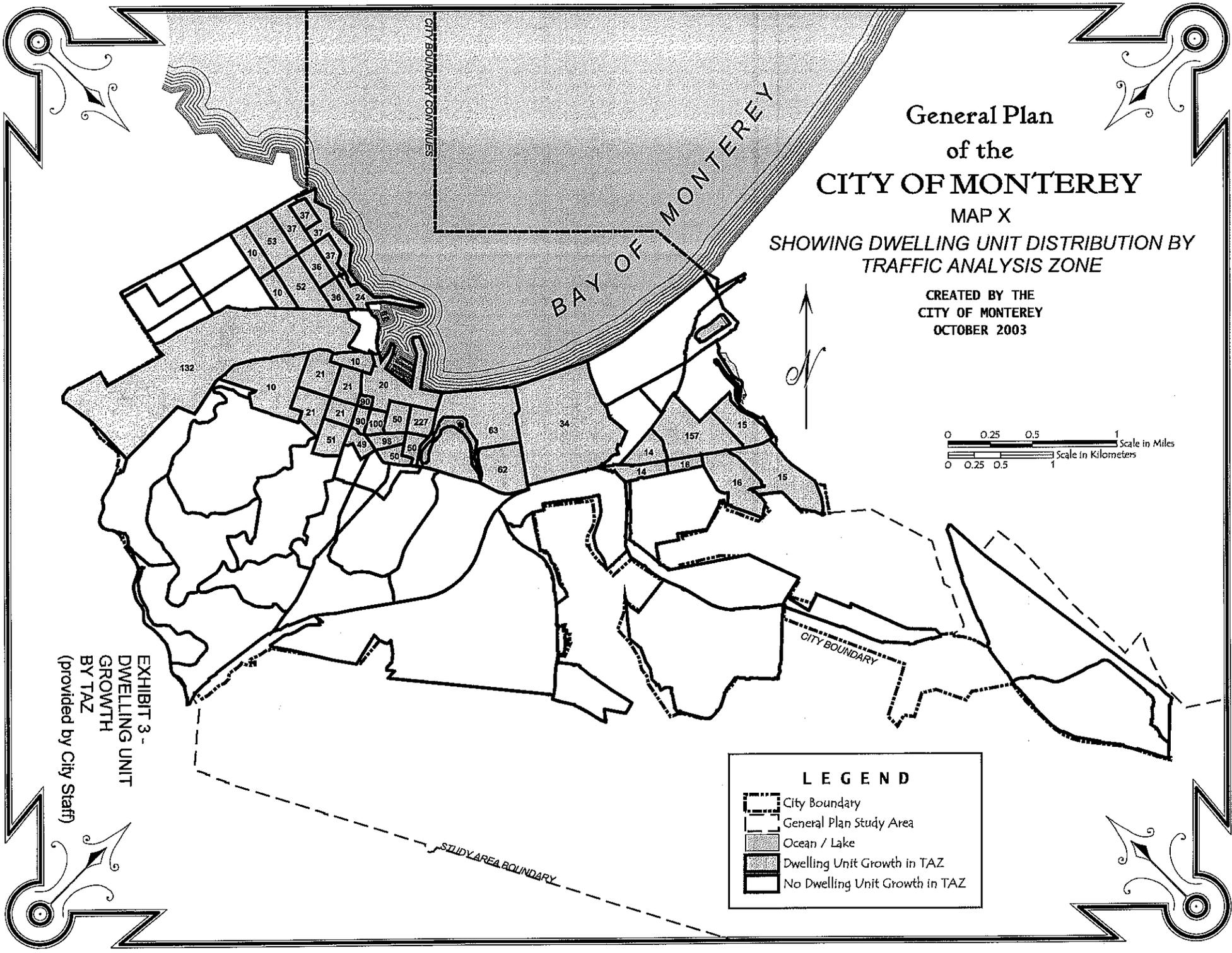
CREATED BY THE
CITY OF MONTEREY
OCTOBER 2003



LEGEND

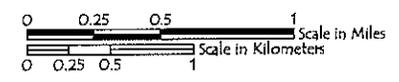
- City Boundary
- General Plan Study Area
- Ocean / Lake
- Dwelling Unit Growth in TAZ
- No Dwelling Unit Growth in TAZ

EXHIBIT 3 -
DWELLING UNIT
GROWTH
BY TAZ
(provided by City Staff)



General Plan of the CITY OF MONTEREY MAP X SHOWING DWELLING UNIT GROWTH

CREATED BY THE
CITY OF MONTEREY
OCTOBER 2003



LEGEND	
	City Boundary
	General Plan Study Area
	Ocean / Lake
	Parcel
	Edge-of-Pavement
	Mixed-Use Villages
	Multi-Family Neighborhood
	Military Facilities

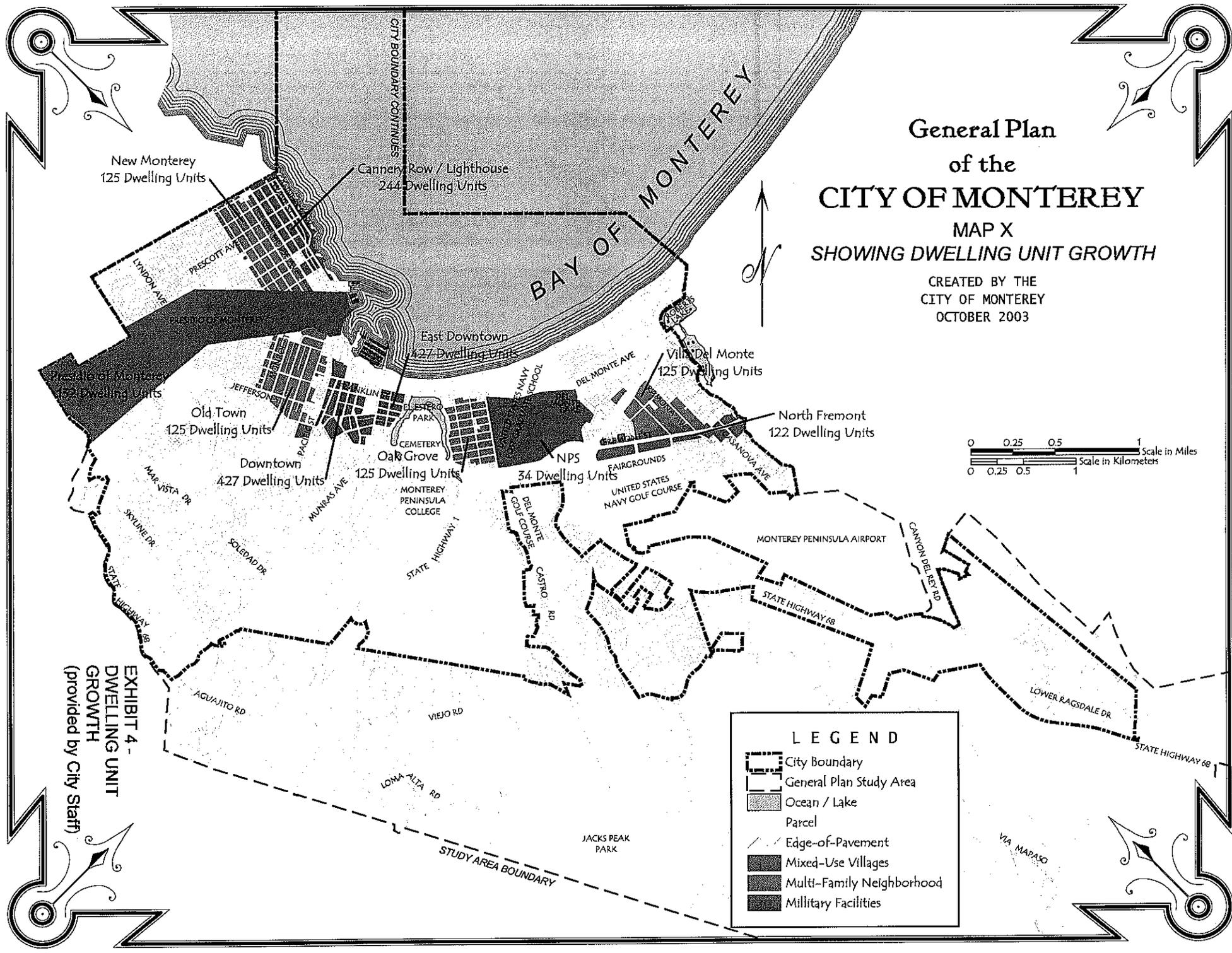


EXHIBIT 4 -
DWELLING UNIT
GROWTH
(provided by City Staff)

EXHIBIT 5 -
EXISTING DAILY
TRAFFIC VOLUMES
(From Base Year Model)

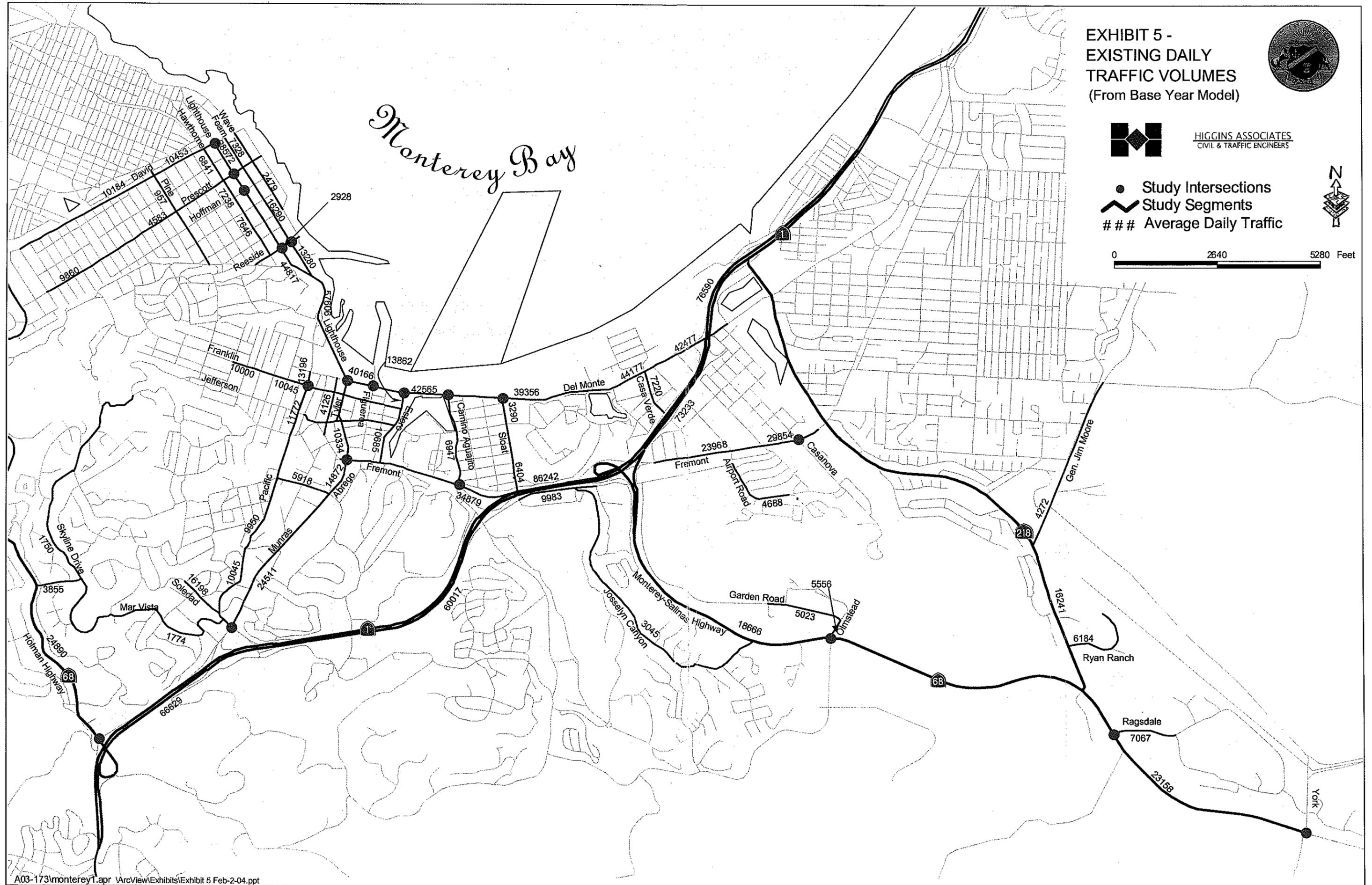


HIGGINS ASSOCIATES
CIVIL & TRAFFIC ENGINEERS

- Study Intersections
- Study Segments
- ### Average Daily Traffic



0 2640 5280 Feet



TRAFFIC MODEL VALIDATION - CITY OF MONTEREY GENERAL PLAN UPDATE
TRAFFIC MODEL VOLUMES VERSUS TRAFFIC COUNTS ON SELECTED ROADS AND HIGHWAYS IN THE YEARS 2000-2002

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way Model Volume	1-Way Traffic Count	2-Way Model Volume	2-Way Traffic Count	Percent Dev. from Cnt.	1-Way PM-Peak Volume	V/C Ratio	1-Way AM-Peak Volume	V/C Ratio	Level of Service	Mitigated		
																No. of Lanes	Level of Service	
1	Abrego St	El Dorado	Fremont	Undivided Roadway	4	8013	9247					812	0.29	590	0.21	A		
						6859	6477					14,872	15,724	-5.4%	654			
1	Abrego St	Fremont	El Dorado															
2	Airport Rd	Fairground	Euclid	Collector	2	2386	2126					279	0.40	161	0.23	A		
						2302	2127					4,688	4,253	10.2%	194			
2	Airport Rd	Fairground	Fairground															
3	Camino Aguajito	Second	Third	Arterial	2	3326	3275					289	0.26	325	0.30	A		
						3621	4240					6,947	7,515	-7.6%	430			
3	Camino Aguajito	Third	Second															
4	Camino Aguajito	Fremont	Via Lavendera	Undivided Roadway	4	6359	6993					673	0.24	483	0.17	A		
						6183	7103					12,542	14,096	-11.0%	556			
4	Camino Aguajito	Via Lavendera	Fremont															
5	Camino El Estero	Franklin	Del Monte	Arterial	2	3528	5061					1,051	0.96	663	0.60	C		
						10334	8833					13,862	13,894	-0.2%	372			
5	Camino El Estero	Del Monte	Franklin															
6	Camino El Estero	Fremont	Webster	Arterial	2	4282	5113					655	0.60	496	0.45	A		
						6403	6642					10,685	11,755	-9.1%	320			
6	Camino El Estero	Webster	Fremont															
7	Casa Verde	Encina	Hwy 1	Collector	2	3503	4054					320	0.29	331	0.30	B		
						3717	3752					7,220	7,806	-7.5%	386			
7	Casa Verde	Hwy 1	Encina															
8	David	Filmore	Cypress	Arterial	2	4715	5723					390	0.35	520	0.47	A		
						5469	5889					10,184	11,612	-12.3%	648			
8	David	Cypress	Filmore															
9	David	Foam	Dickman	Arterial	2	8545	9697					889	0.63	521	0.37	A		
						1033	1469					9,578	11,166	-14.2%	85			
9	David	Dickman	Foam															
10	David Ave	Hawthorne	Pine	Arterial	2	4953	4900					417	0.38	540	0.49	A		
						5500	5200					10,453	10,100	3.5%	661			
10	David Ave	Pine	Hawthorne															
11	Del Monte Ave	Parking Garage	Tyler	One-Way Street	3	5212	5394					419	0.10	549	0.13	A		
												5,212	5,394	-3.4%				
11	Del Monte Ave																	
12	Del Monte Ave	Washington	Figueroa	Divided Roadway	8	22161	21135					2,068	0.37	2,019	0.36	A		
						18005	22158					40,166	43,293	-7.2%	1,733			
12	Del Monte Ave	Figueroa	Washington															
13	Del Monte Ave	Camino El Estero	Camino Agujito	Divided Roadway	4	19697	20521					1,819	0.65	1,866	0.67	F	6	C
						22868	19393					42,565	39,914	6.6%	2,419			
13	Del Monte Ave	Camino Agujito	Camino El Estero															
14	Del Monte Ave	Sloat	Naval Post Gate	Divided Roadway	4	18004	20775					1,561	0.56	1,792	0.64	F	6	C
						21352	19810					39,356	40,585	-3.0%	2,324			
14	Del Monte Ave	Naval Post Gate	Sloat															
	Del Monte Ave	Palo Verde	Casa Verde	Divided Roadway	4	20386	20863					1,712	0.61	2,126	0.76	F	6	C
						23791	19851					44,177	40,714	8.5%	2,660			
	Del Monte Ave	Casa Verde	Palo Verde															
	Del Monte Ave	Hwy 1	Casa Verde	Divided Roadway	5	22885	21713					2,578	0.61	1,523	0.36	E	6	C
						19592	22869					42,477	44,582	-4.7%	1,632			
	Del Monte Ave	Casa Verde	Hwy 1															
	El Dorado	Cass	Munras Ave	Collector	2	3116	2974					329	0.47	212	0.30	A		
						2802	3104					5,918	6,078	-2.6%	248			
	El Dorado	Munras Ave	Cass															
	Foam	Drake	Dickman	One-Way Street	2	7328	7984					-	0.00	-	0.00	A		
												7,328	7,984	-8.2%				
	Foam																	

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way Model Volume	1-Way Traffic Count	2-Way Model Volume	2-Way Traffic Count	Percent Dev. from Cnt.	1-Way PM-Peak Volume	V/C Ratio	1-Way AM-Peak Volume	V/C Ratio	Level of Service	Mitigated No. of Lanes	Level of Service
Foam	Reaside	Lighthouse	One-Way Street	2	13280	15803					1,133	0.51	1,174	0.53			
Foam								13,280	15,803	-16.0%	-	0.00	-	0.00	C		
Foam	McClellan	Hoffman	One-Way Street	2	16290	14875					1,418	0.84	1,363	0.82			
Foam								16,290	14,875	9.5%					D		
Franklin	Monroe	Clay	Arterial	2	5094	5230					580	0.53	346	0.31			
Franklin	Clay	Monroe			4906	5088	10,000	10,318		-3.1%	381	0.35	602	0.55	A		
Franklin	Alvarado	Tyler	One-Way Street	2	15592	13821					1,717	0.78	974	0.44			
Franklin								15,592	13,821	12.8%					C		
Franklin	Van Buren	Pacific	Arterial	2	4619	4875					526	0.48	310	0.28			
Franklin	Pacific	Van Buren			5810	4746	10,429	9,621		8.4%	490	0.45	648	0.59	A		
Fremont	Ramona	Airport Rd.	Divided Roadway	4	11942	12569					954	0.34	1,362	0.49			
Fremont	Airport Rd.	Ramona			12026	11936	23,968	24,505		-2.2%	1,471	0.53	725	0.26	B		
Fremont	Hwy 1	Camino Aquajito	Divided Roadway	5	16756	19000					1,957	0.56	1,078	0.31			
Fremont	Camino Aquajito	Hwy 1			18123	18677	34,879	37,677		-7.4%	1,419	0.27	2,108	0.40	C		
Garden Rd	Sky Park Way	Henderson	Collector	2	2714	2847					291	0.42	195	0.28			
Garden Rd	Henderson	Sky Park Way			2309	2493	5,023	5,340		-5.9%	191	0.27	232	0.33	A		
General Jim Moore	S. Boundary Road	Canyon Del Rey	Arterial	2	2126	2050					257	0.23	134	0.12			
General Jim Moore	Canyon Del Rey	S. Boundary Road			2146	2150	4,272	4,200		1.7%	171	0.16	245	0.22	A		
Hawthorne	David	Prescott	Collector	2	3881	4821					369	0.17	296	0.13			
Hawthorne	Prescott	David			2980	2476	6,841	7,297		-6.2%	276	0.13	245	0.11	B		
Hawthorne	Hoffman	Prescott	Collector	2	823	1091					80	0.07	73	0.07			
Hawthorne	Prescott	Hoffman			6415	5249	7,238	6,340		14.2%	560	0.51	632	0.57	B		
Hawthorne	Reeside	Dickman	Collector	2	5977	4733					484	0.69	652	0.93			
Hawthorne	Dickman	Reeside			1669	1782	7,646	6,515		17.4%	206	0.29	108	0.15	C		
Highway 1	Hwy 68 (Holman)	Munras Ave	Freeway	5	32954	30700					3,241	0.54	2,820	0.47			
Highway 1	Munras Ave	Hwy 68 (Holman)			33675	33000	66,629	63,700		4.6%	3,260	0.81	2,845	0.71	C		
Highway 1	Aguaquito	Soledad	Freeway	4	29840	27950					2,759	0.69	2,329	0.58		6	
Highway 1	Soledad	Aguaquito			30177	31500	60,017	59,450		1.0%	3,107	0.78	2,813	0.70	D		B
Highway 1	Highway 68	Fremont Avenue	Freeway	4	43508	41674					4,706	0.59	2,962	0.37		6	
Highway 1	Fremont Avenue	Highway 68			42734	45091	86,242	86,765		-0.6%	3,665	0.46	4,611	0.58	F		D
Highway 1	Fremont Ave.	Highway 218	Freeway	4	36366	36200					2,925	0.74	3,804	0.95		6	
Highway 1	Highway 218	Fremont Ave.			36867	36800	73,233	73,000		0.3%	3,983	0.97	2,442	0.61	E		C
Highway 1	Hwy 218	Del Monte	Freeway	4	37993	38387					3,048	0.76	3,628	0.91		6	
Highway 1	Del Monte	Hwy 218			38597	36899	76,590	75,286		1.7%	3,635	0.91	2,652	0.66	F		C
Highway 218	Hwy 68	Noth-South Rd	Rural Highway	2	8038	8100					698	0.50	870	0.62		4	
Highway 218	Noth-South Rd	Hwy 68			8203	8321	16,241	16,421		-1.1%	942	0.67	591	0.42	D		A
Highway 218	Fremont	N Street	Divided Roadway	4	9433	9900					940	0.35	858	0.31			
Highway 218	N Street	Fremont			9807	9820	19,240	19,720		-2.4%	971	0.34	743	0.27	A		
Highway 68	Chomp Driveway	Highway 1	Rural Highway	2	12537	13889					1,289	0.74	1,034	0.59		4	
Highway 68	Highway 1	Chomp Driveway			12353	13334	24,890	27,223		-8.6%	1,255	0.72	1,074	0.61	E		A

EXHIBIT 6
EXISTING ROADWAY
LEVEL OF SERVICE SUMMARY

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way	1-Way	2-Way	2-Way	Percent Dev. from Cnt.	1-Way	V/C	1-Way	V/C	Level of Service	Mitigated	
						Model Volume	Traffic Count	Model Volume	Traffic Count		PM-Peak Volume	Ratio	AM-Peak Volume	Ratio		No. of Lanes	Level of Service
Highway 68	Josselyn Cyn Garden Rd.	Garden Rd. Josselyn Cyn	Rural Highway	2	8969	10003					841	0.48	841	0.48	E	4	A
					9697	9603	18,666	19,606	-4.8%	994	0.57	791	0.45				
Highway 68	Ragsdale York Rd.	York Rd. Ragsdale	Rural Highway	2	11989	13201					1,375	0.98	839	0.60	E	4	A
					11169	12601	23,158	25,802	-10.2%	917	0.65	1,256	0.90				
Josselyn Cyn Josselyn Cyn	Hwy 68 Mark Thomas Dr.	Mark Thomas Dr. Hwy 68	Collector	2	1524	1311					129	0.18	170	0.24	A		
					1521	1504	3,045	2,815	8.2%	177	0.25	103	0.15				
Lighthouse Lighthouse	David Prescott	Prescott David	Undivided Roadway	4	17115	19288					1,454	0.52	1,640	0.59	E	6	A
					11457	12300	28,572	31,588	-9.5%	1,311	0.47	819	0.29				
Lighthouse Lighthouse	Reeside Foam	Foam Reeside	Undivided Roadway	4	29497	29998					2,678	0.96	2,613	0.93	F	6	C
					15320	15563	44,817	45,561	-1.6%	1,765	0.63	1,088	0.39				
Lighthouse Curve Lighthouse Curve	Pacific Foam	Foam Pacific	Undivided Roadway	4	28601	28456					2,888	1.03	2,262	0.81	F	8	D
					29005	31106	57,606	59,562	-3.3%	2,687	0.96	2,541	0.91				
Lighthouse Tunnel Lighthouse Tunnel	Pacific Del Monte	Del Monte Pacific	Divided Roadway	4	18088	na					1,900	na	1,900	na	D		
					26759	na	45,847	na	na	2,670	na	2,670	na				
Mar Vista Mar Vista	Skyline Soledad	Soledad Skyline	Collector	2	836	916					85	0.12	80	0.11	A		
					938	1137	1,774	2,053	-13.6%	95	0.14	84	0.12				
Mark Thomas Mark Thomas	Josselyn Cyn Old Salinas Rd.	Old Salinas Rd. Josselyn Cyn	Collector	2	4505	5223					452	0.65	382	0.55	D		
					4605	4276	9,110	9,499	-4.1%	457	0.65	386	0.55				
Mark Thomas Dr Mark Thomas Dr	Sloat Sylvan	Sylvan Sloat	Collector	2	4893	4562					465	0.66	449	0.64	D		
					5090	5353	9,983	9,915	0.7%	533	0.76	397	0.57				
Munras Munras	Webster Fremont	Fremont Webster	Arterial	2	5324	4378					565	0.40	325	0.23	A		
					5010	6400	10,334	10,778	-4.1%	465	0.33	394	0.28				
Munras Munras	Soledad Dr Del Monte Shopping Ctr.	Del Monte Shopping Ctr. Soledad Dr	Divided Roadway	4	11891	12005					1,342	0.48	670	0.24	B		
					12620	12090	24,511	24,095	1.7%	1,043	0.37	1,189	0.42				
N Fremont N Fremont	Ramona Casonova	Casonova Ramona	Divided Roadway	4	14981	15515					1,007	0.41	1,545	0.66	C		
					14873	15216	29,854	30,731	-2.9%	1,705	0.64	1,283	0.41				
Olmstead Rd. Olmstead Rd.	Garden Road Hwy 68	Hwy 68 Garden Road	Collector	2	2716	2700					330	0.47	154	0.22	A		
					2840	2700	5,556	5,400	2.9%	209	0.30	339	0.46				
Pacific Street Pacific Street	Alameda Soledad	Soledad Alameda	Arterial	2	5212	4938					527	0.48	388	0.35	A		
					4833	3939	10,045	8,877	13.2%	425	0.39	471	0.43				
Pacific Street Pacific Street	Grove Alameda	Alameda Grove	Arterial	2	5296	4275					533	0.48	398	0.36	A		
					4654	4692	9,950	8,967	11.0%	404	0.37	456	0.41				
Pacific Street Pacific Street	Madison Jefferson	Jefferson Madison	Arterial	2	5571	5604					516	0.47	503	0.46	B		
					6201	6283	11,772	12,087	-2.6%	616	0.56	474	0.43				
Pacific Street Pacific Street	Del Monte Fraklin	Fraklin Del Monte	Arterial	2	8370	9488					751	0.68	698	0.63	C		
					4826	4560	13,196	14,048	-6.1%	504	0.46	389	0.35				
Pearl Pearl	Tyler Abrego	Abrego Tyler	Collector	2	1500	1750					49	0.07	45	0.06	A		
					2247	1750	3,747	3,500	7.1%	223	0.32	159	0.23				
Pine Pine	Irving David	David Irving	Collector	2	359	501					37	0.05	29	0.04	A		
					598	601	957	1,102	-13.2%	64	0.09	48	0.07				
Prescott	Pine	Oak	Collector	2	1760	2105					177	0.16	152	0.14			

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way Model Volume	1-Way Traffic Count	2-Way Model Volume	2-Way Traffic Count	Percent Dev. from Cnt.	1-Way PM-Peak Volume	V/C Ratio	1-Way AM-Peak Volume	V/C Ratio	Level of Service	Mitigated	
																No. of Lanes	Level of Service
	Prescott	Oak	Pine			2823	2578	4,583	4,683	-2.1%	330	0.47	198	0.28	A		

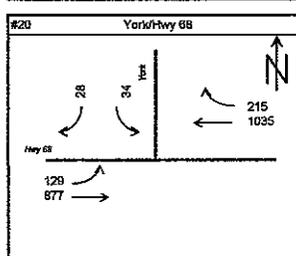
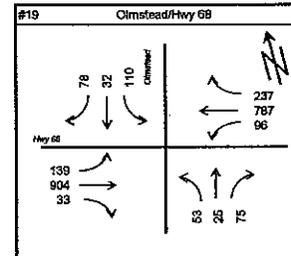
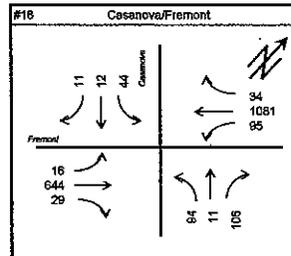
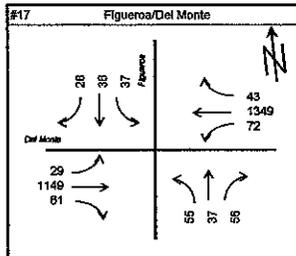
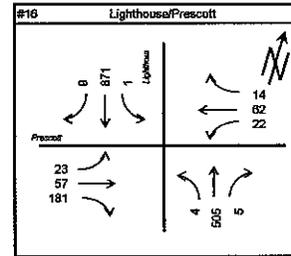
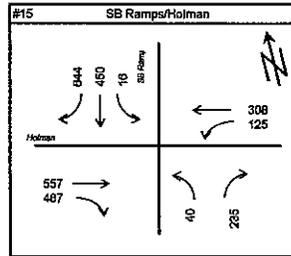
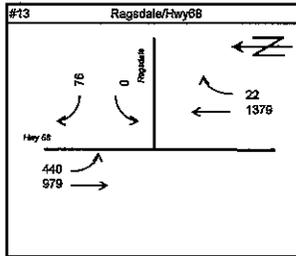
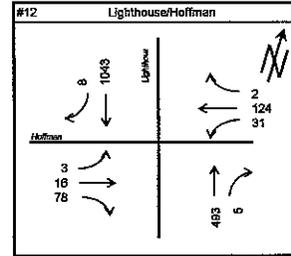
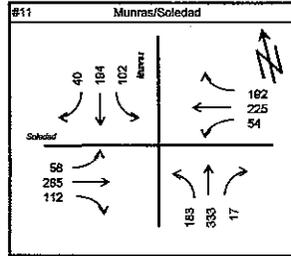
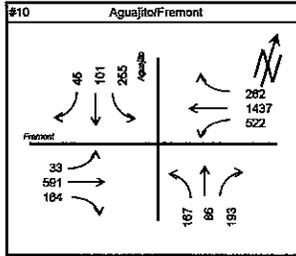
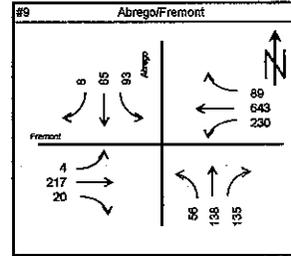
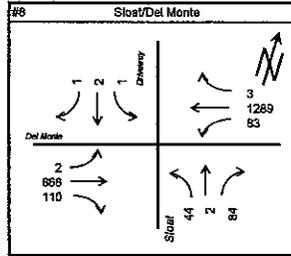
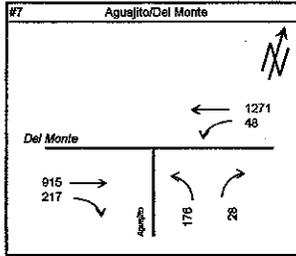
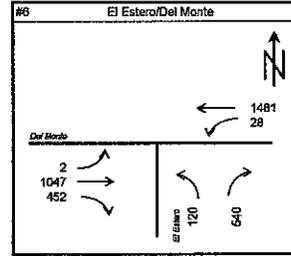
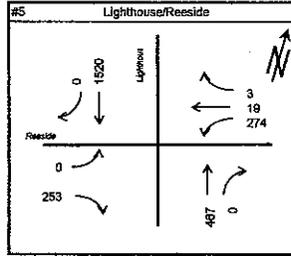
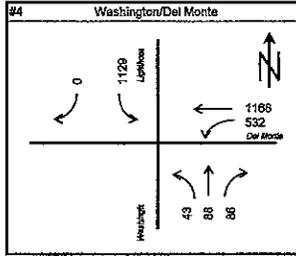
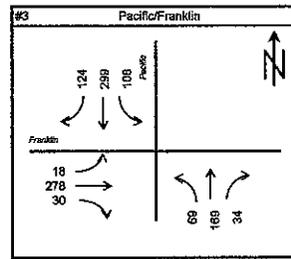
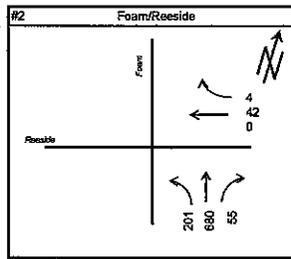
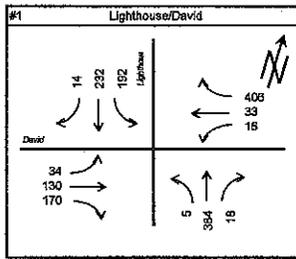


EXHIBIT 7
EXISTING CONDITIONS
AM PEAK HOUR VOLUMES

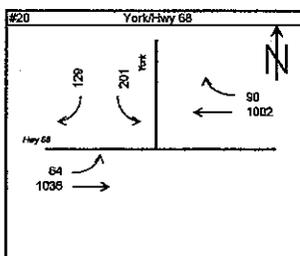
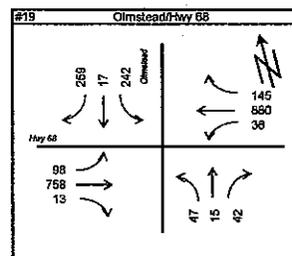
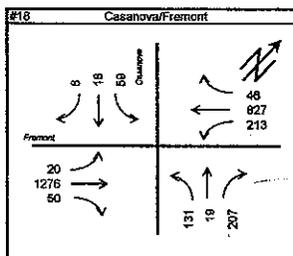
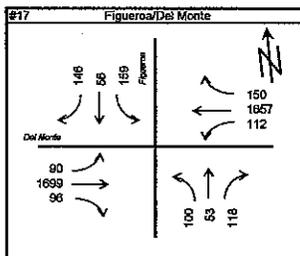
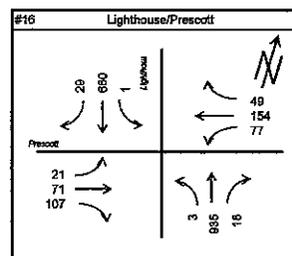
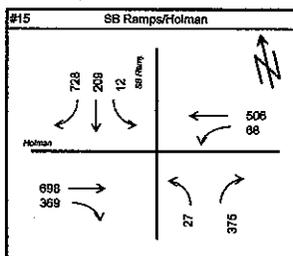
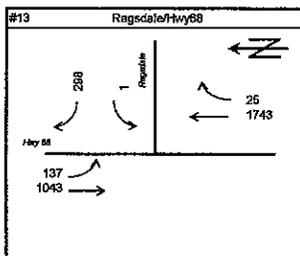
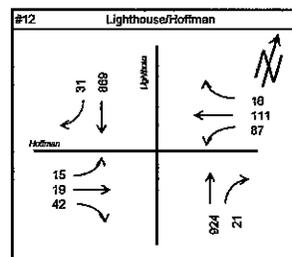
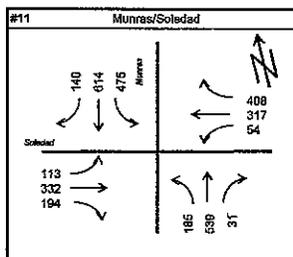
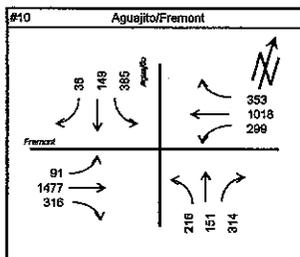
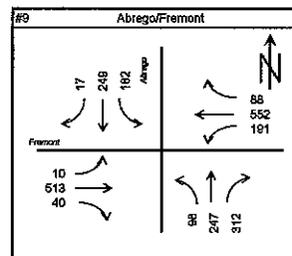
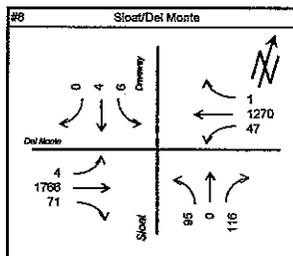
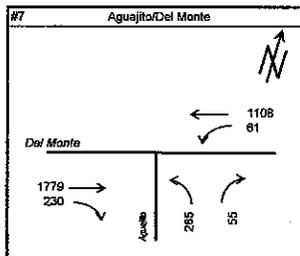
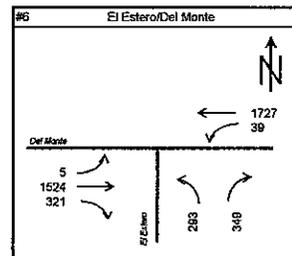
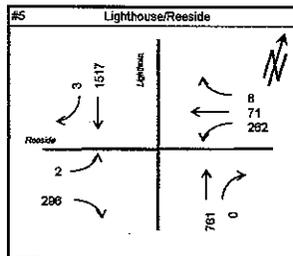
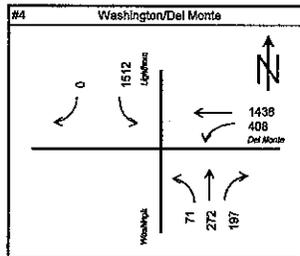
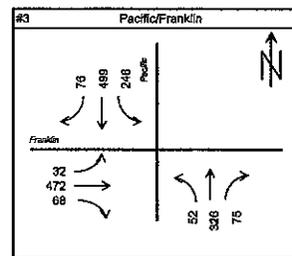
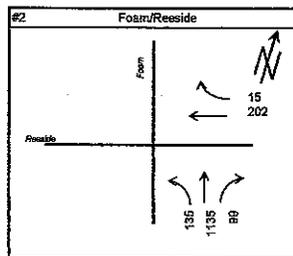
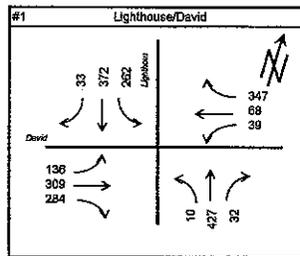


EXHIBIT 8
EXISTING CONDITIONS
PM PEAK HOUR VOLUMES

(Note 6)	N-S Street	E-W Street	Existing Lane Configuration	LOS Std	Existing Intersection Control	Existing Conditions				General Plan Lane Configuration	Existing Intersection Control	General Plan Conditions			
						AM Peak Hr		PM Peak Hr				AM Peak Hr		PM Peak Hr	
						Delay (sec)	LOS V/C	Delay (sec)	LOS			Delay (sec)	LOS	Delay (sec)	LOS
1	Lighthouse Avenue	David Avenue	NB 1-TL, 1-TR SB 1-L, 1-TR EB 1-TL, 1-R WB 1-TL, 1-TR	D	signal	16.4	B	40.1	D	NB 1-L, 1-T, 1-R SB 1-L, 1-TR EB 1-L, 1-T, 1-R WB 1-L, 1-T, 1-R	same as existing	30.9	B	39.4	D
2	Foam Street	Reeside Avenue	NB 1-TL, 1-TR WB 1-T, 1-TR	D	signal	8.8	A	12.5	B	same as existing	same as existing	12.8	B	20.0	C
3	Pacific Street	Franklin Street	NB 1-L, 1-TR SB 1-L, 1-TR EB 1-R, 1-TL	D	signal	10.2	B	17.3	B	same as existing	same as existing	11.7	B	50.6	D
4	Lighthouse Avenue/ Washington Street	Del Monte Avenue	NB 1-L, 2-T, 1-R SB 3-T WB 2-T, 2-R	D	signal <i>With Mitigation 10</i>	35.9	D	65.1	E	NB 1-L, 1-R SB 3-T WB 2-T	same as existing	27.1	C	44.9	D
5	Lighthouse Avenue	Reeside Avenue	NB 2-T SB 1-T, 1-TR EB 1-L, 1-R WB 1-L, 1-LTR	D	signal	51.9	D	34.6	C	same as existing <i>With Mitigation 9</i>	same as existing	97.8	F	139.3	F
6	Camino El Estero	Del Monte Avenue	NB 2-L, 1-R EB 1-L, 2-T, 1-R WB 1-L, 3-T	D	signal	27.1	C	41.8	D	same as existing	same as existing	38.7	D	46.3	D
7	Camino Aguajito	Del Monte Avenue	NB 1-L, 1-LR EB 1-T, 1-TR WB 1-L, 2-T	D	signal	9.4	A	51.5	D	NB 2-L, 1-R EB 3-T, 1-R WB 1-L, 2-T	same as existing	11.1	B	13.4	B
8	Sloat Avenue	Del Monte Avenue	NB 1-TL, 1-R SB 1-LTR EB 1-TL, 1-TR WB 1-TL, 1-TR	D	signal	7.0	A	17.8	B	NB 2-L, 1-R EB 2-T, 1-TR WB 1-L, 2-T	same as existing	9.7	A	11.2	B
9	Abrego Street	Fremont Street	NB 1-L, 1-T, 1-R SB 1-L, 1-TR EB 1-L, 1-T, 1-TR WB 1-L, 1-T, 1-TR	D	signal	17.3	B	18.1	B	same as existing	same as existing	14.4	B	25.8	C
10	Camino Aguajito (Note 8)	Fremont Street	NB 1-L, 1-TL, 1-R SB 1-L, 1-TL, 1-R EB 1-L, 2-T, 1-R WB 1-L, 3-T, 1-R	D	signal <i>With Mitigation 1</i>	52.7	D	85.5	F	NB 2-L, 1-T, 1-R SB 2-L, 1-T, 1-R EB 1-L, 2-T, 1-R WB 1-L, 3-T, 1-R <i>With Mitigation 5</i>	same as existing	62.7	E	175.5	F
11	Munras Avenue	Soledad Drive	NB 1-L, 2-T, 1-R SB 2-L, 2-T, 1-R EB 1-L, 2-T, 1-R WB 1-L, 1-T, 1-R	D	signal <i>With Mitigation 2</i>	28.9	C	83.6	F	same as existing <i>With Mitigation 2</i>	same as existing	33.9	C	46.9	D
12	Lighthouse Avenue	Hoffman Avenue	NB 1-T, 1-TR SB 1-T, 1-TR EB 1-LTR WB 1-LTR	D	signal	8.0	A	9.1	A	same as existing	same as existing	11.0	B	13.6	B
16	Lighthouse Avenue	Prescott Avenue	NB 1-TL, 1-TR SB 1-TL, 1-TR EB 1-LTR WB 1-LTR	D	signal	10.5	B	12.1	B	same as existing	same as existing	15.1	B	28.7	C
17	Figuroa Street	Del Monte Avenue	NB 1-L, 1-T, 1-R SB 1-L, 1-T, 1-R EB 1-L, 2-T, 1-TR WB 1-L, 2-T, 1-TR	D	signal	10.1	B	17.2	B	NB 2-L, 1-TR SB 2-L, 1-T, 1-R EB 1-L, 2-T, 1-TR WB 1-L, 3-T, 1-R	same as existing	15.6	B	34.9	C
18	Casanova Avenue	Fremont Street	NB 1-TL, 1-R SB 1-L, 1-TR EB 1-L, 2-T, 1-R WB 1-L, 2-T, 1-R	D	signal	10.7	B	53.7	D	same as existing <i>With Mitigation 6</i>	same as existing	11.8	B	76.4	E
														20.2	C

RECOMMENDED MITIGATION MEASURES

Mitigation Measures for Existing Conditions:	Mitigation Measures for General Plan Conditions:
1. Provide a 2nd left turn lane on southbound Camino Aguajito. 2. New signal timing plan for PM.	<i>All mitigation measures for existing conditions, plus:</i> 5. New configuration: 1-EBL, 3-EBT, 1-EBR, 2-WBL, 3-WBT, 1-WBR, 2-NBL, 2-NBT, 1-NBR, 3-SBL, 1-SBT/R. 6. Optimize signal timing for PM peak hour and coordinate with Hwy 218 intersection at Fremont. 9. One-way pair 10. Planned City Improvement - Eliminate north-south through movements and provide pedestrian bridge

- Notes:**
1. L, T, R = Left, Through, Right
 2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
 3. WA = Worst Approach
 4. N/A = Not Applicable - intersection does not exist under this scenario
 6. HCM analysis utilized.
 7. Threshold analysis utilized.
 8. Signal timing based on Synchro default.
 9. For future conditions signal timing were optimized and not necessarily identified as mitigation.

**EXHIBIT 9B
INTERSECTION LEVEL OF SERVICE
SUMMARY - CITY STREETS**



EXHIBIT 10 -
2023 AVERAGE DAILY
TRAFFIC VOLUMES

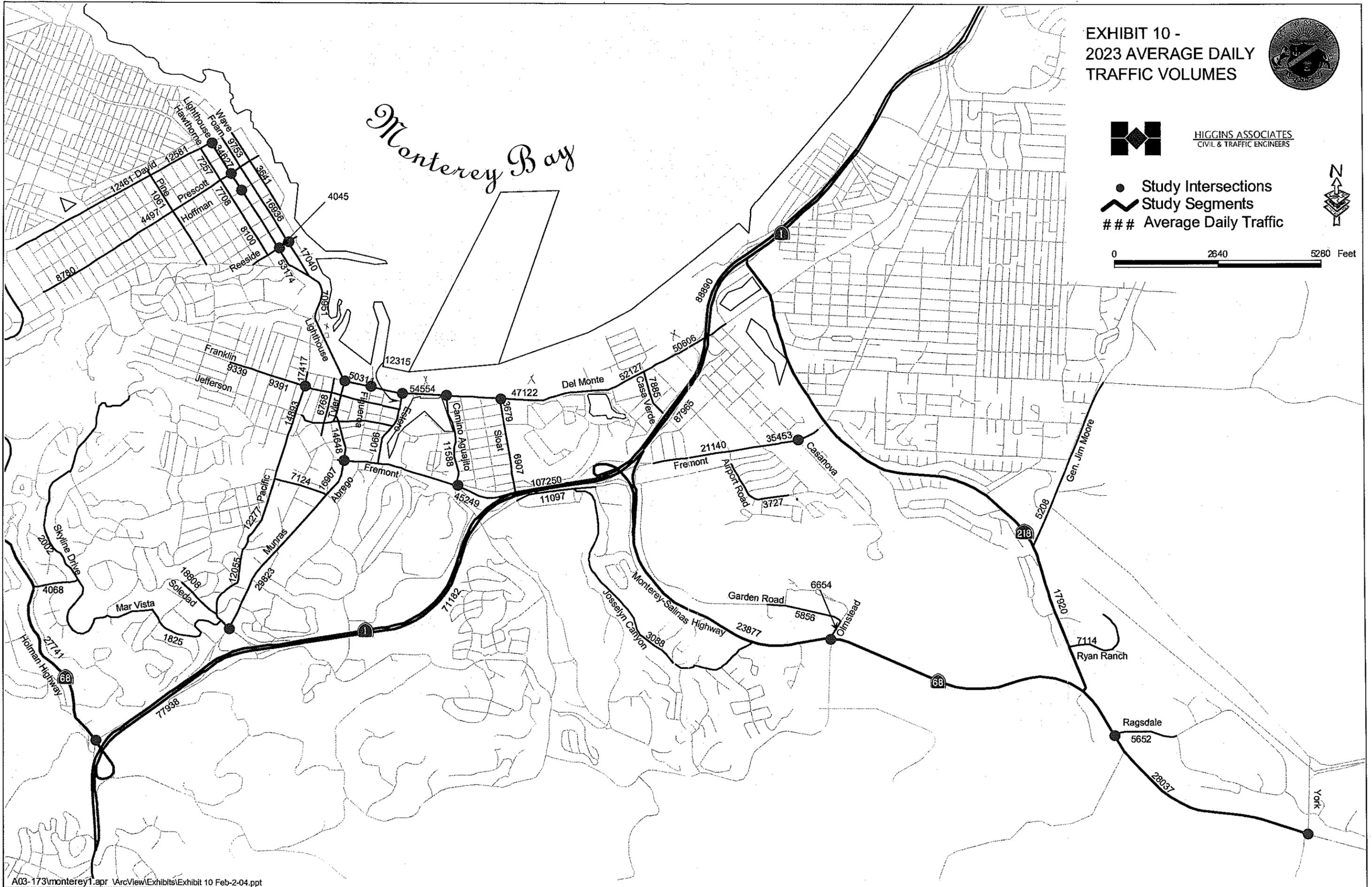


HIGGINS ASSOCIATES
CIVIL & TRAFFIC ENGINEERS

- Study Intersections
- Study Segments
- ### Average Daily Traffic



0 2640 5280 Feet



**YEAR 2020 TRAVEL FORECAST - CITY OF MONTEREY GENERAL PLAN UPDATE
TRAFFIC VOLUMES & LEVEL OF SERVICE ON SELECTED ROADS AND HIGHWAYS**

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way	1-Way	2-Way	2-Way	Percent Growth from 2000	1-Way	PM	1-Way	AM	Level of Service	Mitigated	
						2020 Model Volume	2000 Model Volume	2020 Model Volume	2000 Count Volume		2020 PM-Peak Volume	2020 V/C Ratio	2020 AM-Peak Volume	2020 V/C Ratio		No. of Lanes	Level of Service
Abrego St	El Dorado	Fremont	El Dorado	Undivided Roadway	4	8932	9247				991	0.35	655	0.23	A		
						7875	6477	16,907	15,724	7.5%	732	0.26	685	0.24			
Airport Rd	Fairground	Euclid	Fairground	Collector	2	2792	2126				330	0.47	186	0.27	A		
						935	2127	3,727	4,253	-12.4%	87	0.12	92	0.13			
Camino Aguajito	Second	Third		Arterial	2	7707	3275				702	0.64	708	0.64	B		
						3881	4240	11,588	7,515	54.2%	421	0.38	274	0.25			
Camino Aguajito	Fremont	Via Lavendera	Fremont	Undivided Roadway	4	7613	6993				793	0.28	575	0.21	A		
						7413	7103	15,026	14,096	6.6%	667	0.24	673	0.24			
Camino El Estero	Franklin	Del Monte	Del Monte	Arterial	2	954	5061				73	0.07	167	0.14	B		
						11361	8833	12,315	13,894	-11.4%	1,200	1.09	669	0.61			
Camino El Estero	Fremont	Webster	Fremont	Arterial	2	5076	5113				487	0.44	431	0.39	A		
						4825	6642	9,901	11,755	-15.8%	628	0.57	415	0.38			
Casa Verde	Encina	Hwy 1	Encina	Arterial	2	3953	4054				367	0.33	352	0.32	A		
						3932	3752	7,885	7,806	1.0%	528	0.48	283	0.26			
David Ave	Filmore	Cypress	Cypress	Arterial	2	5884	5723				501	0.46	631	0.57	B		
						6577	5889	12,461	11,612	7.3%	764	0.69	461	0.42			
David Ave	Foam	Dickman	Foam	Arterial	2	11348	9697				1,185	0.83	711	0.51	C		
						1434	1469	12,782	11,186	14.5%	123	0.09	133	0.09			
David Ave	Hawthorne	Pine	Hawthorne	Arterial	2	6070	4900				519	0.47	649	0.59	B		
						6511	5200	12,581	10,100	24.6%	709	0.64	448	0.41			
Del Monte	Parking Garage	Tyler	Tyler	Divided Roadway	3	7154	5394				641	0.15	647	0.15	A		
								7,154	5,394	32.6%							
Del Monte Ave	Washington	Figueroa	Washington	Divided Roadway	8	27194	21135				2,673	0.48	2,519	0.45	C		
						23117	22158	50,311	43,293	16.2%	2,193	0.39	1,889	0.34			
Del Monte Ave	Camino El Estero	Camino Aguajito	Camino El Estero	Divided Roadway	8	23356	20521				2,112	0.50	2,371	0.58	E	8	C
						31198	19398	54,554	39,914	36.7%	3,161	0.75	2,242	0.53			
Del Monte Ave	Sloat	Naval Post Gate	Sloat	Divided Roadway	4	21646	20775				1,883	0.67	2,317	0.83	F	8	B
						25476	19810	47,122	40,585	16.1%	2,662	0.95	1,679	0.60			
Del Monte Ave	Palo Verde	Casa Verde	Palo Verde	Divided Roadway	4	24134	20863				2,044	0.73	2,667	0.95	F	8	C
						27993	19851	52,127	40,714	28.0%	3,002	1.07	1,785	0.64			
Del Monte Ave	Hwy 1	Casa Verde	Hwy 1	Divided Roadway	5	27307	21713				2,828	0.67	1,745	0.42	F	8	C
						23289	22669	60,606	44,582	13.5%	1,954	0.70	2,621	0.94			
El Dorado	Cass	Munras Ave	Cass	Collector	2	3542	2974				373	0.53	241	0.34	B		
						3582	3104	7,124	6,078	17.2%	318	0.45	315	0.45			
Foam	Drake	Dickman	Dickman	One-Way Street	2	9753	7984				883	0.40	736	0.33	A		
								9,753	7,984	22.2%	-	0.00	-	0.00			

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way	1-Way	2-Way	2-Way	Percent Growth from 2000	1-Way	PM	1-Way	AM	Level of Service	Mitigated	
						2020 Model Volume	2000 Model Volume	2020 Model Volume	2000 Count Volume		2020 PM-Peak Volume	V/C Ratio	2020 AM-Peak Volume	V/C Ratio		No. of Lanes	Level of Service
Foam	Reeside	Lighthouse	One-Way Street	2	17040	15803					1,460	0.66	1,493	0.68			
Foam								17,040	15,803	7.8%	-	0.00	-	0.00	D		
Foam	McClellan	Hoffman	One-Way Street	2	16936	14875					1,476	0.67	1,392	0.63	D		
Foam								16,936	14,875	13.9%							
Franklin	Monroe	Clay	Arterial	2	4236	5230					551	0.50	313	0.28			
Franklin	Clay	Monroe			5103	5088	9,339	10,318	-9.5%		378	0.34	623	0.57	A		
Franklin	Alverado	Tyler	One-Way Street	2	16366	13821					1,879	0.85	1,071	0.49	D		
Franklin								16,366	13,821	18.4%							
Franklin	Van Buren	Pacific	Arterial	2	3949	4875					512	0.47	297	0.27			
Franklin	Pacific	Van Buren			5442	4746	9,391	9,621	-2.4%		401	0.36	617	0.56	A		
Fremont	Ramona	Airport Rd.	Divided Roadway	4	10889	12589					1,594	0.57	690	0.25			
Fremont	Airport Rd.	Ramona			10231	11938	21,140	24,505	-13.7%		854	0.31	1,163	0.42	A		
Fremont	Hwy 1	Camino Aquajito	Divided Roadway	5	21605	19000					2,563	0.73	1,497	0.43		6	
Fremont	Camino Aquajito	Hwy 1			23644	18677	45,249	37,677	20.1%		1,858	0.35	2,527	0.48	E		D
Garden Rd	Sky Park Way	Henderson	Collector	2	3090	2847					324	0.46	221	0.32			
Garden Rd	Henderson	Sky Park Way			2766	2493	5,856	5,340	9.7%		240	0.34	263	0.38	A		
General Jim Moore	S. Boundary Road	Canyon Del Rey	Arterial	2	2446	2050					327	0.30	164	0.15			
General Jim Moore	Canyon Del Rey	S. Boundary Road			2762	2150	5,208	4,200	24.0%		230	0.21	328	0.30	A		
Hawthorne	David	Prescott	Collector	2	4350	4821					408	0.19	332	0.15			
Hawthorne	Prescott	David			2907	2478	7,257	7,297	-0.5%		266	0.12	238	0.11	B		
Hawthorne	Prescott	Hoffman	Collector	2	991	1091					100	0.09	89	0.08			
Hawthorne	Hoffman	Prescott			6717	5249	7,708	6,340	21.6%		597	0.54	647	0.59	C		
Hawthorne	Reeside	Dickman	Collector	2	6221	4733					520	0.74	572	0.82			
Hawthorne	Dickman	Reeside			1879	1782	8,100	6,515	24.3%		228	0.33	128	0.18	C		
Highway 1	Hwy 68 (Holman)	Munras Ave	Freeway	5	38352	30700					3,697	0.62	3,284	0.55			
Highway 1	Munras Ave	Hwy 68 (Holman)			39586	33000	77,938	63,700	22.4%		3,766	0.94	3,313	0.83	D		
Highway 1	Aguajito	Soledad	Freeway	4	38050	27950					3,689	0.92	2,786	0.70		6	
Highway 1	Soledad	Aguajito			35132	31500	71,182	59,450	19.7%		3,240	0.81	3,297	0.82	E		C
Highway 1	Highway 68	Fremont Avenue	Freeway	8	54076	41874					4,555	0.57	5,499	0.69			
Highway 1	Fremont Avenue	Highway 68			53174	45091	107,250	86,785	23.6%		5,874	0.73	3,814	0.48	C		
Highway 1	Fremont Ave.	Highway 218	Freeway	6	44851	36200					4,809	0.80	3,024	0.51		8	
Highway 1	Highway 218	Fremont Ave.			43114	36800	87,965	73,000	20.5%		3,531	0.59	4,516	0.75	D		C
Highway 1	Hwy 218	Del Monte	Freeway	4	43718	36387					3,432	0.86	3,850	0.96		8	
Highway 1	Del Monte	Hwy 218			45172	36899	88,890	75,266	18.1%		4,219	1.05	3,303	0.83	F		C
Highway 218	Hwy 68	General Jim Moore Bl.	Rural Highway	2	8968	8100					807	0.58	928	0.66		4	
Highway 218	General Jim Moore Bl.	Hwy 68			8952	8321	17,920	16,421	9.1%		992	0.71	696	0.50	D		A
Highway 218	Fremont	N Street	Divided Roadway	4	10364	9900					1,008	0.36	846	0.32			
Highway 218	N Street	Fremont			10819	9820	21,183	19,720	7.4%		1,062	0.38	906	0.30	A		
Highway 68	Chomp Driveway	Highway 1	Freeway	4	14536	13889					1,506	0.43	1,174	0.34			
Highway 68	Highway 1	Chomp Driveway			13205	13334	27,741	27,223	1.9%		1,318	0.38	1,181	0.34	B		
Highway 68	Josselyn Cyn	Garden Rd.	Rural Highway	2	11575	10003					1,038	0.59	1,120	0.64		4	
Highway 68	Garden Rd.	Josselyn Cyn			12302	9603	23,877	19,606	21.8%		1,200	0.69	975	0.56	E		A

EXHIBIT 11
FUTURE ROADWAY
LEVEL OF SERVICE SUMMARY

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way	1-Way	2-Way	2-Way	Percent Growth from 2000	1-Way	PM	1-Way	AM	Level of Service	Mitigated	
						2020 Model Volume	2000 Model Volume	2020 Model Volume	2000 Count Volume		2020 PM-Peak Volume	V/C Ratio	2020 AM-Peak Volume	V/C Ratio		No. of Lanes	Level of Service
Highway 68	Regsdale		York Rd.	Rural Highway	2	14558	13201				1,576	1.13	1,010	0.72		4	
Highway 68	York Rd.		Ragsdale			13479	12601	28,037	25,802	8.7%	1,089	0.78	1,503	1.07	E		B
Josselyn Cyn	Hwy 68		Merk Thomas Dr.	Collector	2	1543	1311				129	0.18	173	0.25			
Josselyn Cyn	Mark Thomas Dr.		Hwy 68			1545	1504	3,088	2,815	9.7%	180	0.26	101	0.14	A		
Lighthouse	David		Prescott	Undivided Roadway	4	21255	19288				1,827	0.65	1,990	0.71		6	
Lighthouse	Prescott		David			13372	12300	34,627	31,588	9.6%	1,437	0.51	1,000	0.36	F		B
Lighthouse	Reeside		Foam	Undivided Roadway	4	35292	29998				3,187	1.14	3,069	1.10		8	
Lighthouse	Foam		Reeside			17882	15563	53,174	45,561	16.7%	2,001	0.71	1,324	0.47	F		C
Lighthouse Curve	Pacific		Foam	Divided Roadway	4	34924	28458				3,461	1.24	2,818	1.01		8	
Lighthouse Curve	Foam		Pacific			36027	31106	70,951	59,562	19.1%	3,276	1.17	3,049	1.09	F		C
Lighthouse Tunnel	Pacific		Del Monte	Divided Roadway	4	22040	19088				2,204	na	2,204	na		6	
Lighthouse Tunnel	Del Monte		Pacific			27373	26759	49,413	45,847	7.6%	2,737	na	2,737	na	E		C
Mar Vista	Skyline		Soledad	Collector	2	861	916				87	0.12	84	0.12			
Mar Vista	Soledad		Skyline			964	1137	1,825	2,053	-11.1%	87	0.14	88	0.13	A		
Mark Thomas	Josselyn Cyn		Old Salinas Rd.	Collector	2	5019	5223				501	0.72	449	0.64			
Mark Thomas	Old Salinas Rd.		Josselyn Cyn			5346	4276	10,365	9,499	9.1%	560	0.80	438	0.63	D		
Mark Thomas Dr	Sloat		Sylvan	Collector	2	5338	4562				509	0.73	506	0.72		2	
Mark Thomas Dr	Sylvan		Sloat			5759	5353	11,097	9,915	11.9%	625	0.89	446	0.64	E		A
Munras	Webster		Fremont	Arterial	2	6439	4378				666	0.48	407	0.29			
Munras	Fremont		Webster			8209	6400	14,648	10,778	35.9%	782	0.56	689	0.49	C		
Munras	Soledad Dr		Del Monte Shopping Ctr.	Divided Roadway	4	15208	12005				1,600	0.57	902	0.32			
Munras	Del Monte Shopping Ctr.		Soledad Dr			14615	12090	29,823	24,085	23.8%	1,226	0.44	1,365	0.49	C		
N Fremont	Ramona		Casanova	Divided Roadway	4	17418	15515				1,500	0.54	1,880	0.67			
N Fremont	Casanova		Ramona			18035	15216	35,453	30,731	15.4%	2,366	0.85	1,182	0.42	D		
Olmstead Rd.	Garden Road		Hwy 68	Collector	2	3310	2700				407	0.58	187	0.27			
Olmstead Rd.	Hwy 68		Garden Road			3344	2700	6,654	5,400	23.2%	238	0.34	401	0.57	B		
Pacific Street	Alameda		Soledad	Arterial	2	5573	4938				519	0.47	415	0.38			
Pacific Street	Soledad		Alameda			6482	3939	12,055	8,877	35.8%	466	0.43	582	0.53	B		
Pacific Street	Grove		Alameda	Arterial	2	5798	4275				534	0.49	442	0.40			
Pacific Street	Alameda		Grove			6479	4692	12,277	8,967	36.9%	471	0.43	578	0.53	B		
Pacific Street	Madison		Jefferson	Arterial	2	7430	5804				583	0.53	629	0.57			
Pacific Street	Jefferson		Madison			7463	6283	14,893	12,087	23.2%	704	0.64	568	0.51	C		
Pacific Street	Del Monte		Franklin	Arterial	2	10635	9488				925	0.84	884	0.60		4	
Pacific Street	Franklin		Del Monte			6782	4560	17,417	14,048	24.0%	578	0.53	535	0.49	E		A
Pearl	Tyler		Abrego	Collector	2	598	1750				60	0.09	51	0.07			
Pearl	Abrego		Tyler			3009	1750	3,607	3,500	3.1%	292	0.42	265	0.38	A		
Pine	Irving		David	Collector	2	340	501				39	0.06	23	0.03			
Pine	David		Irving			721	601	1,081	1,102	-3.7%	133	0.19	55	0.08	A		
Prescott	Pine		Oak	Collector	2	1436	2105				147	0.13	121	0.11			
Prescott	Oak		Pine			3061	2578	4,497	4,683	-4.0%	394	0.56	217	0.31	A		
Prescott	Tyler		Lotte	Collector	2	4515	5769				384	0.35	493	0.45			
Prescott	Lotte		Tyler			4265	4652	8,780	10,421	-15.7%	549	0.50	283	0.26	C		

EXHIBIT 11
FUTURE ROADWAY
LEVEL OF SERVICE SUMMARY

Seg. No.	Street	From:	To:	Roadway Description	No. of Lanes	1-Way 2000 Model Volume		2-Way 2000 Model Volume		Percent Growth from 2000	1-Way 2020 P.M.-Peak Volume		AM V/C Ratio	Level of Service	Mitigated No. of Lanes
						1-Way 2000 Model Volume	2-Way 2000 Model Volume	2-Way 2000 Count Volume	1-Way 2020 P.M.-Peak Volume		1-Way 2020 AM-Peak Volume				
	Ragsdale	Lower Ragsdale	Hwy 66	Collector	2	2762	3400				202	343	0.49		
	Ragsdale	Hwy 88	Lower Ragsdale	Collector	2	2890	3400	5,652	6,800	-16.9%	358	159	0.23	A	
	Reeside	Foam	Lighthouse	Collector	2	4045	2956				421	272	0.10		
	Reeside							4,045	2,856	36.8%				A	
	Ryan Ranch	Hwy 66	Park Rd.	Collector	2	3681	3100				498	198	0.28		
	Ryan Ranch	Park Rd.	Hwy 66	Collector	2	3433	3100	7,114	6,200	14.7%	230	481	0.69	B	
	Skyline Dr	Vets Park	Mar Vista	Collector	2	891	841				87	130	0.19		
	Skyline Dr	Mar Vista	Vets Park	Collector	2	1111	936	2,002	1,779	12.5%	142	70	0.10	A	
	Skyline Forest	Skyline Dr.	Holman Hwy	Collector	2	1718	2371				209	230	0.33		
	Skyline Forest	Holman Hwy	Skyline Dr.	Collector	2	2350	2150	4,068	4,521	-10.0%	301	183	0.26	A	
	Sloat	Third	Fifth	Collector	2	3739	3121				428	281	0.40		
	Sloat	Fifth	Third	Collector	2	3188	3234	6,907	6,355	8.7%	282	319	0.46	B	
	Sloat	Del Monte	Pearl	Collector	2	1734	1925				183	119	0.17		
	Sloat	Pearl	Del Monte	Collector	2	1945	2025	3,679	3,950	-6.9%	169	200	0.28	A	
	Soledad	Pacific	Munras Ave	Arterial	2	8951	8941				859	772	0.70		4
	Soledad	Munras Ave	Pacific	Arterial	2	9857	7719	16,808	16,660	12.9%	851	850	0.77	E	
	Tyler	Franklin	Bonifacio	Arterial	2	4587	1822				377	391	0.56		
	Tyler	Bonifacio	Franklin	Arterial	2	2181	2310	6,768	4,132	63.8%	192	175	0.25	A	
	Washington	Franklin	Del Monte	One-Way Street	2	125	5188				13	8	0.00		
	Washington							125	5,198	-97.6%				A	
	Wave	Drake	McClellan	Collector	2	375	601				84	10	0.01		
	Wave	McClellan	Drake	Collector	2	3286	1942	3,641	2,543	43.2%	493	161	0.23	A	

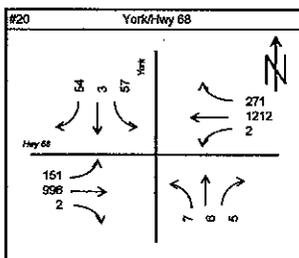
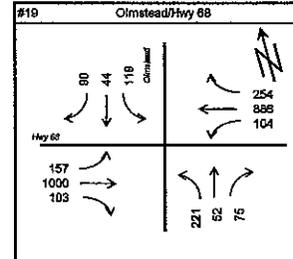
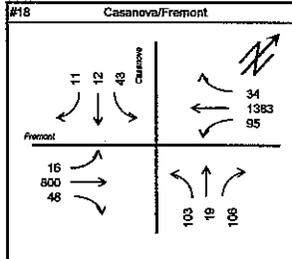
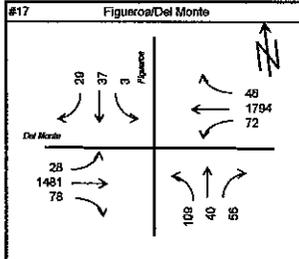
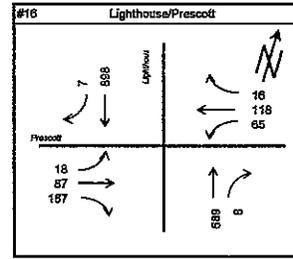
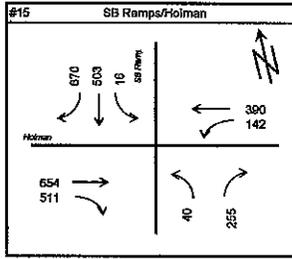
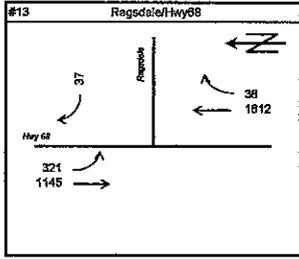
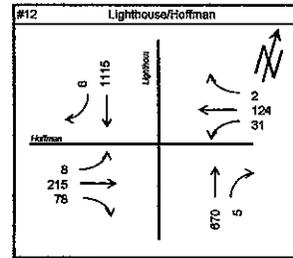
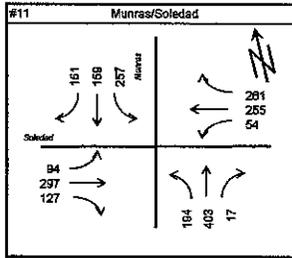
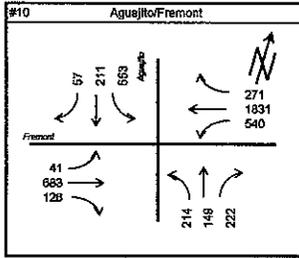
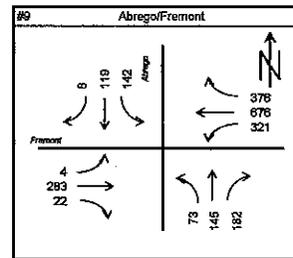
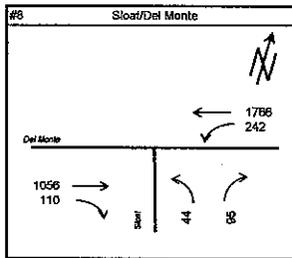
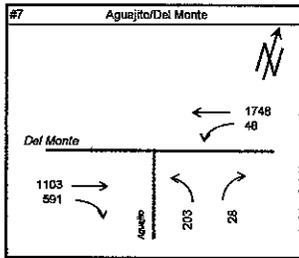
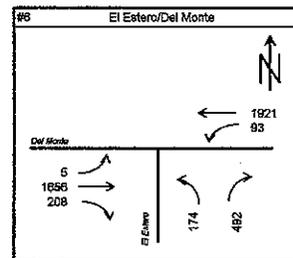
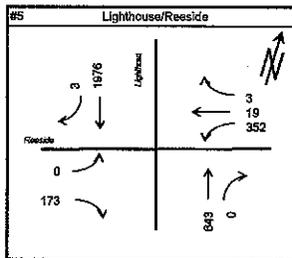
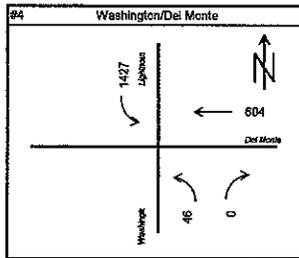
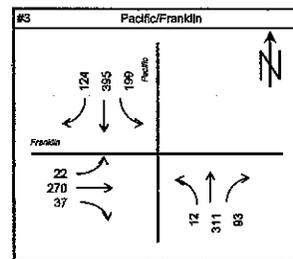
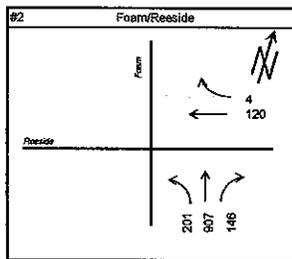
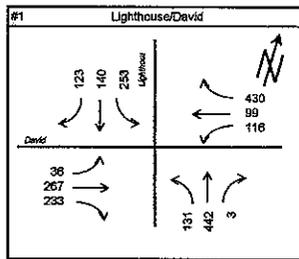


EXHIBIT 12
2023 CONDITIONS
AM PEAK HOUR VOLUMES

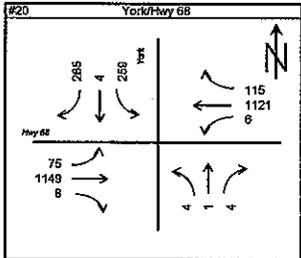
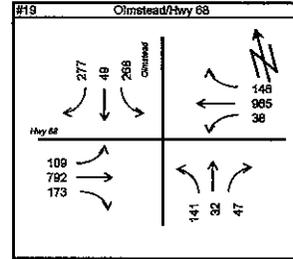
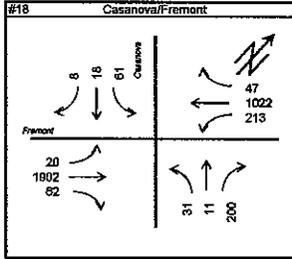
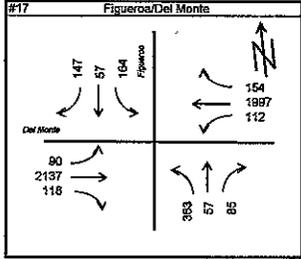
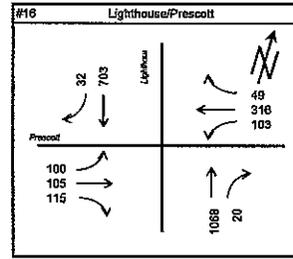
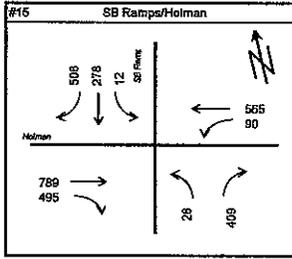
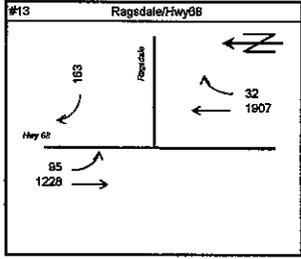
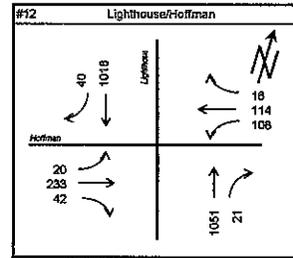
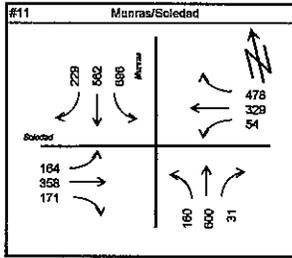
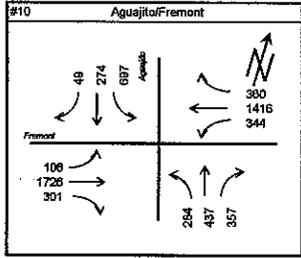
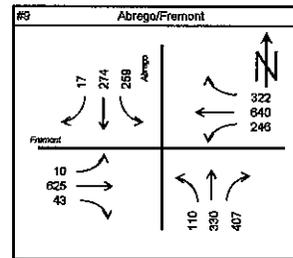
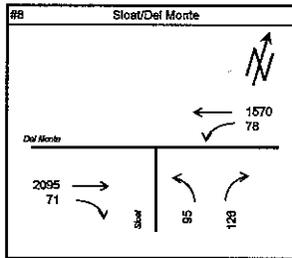
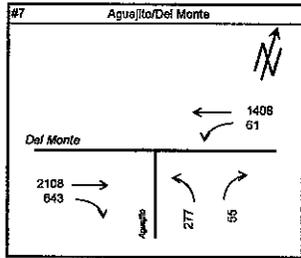
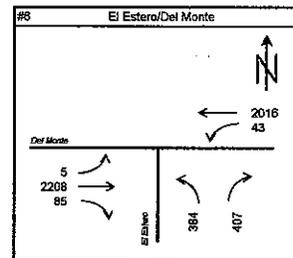
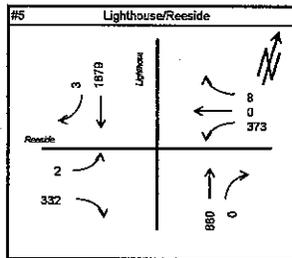
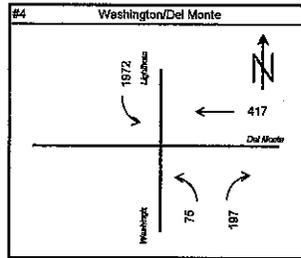
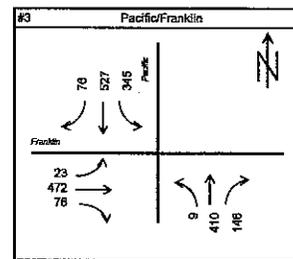
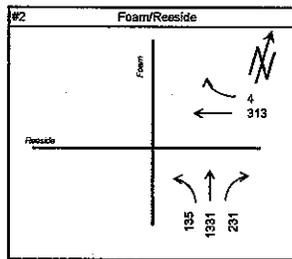
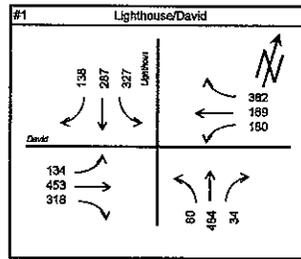


EXHIBIT 13
2023 CONDITIONS
PM PEAK HOUR VOLUMES

HCM Signalized Intersection Capacity Analysis
 18: FREMONT ST. & CASANOVA AV.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1776			1785	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.63	1.00			0.74	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1169	1776			1377	1583
Volume (vph)	20	1276	50	212	827	46	59	18	8	131	19	207
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1387	54	230	899	50	64	20	9	142	21	225
Lane Group Flow (vph)	22	1387	54	230	899	50	64	29	0	0	163	225
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Free
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4			8	6			2		Free
Actuated Green, G (s)	2.9	26.4	26.4	12.3	35.8	35.8	26.0	26.0			26.0	76.7
Effective Green, g (s)	2.9	26.4	26.4	12.3	35.8	35.8	26.0	26.0			26.0	76.7
Actuated g/C Ratio	0.04	0.34	0.34	0.16	0.47	0.47	0.34	0.34			0.34	1.00
Clearance Time (s)	4.0	4.0	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	3.0			3.0	
Lane Grp Cap (vph)	67	1218	545	284	1652	739	396	602			467	1583
v/s Ratio Prot	0.01	c0.39		c0.13	0.25			0.02				
v/s Ratio Perm			0.03			0.03	0.05				c0.12	0.14
v/c Ratio	0.33	1.14	0.10	0.81	0.54	0.07	0.16	0.05			0.35	0.14
Uniform Delay, d1	36.0	25.2	17.1	31.1	14.6	11.3	17.7	17.0			19.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	2.9	72.8	0.1	15.5	0.4	0.0	0.9	0.2			2.1	0.2
Delay (s)	38.8	98.0	17.2	46.6	15.0	11.3	18.6	17.2			21.1	0.2
Level of Service	D	F	B	D	B	B	B	B			C	A
Approach Delay (s)		94.1			21.0			18.2			9.0	
Approach LOS		F			C			B			A	

Intersection Summary

HCM Average Control Delay	53.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: HWY 68 & OLMSTEAD RD

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	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		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583		1794	1583		1780	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.56	1.00		0.69	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583		1037	1583		1288	1583
Volume (vph)	98	758	13	36	880	145	47	15	42	242	17	259
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	105	815	14	39	946	156	51	16	45	260	18	278
Lane Group Flow (vph)	105	815	14	39	946	156	0	67	45	0	278	278
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	6.5	49.3	49.3	3.7	46.5	46.5		21.0	21.0		21.0	21.0
Effective Green, g (s)	6.0	51.3	51.3	3.2	48.5	48.5		21.0	21.0		21.0	21.0
Actuated g/C Ratio	0.07	0.59	0.59	0.04	0.55	0.55		0.24	0.24		0.24	0.24
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0		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	3.0		3.0	3.0
Lane Grp Cap (vph)	121	1092	928	65	1033	877		249	380		309	380
v/s Ratio Prot	c0.06	c0.44		0.02	c0.51							
v/s Ratio Perm			0.01			0.10		0.06	0.03		c0.22	0.18
v/c Ratio	0.87	0.75	0.02	0.60	0.92	0.18		0.27	0.12		0.90	0.73
Uniform Delay, d1	40.4	13.3	7.6	41.5	17.7	9.6		27.0	26.0		32.2	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	43.7	4.7	0.0	14.0	13.9	0.4		0.6	0.1		27.0	7.1
Delay (s)	84.0	18.0	7.6	55.5	31.5	10.1		27.6	26.1		59.2	37.7
Level of Service	F	B	A	E	C	B		C	C		E	D
Approach Delay (s)		25.2			29.4			27.0			48.5	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	D
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

94: Hwy 68 & York

1/23/2004

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Volume (vph)	64	1036	1002	90	201	129
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	69	1114	1077	97	216	139
Lane Group Flow (vph)	69	1114	1077	97	216	139
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	4.1	57.0	48.9	48.9	14.4	14.4
Effective Green, g (s)	4.1	59.0	50.9	50.9	14.4	14.4
Actuated g/C Ratio	0.05	0.72	0.63	0.63	0.18	0.18
Clearance Time (s)	4.0	6.0	6.0	6.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	89	1350	1165	990	313	280
v/s Ratio Prot	0.04	c0.60	c0.58		c0.12	
v/s Ratio Perm				0.06		0.09
v/c Ratio	0.78	0.83	0.92	0.10	0.69	0.50
Uniform Delay, d1	38.2	7.7	13.5	6.1	31.4	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.5	4.3	12.1	0.0	6.4	1.4
Delay (s)	71.6	11.9	25.7	6.1	37.8	31.6
Level of Service	E	B	C	A	D	C
Approach Delay (s)		15.4	24.1		35.4	
Approach LOS		B	C		D	

Intersection Summary

HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	D
c Critical Lane Group			

APPENDIX E

**EXISTING CONDITIONS MITIGATED
ANALYSIS WORKSHEETS**

HCM Signalized Intersection Capacity Analysis
 4: DEL MONTE & LIGHTHOUSE

4/19/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑		↑	↑↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1500	1900	1900
Total Lost time (s)					4.0		4.0		4.0	4.0		
Lane Util. Factor					0.95		1.00		1.00	0.94		
Frt					1.00		1.00		0.85	1.00		
Flt Protected					1.00		0.95		1.00	0.95		
Satd. Flow (prot)					3539		1770		1583	3940		
Flt Permitted					1.00		0.95		1.00	0.95		
Satd. Flow (perm)					3539		1770		1583	3940		
Volume (vph)	0	0	0	0	532	0	123	0	86	1129	0	0
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	0	611	0	141	0	99	1298	0	0
Lane Group Flow (vph)	0	0	0	0	611	0	141	0	99	1298	0	0
Turn Type							custom		custom	custom		
Protected Phases					5		8			6		
Permitted Phases							8		8	6		
Actuated Green, G (s)					15.5		7.5		7.5	29.6		
Effective Green, g (s)					16.5		9.5		9.5	30.6		
Actuated g/C Ratio					0.24		0.14		0.14	0.45		
Clearance Time (s)					5.0		6.0		6.0	5.0		
Vehicle Extension (s)					3.0		3.0		3.0	3.0		
Lane Grp Cap (vph)					851		245		219	1757		
v/s Ratio Prot					c0.17		c0.08			c0.33		
v/s Ratio Perm									0.06			
v/c Ratio					0.72		0.58		0.45	0.74		
Uniform Delay, d1					23.9		27.7		27.2	15.7		
Progression Factor					1.00		1.00		1.00	1.00		
Incremental Delay, d2					2.9		3.3		1.5	2.8		
Delay (s)					26.8		30.9		28.6	18.5		
Level of Service					C		C		C	B		
Approach Delay (s)		0.0			26.8			30.0			18.5	
Approach LOS		A			C			C			B	
Intersection Summary												
HCM Average Control Delay			22.2									C
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			68.6							12.0		
Intersection Capacity Utilization			54.8%							A		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: DEL MONTE & LIGHTHOUSE

4/19/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↙		↗	↙↙↙		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1500	1900	1900
Total Lost time (s)					4.0		4.0		4.0	4.0		
Lane Util. Factor					0.95		1.00		1.00	0.94		
Fr _t					1.00		1.00		0.85	1.00		
Fl _t Protected					1.00		0.95		1.00	0.95		
Satd. Flow (prot)					3539		1770		1583	3940		
Fl _t Permitted					1.00		0.95		1.00	0.95		
Satd. Flow (perm)					3539		1770		1583	3940		
Volume (vph)	0	0	0	0	532	0	71	0	197	1512	0	0
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	0	611	0	82	0	226	1738	0	0
Lane Group Flow (vph)	0	0	0	0	611	0	82	0	226	1738	0	0
Turn Type							custom		custom	custom		
Protected Phases					5		8			6		
Permitted Phases							8		8	6		
Actuated Green, G (s)					16.1		10.5		10.5	29.0		
Effective Green, g (s)					17.1		12.5		12.5	30.0		
Actuated g/C Ratio					0.24		0.17		0.17	0.42		
Clearance Time (s)					5.0		6.0		6.0	5.0		
Vehicle Extension (s)					3.0		3.0		3.0	3.0		
Lane Grp Cap (vph)					845		309		276	1651		
v/s Ratio Prot					c0.17		0.05			c0.44		
v/s Ratio Perm									0.14			
v/c Ratio					0.72		0.27		0.82	1.05		
Uniform Delay, d1					25.1		25.6		28.5	20.8		
Progression Factor					1.00		1.00		1.00	1.00		
Incremental Delay, d2					3.1		0.5		17.0	37.5		
Delay (s)					28.2		26.0		45.4	58.3		
Level of Service					C		C		D	E		
Approach Delay (s)		0.0			28.2			40.3			58.3	
Approach LOS		A			C			D			E	
Intersection Summary												
HCM Average Control Delay			49.3									D
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			71.6							12.0		
Intersection Capacity Utilization			65.4%							B		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

4/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑	↗	↘	↑	↗	↘↘	↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	33	591	164	522	1437	262	167	86	193	255	101	45
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	38	672	186	593	1633	298	190	98	219	290	115	51
Lane Group Flow (vph)	38	672	186	593	1633	298	190	98	219	290	115	51
Turn Type	Prot		Free	Prot		Perm	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			Free			6
Actuated Green, G (s)	3.6	20.6	101.6	32.0	49.0	49.0	16.0	17.0	101.6	16.0	17.0	17.0
Effective Green, g (s)	3.6	20.6	101.6	32.0	49.0	49.0	16.0	17.0	101.6	16.0	17.0	17.0
Actuated g/C Ratio	0.04	0.20	1.00	0.31	0.48	0.48	0.16	0.17	1.00	0.16	0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	63	718	1583	557	2452	763	279	312	1583	541	312	265
v/s Ratio Prot	0.02	c0.19		c0.34	0.32		c0.11	0.05		c0.08	0.06	
v/s Ratio Perm			0.12			0.19			0.14			0.03
v/c Ratio	0.60	0.94	0.12	1.06	0.67	0.39	0.68	0.31	0.14	0.54	0.37	0.19
Uniform Delay, d1	48.3	39.9	0.0	34.8	20.1	16.8	40.4	37.2	0.0	39.4	37.5	36.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.2	19.4	0.2	56.5	0.7	0.3	12.7	2.6	0.2	3.8	3.3	1.6
Delay (s)	63.5	59.3	0.2	91.3	20.8	17.1	53.0	39.8	0.2	43.2	40.9	38.0
Level of Service	E	E	A	F	C	B	D	D	A	D	D	D
Approach Delay (s)		47.2			36.9			27.7			42.0	
Approach LOS		D			D			C			D	

Intersection Summary

HCM Average Control Delay	38.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

4/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Volume (vph)	91	1477	316	299	1018	353	216	151	314	385	149	36
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)	96	1555	333	315	1072	372	227	159	331	405	157	38
Lane Group Flow (vph)	96	1555	333	315	1072	372	227	159	331	405	157	38
Turn Type	Prot		Free	Prot		Perm	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			Free			6
Actuated Green, G (s)	10.9	51.1	118.0	21.0	61.2	61.2	16.0	13.9	118.0	16.0	13.9	13.9
Effective Green, g (s)	10.9	51.1	118.0	21.0	61.2	61.2	16.0	13.9	118.0	16.0	13.9	13.9
Actuated g/C Ratio	0.09	0.43	1.00	0.18	0.52	0.52	0.14	0.12	1.00	0.14	0.12	0.12
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	164	1533	1583	315	2637	821	240	219	1583	465	219	186
v/s Ratio Prot	0.05	c0.44		c0.18	0.21		c0.13	0.09		c0.12	0.08	
v/s Ratio Perm			0.21			0.23			0.21			0.02
v/c Ratio	0.59	1.01	0.21	1.00	0.41	0.45	0.95	0.73	0.21	0.87	0.72	0.20
Uniform Delay, d1	51.4	33.5	0.0	48.5	17.3	17.9	50.6	50.2	0.0	50.0	50.2	47.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	26.6	0.3	50.7	0.1	0.4	42.9	11.3	0.3	16.2	10.6	0.5
Delay (s)	56.6	60.1	0.3	99.2	17.4	18.3	93.5	61.5	0.3	66.2	60.8	47.6
Level of Service	E	E	A	F	B	B	F	E	A	E	E	D
Approach Delay (s)		49.9			32.2			43.4			63.6	
Approach LOS		D			C			D			E	

Intersection Summary

HCM Average Control Delay	44.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: SOLEDAD DR. & MUNRAS AV.

1/25/2004

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↗↗	↗	↘	↖	↖	↘	↗↗	↗	↖↖	↖↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	113	332	194	54	317	408	185	539	31	475	614	140
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	124	365	213	59	348	448	203	592	34	522	675	154
Lane Group Flow (vph)	124	365	213	59	348	448	203	592	34	522	675	154
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2		6	6
Actuated Green, G (s)	9.0	31.4	31.4	5.6	28.0	28.0	14.0	28.0	28.0	16.0	30.0	30.0
Effective Green, g (s)	10.0	32.4	32.4	6.6	29.0	29.0	15.0	29.0	29.0	17.0	31.0	31.0
Actuated g/C Ratio	0.10	0.32	0.32	0.07	0.29	0.29	0.15	0.29	0.29	0.17	0.31	0.31
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	175	1135	508	116	535	455	263	1016	455	578	1086	486
v/s Ratio Prot	c0.07	0.10		0.03	0.19		c0.11	0.17		c0.15	c0.19	
v/s Ratio Perm			0.13			0.28			0.02			0.10
v/c Ratio	0.71	0.32	0.42	0.51	0.65	0.98	0.77	0.58	0.07	0.90	0.62	0.32
Uniform Delay, d ₁	44.1	26.0	26.9	45.6	31.6	35.8	41.4	30.8	26.2	41.2	30.0	26.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	12.3	0.7	2.5	3.5	6.0	38.5	13.1	2.4	0.3	17.4	2.7	1.7
Delay (s)	56.4	26.7	29.5	49.1	37.6	74.3	54.5	33.3	26.5	58.6	32.7	28.6
Level of Service	E	C	C	D	D	E	D	C	C	E	C	C
Approach Delay (s)		32.8			57.6			38.2			42.2	
Approach LOS		C			E			D			D	

Intersection Summary

HCM Average Control Delay	43.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	101.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: RAGSDALE DR. & Hwy 68

1/25/2004

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗↗	↕↕	↖	↘	↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.88	0.95	1.00	1.00	0.95
Fr _t		0.85	1.00	0.85	1.00	1.00
Fl _t Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		2787	3539	1583	1770	3539
Fl _t Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2787	3539	1583	1770	3539
Volume (vph)	0	76	1379	22	440	979
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	79	1436	23	458	1020
Lane Group Flow (vph)	0	79	1436	23	458	1020
Turn Type		custom		Perm	Prot	
Protected Phases		5	6		5	2
Permitted Phases		5		6		
Actuated Green, G (s)		16.1	24.7	24.7	16.1	48.8
Effective Green, g (s)		16.1	24.7	24.7	16.1	48.8
Actuated g/C Ratio		0.33	0.51	0.51	0.33	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		919	1791	801	584	3539
v/s Ratio Prot		0.03	c0.41		c0.26	0.29
v/s Ratio Perm				0.01		
v/c Ratio		0.09	0.80	0.03	0.78	0.29
Uniform Delay, d ₁		11.3	10.0	6.0	14.8	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂		0.0	2.7	0.0	6.8	0.0
Delay (s)		11.3	12.7	6.1	21.6	0.0
Level of Service		B	B	A	C	A
Approach Delay (s)	11.3		12.6			6.7
Approach LOS	B		B			A

Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	48.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: RAGSDALE DR. & Hwy 68

1/25/2004

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.88	0.95	1.00	1.00	0.95
Frt		0.85	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		2787	3539	1583	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2787	3539	1583	1770	3539
Volume (vph)	0	298	1743	25	137	1043
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	304	1779	26	140	1064
Lane Group Flow (vph)	0	304	1779	26	140	1064
Turn Type		custom		Perm	Prot	
Protected Phases		5	6		5	2
Permitted Phases		5		6		
Actuated Green, G (s)		6.9	29.9	29.9	6.9	44.8
Effective Green, g (s)		6.9	29.9	29.9	6.9	44.8
Actuated g/C Ratio		0.15	0.67	0.67	0.15	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		429	2362	1057	273	3539
v/s Ratio Prot		c0.11	c0.50		0.08	0.30
v/s Ratio Perm				0.02		
v/c Ratio		0.71	0.75	0.02	0.51	0.30
Uniform Delay, d1		18.0	5.0	2.5	17.4	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		5.3	1.4	0.0	1.6	0.0
Delay (s)		23.3	6.4	2.5	19.0	0.0
Level of Service		C	A	A	B	A
Approach Delay (s)	23.3		6.3			2.3
Approach LOS	C		A			A
Intersection Summary						
HCM Average Control Delay			6.4		HCM Level of Service	A
HCM Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			44.8		Sum of lost time (s)	8.0
Intersection Capacity Utilization			66.5%		ICU Level of Service	B
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

15: HWY 68 & Holman

2/3/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑		↖		↗	↖	↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	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	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		1863	1583	1770	1863		1770		1583	1770	1863	1583
Flt Permitted		1.00	1.00	0.18	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		1863	1583	339	1863		1770		1583	1770	1863	1583
Volume (vph)	0	698	369	68	506	0	27	0	375	12	209	728
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	735	388	72	533	0	28	0	395	13	220	766
Lane Group Flow (vph)	0	735	388	72	533	0	28	0	395	13	220	766
Turn Type			Perm	Perm			custom		custom	Prot		Free
Protected Phases		4			8		5			1	6	
Permitted Phases			4	8		5		2			6	Free
Actuated Green, G (s)		22.0	22.0	22.0	22.0		1.2		11.9	0.6	11.3	46.5
Effective Green, g (s)		22.0	22.0	22.0	22.0		1.2		11.9	0.6	11.3	46.5
Actuated g/C Ratio		0.47	0.47	0.47	0.47		0.03		0.26	0.01	0.24	1.00
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		881	749	160	881		46		405	23	453	1583
v/s Ratio Prot		c0.39			0.29		0.02			0.01	0.12	
v/s Ratio Perm			0.25	0.21					0.25			0.48
v/c Ratio		0.83	0.52	0.45	0.60		0.61		0.98	0.57	0.49	0.48
Uniform Delay, d1		10.7	8.5	8.2	9.0		22.4		17.2	22.8	15.1	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		6.9	0.6	2.0	1.2		20.7		37.9	28.1	0.8	1.1
Delay (s)		17.5	9.2	10.2	10.2		43.1		55.0	50.9	15.9	1.1
Level of Service		B	A	B	B		D		E	D	B	A
Approach Delay (s)		14.6			10.2			54.3			5.0	
Approach LOS		B			B			D			A	

Intersection Summary

HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	C

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

15: HWY 68 & Holman

2/3/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑		↘		↗	↘	↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	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	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		1863	1583	1770	1863		1770		1583	1770	1863	1583
Flt Permitted		1.00	1.00	0.23	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		1863	1583	436	1863		1770		1583	1770	1863	1583
Volume (vph)	0	557	467	125	308	0	40	0	235	16	450	644
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	599	502	134	331	0	43	0	253	17	484	692
Lane Group Flow (vph)	0	599	502	134	331	0	43	0	253	17	484	692
Turn Type			Perm	Perm			custom		custom	Prot		Free
Protected Phases		4			8		5			1	6	
Permitted Phases			4	8			5		2		6	Free
Actuated Green, G (s)		29.5	29.5	29.5	29.5		2.1		22.4	1.2	21.5	65.1
Effective Green, g (s)		29.5	29.5	29.5	29.5		2.1		22.4	1.2	21.5	65.1
Actuated g/C Ratio		0.45	0.45	0.45	0.45		0.03		0.34	0.02	0.33	1.00
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		844	717	198	844		57		545	33	615	1583
v/s Ratio Prot		c0.32			0.18		0.02			0.01	c0.26	
v/s Ratio Perm			0.32	0.31					0.16			0.44
v/c Ratio		0.71	0.70	0.68	0.39		0.75		0.46	0.52	0.79	0.44
Uniform Delay, d1		14.3	14.3	14.0	11.8		31.2		16.7	31.7	19.7	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.8	3.1	8.8	0.3		42.7		0.6	12.9	6.6	0.9
Delay (s)		17.1	17.4	22.9	12.1		73.9		17.3	44.6	26.3	0.9
Level of Service		B	B	C	B		E		B	D	C	A
Approach Delay (s)		17.2			15.2			25.5			11.8	
Approach LOS		B			B			C			B	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	C

c Critical Lane Group

APPENDIX F

**FUTURE ROAD NETWORK
PROJECTS**

APPENDIX A

**LEVEL OF SERVICE DESCRIPTION -
SIGNALIZED INTERSECTIONS**

APPENDIX A

LEVEL OF SERVICE DESCRIPTION - SIGNALIZED INTERSECTIONS

Level of Service	Vehicle Delay (Secs.)	Volume to Capacity Ratio	Description
A	<5.00	0.00-0.59	Free Flow/Insignificant Delays: No approach is fully utilized by traffic and no vehicle waits longer than one red indication.
B	5.1-15.0	0.60-0.69	Stable Operation/Minimal Delays: An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles.
C	15.1-25.0	0.70-0.79	Stable Operation/Acceptable Delays: Major approach phases fully utilized. Most drivers feel somewhat restricted.
D	25.1-40.0	0.80-0.89	Approaching Unstable/Tolerable Delays: Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays.
E	40.1-60.0	0.90-0.99	Unstable Operation/Significant Delays: Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
F	≥60.0	N/A	Forced Flow/Excessive Delays: Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 1994.

APPENDIX B

**LEVEL OF SERVICE DESCRIPTION
TWO-WAY STOP CONTROLLED INTERSECTION**

APPENDIX B

LEVEL OF SERVICE DESCRIPTION TWO-WAY STOP CONTROLLED INTERSECTION

The 1994 Highway Capacity Manual (HCM) provides the description of the conceptual approach for the capacity analysis at Two-Way Stop Controlled (TWSC) intersections.

“Capacity analysis at TWSC intersections depends on a clear description and understanding of the interaction of drivers on the minor or stop-controlled approach with drivers on the minor or stop-controlled approach with drivers or vehicles on the major street. Both gap acceptance and empirical models have been developed as a means to describe this interaction.

Gap acceptance models begin with the recognition that TWSC intersections give no positive indication or control to the driver on the minor street as to when it is safe to leave the stop line and enter the major traffic stream. The driver must determine both when a gap in the major stream is large enough to permit safe entry and when it is his or her turn to do so on the basis of the relative priority of the competing traffic streams. This decision-making process has been formalized into what is known as gap acceptance theory.

Gap acceptance theory relies on three basic elements: the size and distribution (availability) of gaps in the major traffic stream, the usefulness of these gaps to the minor stream drivers, and the relative priority of the various traffic streams at the intersection”.

Using the gap acceptance theory, the average total delay is estimated for the study intersection. The level of service criteria based on the HCM methodology is tabulated in Table 1. Average total delay is defined as total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line.

The primary reason for this difference is that drivers expect a signalized intersection to be designed to carry higher traffic volumes than an unsignalized intersection. Also, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. The total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

TABLE 1. LEVEL OF SERVICE CRITERIA
FOR TWSC INTERSECTIONS

Level of Service	Average Total Delay (Sec/Veh)
A	≤ 5
B	> 5 and ≤ 10
C	> 10 and ≤ 20
D	> 20 and ≤ 30
E	> 30 and ≤ 45
F	> 45

APPENDIX C

**LEVEL OF SERVICE THRESHOLD VOLUMES FOR
VARIOUS ROADWAY TYPES**

APPENDIX C

LEVEL OF SERVICE THRESHOLD VOLUMES FOR VARIOUS ROADWAY TYPES TOTAL DAILY VOLUMES IN BOTH DIRECTIONS (ADT) /a/

ROADWAY TYPE	CODE	LOS A	LOS B	LOS C	LOS D	LOS E
10-Lane Freeway	10F	64,000	99,000	139,000	160,000	182,000
8-Lane Freeway	8F	51,000	79,000	112,000	136,000	146,000
6-Lane Freeway	6F	39,000	59,000	85,000	102,000	110,000
8-Lane Expressway	8E	35,000	54,000	75,000	90,000	98,000
6-Lane Expressway	6E	28,000	42,000	56,000	67,000	74,000
4-Lane Freeway	4F	26,000	40,000	57,000	69,000	74,000
8-Lane Divided Arterial (w/ left-turn lane)	9	40,000	47,000	54,000	61,000	68,000
6-Lane Divided Arterial (w/ left-turn lane)	7	32,000	38,000	43,000	49,000	54,000
4-Lane Expressway	4E	18,000	27,000	36,000	45,000	50,000
4-Lane Divided Arterial (w/ left-turn lane)	5	22,000	25,000	29,000	32,500	36,000
4-Lane Undivided Arterial (no left-turn lane)	4	16,000	19,000	22,000	24,000	27,000
2-Lane Arterial (w/ left-turn lane)	3	11,000	12,500	14,500	16,000	18,000
2-Lane Collector	2	6,000	7,500	9,000	10,500	12,000
2-Lane Local /b/	2L	1,200	1,400	1,600	1,800	2,000
1-Lane Freeway Ramp /c/	1	5,000	7,500	10,500	13,000	15,000
2-Lane Freeway Ramp /c/	1	10,000	15,000	21,000	26,000	28,000

Note: /a/ Non-directional peak hour traffic volume is assumed to be 10 percent of the daily traffic volume. Directional split is assumed 60/40.

All volumes are approximate and assume ideal roadway characteristics. Actual threshold volumes for each level of service listed above may vary depending on a number of factors including curvature and grade, intersection or interchange spacing, percentage of trucks and other heavy vehicles, lane widths, signal timing, on-street parking, amount of cross traffic and pedestrians, driveway spacing, etc.

/b/ The capacity limitation is related to neighborhood quality-of-life rather than the physical capacity of the road. This assumes a standard suburban neighborhood, 40 foot roadway width and 25 mile per hour speed limit with normal speed violation rates.

/c/ Capacities given for each service level assume the same level of service for the adjoining merging roadway as well as level of service being determined by volume-to-capacity ratio, not attainable vehicle speed. Level of service will be controlled by freeway level of service if worse than ramp.

Source: *Highway Capacity Manual, Special Report 209*, Transportation Research Board, 1985.

APPENDIX D1

**EXISTING AM PEAK HOUR
SYNCHRO ANALYSIS SHEETS**

HCM Signalized Intersection Capacity Analysis

2: REESIDE AV. & FOAM ST.

1/14/2004

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					 			 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0			4.0					
Lane Util. Factor					0.95			0.95					
Frt					0.99			0.99					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					3490			3471					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					3490			3471					
Volume (vph)	0	0	0	0	42	4	201	680	55	0	0	0	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Adj. Flow (vph)	0	0	0	0	49	5	236	800	65	0	0	0	
Lane Group Flow (vph)	0	0	0	0	54	0	0	1101	0	0	0	0	
Turn Type							Perm						
Protected Phases					8			2					
Permitted Phases							2						
Actuated Green, G (s)					12.0			20.0					
Effective Green, g (s)					11.0			19.0					
Actuated g/C Ratio					0.29			0.50					
Clearance Time (s)					3.0			3.0					
Lane Grp Cap (vph)					1010			1736					
v/s Ratio Prot					0.02								
v/s Ratio Perm								0.32					
v/c Ratio					0.05			0.63					
Uniform Delay, d1					9.7			7.0					
Progression Factor					1.00			1.00					
Incremental Delay, d2					0.1			1.8					
Delay (s)					9.8			8.7					
Level of Service					A			A					
Approach Delay (s)		0.0			9.8			8.7			0.0		
Approach LOS		A			A			A			A		
Intersection Summary													
HCM Average Control Delay			8.8									HCM Level of Service	A
HCM Volume to Capacity ratio			0.42										
Actuated Cycle Length (s)			38.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			41.9%									ICU Level of Service	A
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 3: FRANKLIN ST. & PACIFIC ST.

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Fr _t		1.00	0.85				1.00	0.97		1.00	0.96	
Fl _t Protected		1.00	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1857	1583				1770	1816		1770	1781	
Fl _t Permitted		1.00	1.00				0.37	1.00		0.61	1.00	
Satd. Flow (perm)		1857	1583				685	1816		1136	1781	
Volume (vph)	18	278	30	0	0	0	69	169	34	108	299	124
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	21	327	35	0	0	0	81	199	40	127	352	146
Lane Group Flow (vph)	0	348	35	0	0	0	81	239	0	127	498	0
Turn Type	Perm		Perm				Perm			Perm		
Protected Phases		4						2			2	
Permitted Phases	4		4				2			2		
Actuated Green, G (s)		13.6	13.6				18.1	18.1		18.1	18.1	
Effective Green, g (s)		13.6	13.6				18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.34	0.34				0.46	0.46		0.46	0.46	
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)		636	542				312	828		518	812	
v/s Ratio Prot								0.13			c0.28	
v/s Ratio Perm		0.19	0.02				0.12			0.11		
v/c Ratio		0.55	0.06				0.26	0.29		0.25	0.61	
Uniform Delay, d ₁		10.6	8.8				6.7	6.8		6.6	8.2	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d ₂		1.0	0.1				2.0	0.9		1.1	3.4	
Delay (s)		11.5	8.8				8.7	7.6		7.7	11.6	
Level of Service		B	A				A	A		A	B	
Approach Delay (s)		11.3			0.0			7.9			10.8	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 4: DEL MONTE AV. & WASHINGTON

4/19/2004

						
Movement	NBL2	NBL	NBR2	SET	NWL	NWT
Lane Configurations		 		  	 	 
Ideal Flow (vphpl)	1900	1900	1900	1500	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.97	1.00	0.91	0.97	0.95
Frt	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3433	1583	4015	3433	3539
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3433	1583	4015	3433	3539
Volume (vph)	43	88	86	1129	532	1168
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	49	101	99	1298	611	1343
Lane Group Flow (vph)	49	101	99	1298	611	1343
Turn Type	Split		Perm	Prot		custom
Protected Phases	8	8		6	5	
Permitted Phases			8			2
Actuated Green, G (s)	30.0	30.0	30.0	35.0	30.0	71.0
Effective Green, g (s)	32.0	32.0	32.0	36.0	31.0	71.0
Actuated g/C Ratio	0.29	0.29	0.29	0.32	0.28	0.64
Clearance Time (s)	6.0	6.0	6.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	510	990	456	1302	959	2264
v/s Ratio Prot	0.03	0.03		c0.32	c0.18	
v/s Ratio Perm			0.06			0.38
v/c Ratio	0.10	0.10	0.22	1.00	0.64	0.59
Uniform Delay, d1	28.9	29.0	30.0	37.4	35.1	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	0.2	24.2	1.4	0.4
Delay (s)	29.0	29.0	30.2	61.7	36.5	12.0
Level of Service	C	C	C	E	D	B
Approach Delay (s)		29.5		61.7		19.7
Approach LOS		C		E		B

Intersection Summary

HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	111.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 5: REESIDE AV. & LIGHTHOUSE AV.

1/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor			1.00	0.95	0.95			0.95			0.95	
Frt			0.85	1.00	1.00			1.00			1.00	
Flt Protected			1.00	0.95	0.96			1.00			1.00	
Satd. Flow (prot)			1583	1681	1692			3539			3539	
Flt Permitted			1.00	0.95	0.96			1.00			1.00	
Satd. Flow (perm)			1583	1681	1692			3539			3539	
Volume (vph)	0	0	253	274	19	3	0	467	0	0	1520	1
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	0	312	338	23	4	0	577	0	0	1877	1
Lane Group Flow (vph)	0	0	312	180	185	0	0	577	0	0	1878	0
Turn Type	custom		custom		Split							
Protected Phases				8	8			2			6	
Permitted Phases	4		4									
Actuated Green, G (s)			15.3	13.9	13.9			40.7			40.7	
Effective Green, g (s)			14.8	13.4	13.4			40.7			40.7	
Actuated g/C Ratio			0.18	0.17	0.17			0.50			0.50	
Clearance Time (s)			3.5	3.5	3.5			4.0			4.0	
Vehicle Extension (s)			3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)			290	278	280			1780			1780	
v/s Ratio Prot				0.11	c0.11			0.16			c0.53	
v/s Ratio Perm			0.20									
v/c Ratio			1.08	0.65	0.66			0.32			1.06	
Uniform Delay, d1			33.1	31.5	31.6			11.9			20.1	
Progression Factor			1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2			74.5	5.1	5.7			0.5			37.6	
Delay (s)			107.5	36.7	37.4			12.4			57.7	
Level of Service			F	D	D			B			E	
Approach Delay (s)	107.5				37.0			12.4			57.7	
Approach LOS	F				D			B			E	
Intersection Summary												
HCM Average Control Delay			51.9					HCM Level of Service			D	
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			80.9					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			91.4%					ICU Level of Service		E		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 6: DEL MONTE AV. & CAMINO ESTERO

1/14/2004

							
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
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	1.00	0.91	0.97	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	3433	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	3433	1583
Volume (vph)	2	1047	452	28	1481	120	540
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	1114	481	30	1576	128	574
Lane Group Flow (vph)	2	1114	481	30	1576	128	574
Turn Type	Prot		Perm	Prot		Perm	
Protected Phases	7	4		3	8	2	
Permitted Phases			4			2	2
Actuated Green, G (s)	0.7	40.2	40.2	4.6	44.1	38.7	38.7
Effective Green, g (s)	0.7	40.7	40.7	4.6	44.6	38.7	38.7
Actuated g/C Ratio	0.01	0.42	0.42	0.05	0.46	0.40	0.40
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	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)	13	1500	671	85	2362	1384	638
v/s Ratio Prot	0.00	c0.31		c0.02	c0.31	0.04	
v/s Ratio Perm			0.30				0.36
v/c Ratio	0.15	0.74	0.72	0.35	0.67	0.09	0.90
Uniform Delay, d1	47.4	23.2	22.9	44.3	19.9	17.8	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	3.4	6.5	2.5	0.7	0.1	18.1
Delay (s)	52.8	26.6	29.3	46.8	20.7	17.9	44.9
Level of Service	D	C	C	D	C	B	D
Approach Delay (s)		27.5			21.2	40.0	
Approach LOS		C			C	D	

Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 7: DEL MONTE AV. & CAMINO AGUAJITO

1/14/2004

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔↔		↔	↔↔	↔↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	0.97	
Frt	0.97		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3438		1770	3539	3393	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3438		1770	3539	3393	
Volume (vph)	915	217	48	1271	176	28
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1017	241	53	1412	196	31
Lane Group Flow (vph)	1258	0	53	1412	227	0
Turn Type			Prot			
Protected Phases	2		1	6	4	
Permitted Phases						
Actuated Green, G (s)	60.7		5.3	69.0	11.6	
Effective Green, g (s)	61.7		4.3	70.0	12.1	
Actuated g/C Ratio	0.68		0.05	0.78	0.13	
Clearance Time (s)	5.0		3.0	5.0	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2354		84	2750	456	
v/s Ratio Prot	0.37		0.03	c0.40	c0.07	
v/s Ratio Perm						
v/c Ratio	0.53		0.63	0.51	0.50	
Uniform Delay, d1	7.1		42.1	3.7	36.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.9		14.4	0.7	0.9	
Delay (s)	7.9		56.5	4.4	37.0	
Level of Service	A		E	A	D	
Approach Delay (s)	7.9			6.3	37.0	
Approach LOS	A			A	D	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 8: DEL MONTE AV. & SLOAT AV.

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frt		0.98			1.00			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.95	1.00		0.99	
Satd. Flow (prot)		3479			3527			1777	1583		1778	
Flt Permitted		0.95			0.75			0.73	1.00		0.94	
Satd. Flow (perm)		3317			2664			1362	1583		1691	
Volume (vph)	2	868	110	83	1289	3	44	2	84	1	2	1
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	2	1072	136	102	1591	4	54	2	104	1	2	1
Lane Group Flow (vph)	0	1210	0	0	1697	0	0	56	104	0	4	0
Turn Type	Perm			pm+pt			Perm		Perm	Perm	Perm	
Protected Phases		4		3	8			2				6
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		71.5			71.5			7.9	7.9			7.9
Effective Green, g (s)		72.0			72.0			7.9	7.9			7.9
Actuated g/C Ratio		0.82			0.82			0.09	0.09			0.09
Clearance Time (s)		4.5			4.5			4.0	4.0			4.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		2717			2182			122	142			152
v/s Ratio Prot												
v/s Ratio Perm		0.36			0.64			0.04	0.07			0.00
v/c Ratio		0.45			0.78			0.46	0.73			0.03
Uniform Delay, d1		2.3			4.0			38.0	39.0			36.5
Progression Factor		1.00			1.00			1.00	1.00			1.00
Incremental Delay, d2		0.5			1.8			2.7	17.6			0.1
Delay (s)		2.8			5.8			40.7	56.6			36.6
Level of Service		A			A			D	E			D
Approach Delay (s)		2.8			5.8			51.0				36.6
Approach LOS		A			A			D				D
Intersection Summary												
HCM Average Control Delay			7.0									
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			87.9									
Intersection Capacity Utilization			96.1%									
c Critical Lane Group												
HCM Level of Service									A			
Sum of lost time (s)									8.0			
ICU Level of Service									E			

HCM Signalized Intersection Capacity Analysis
 9: FREMONT ST. & ABREGO ST.

2/2/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		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	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3493		1770	3474		1770	1863	1583	1770	1838	
Flt Permitted	0.34	1.00		0.50	1.00		0.69	1.00	1.00	0.63	1.00	
Satd. Flow (perm)	628	3493		938	3474		1290	1863	1583	1174	1838	
Volume (vph)	4	217	20	230	643	89	56	138	135	93	85	8
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	233	22	247	691	96	60	148	145	100	91	9
Lane Group Flow (vph)	4	255	0	247	787	0	60	148	145	100	100	0
Turn Type	pm+pt			pm+pt			pm+pt			pt+ov	pm+pt	
Protected Phases	5	2		1	6		3	8	8	1	7	4
Permitted Phases	2			6			8				4	
Actuated Green, G (s)	21.6	20.7		28.7	24.0		11.1	9.3	18.5	12.1	9.3	
Effective Green, g (s)	22.6	21.2		30.2	25.0		11.6	9.8	19.0	12.6	10.3	
Actuated g/C Ratio	0.41	0.39		0.55	0.46		0.21	0.18	0.35	0.23	0.19	
Clearance Time (s)	4.5	4.5		4.5	5.0		4.0	4.5		3.5	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	290	1359		599	1594		290	335	552	297	347	
v/s Ratio Prot	0.00	0.07		c0.04	c0.23		0.01	c0.08	c0.09	c0.01	0.05	
v/s Ratio Perm	0.01			0.19			0.04			0.06		
v/c Ratio	0.01	0.19		0.41	0.49		0.21	0.44	0.26	0.34	0.29	
Uniform Delay, d1	9.4	11.0		6.5	10.3		17.5	19.9	12.7	17.1	19.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.5	0.2		0.4	0.9	0.3	0.7	0.5	
Delay (s)	9.4	11.0		6.9	10.6		17.8	20.8	13.0	17.8	19.4	
Level of Service	A	B		A	B		B	C	B	B	B	
Approach Delay (s)		11.0			9.7			17.1			18.6	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

2/2/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1681	1740	1583	1681	1731	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1681	1740	1583	1681	1731	1583
Volume (vph)	33	591	164	522	1437	262	167	86	193	255	101	45
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	38	672	186	593	1633	298	190	98	219	290	115	51
Lane Group Flow (vph)	38	672	186	593	1633	298	140	148	219	197	208	51
Turn Type	Prot		Free	Prot		Perm	Split		Free	Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			Free			8			Free			6
Actuated Green, G (s)	2.4	17.6	87.6	22.0	37.2	37.2	16.0	16.0	87.6	16.0	16.0	16.0
Effective Green, g (s)	2.4	17.6	87.6	22.0	37.2	37.2	16.0	16.0	87.6	16.0	16.0	16.0
Actuated g/C Ratio	0.03	0.20	1.00	0.25	0.42	0.42	0.18	0.18	1.00	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	48	711	1583	445	2159	672	307	318	1583	307	316	289
v/s Ratio Prot	0.02	c0.19		c0.34	0.32		0.08	c0.09		0.12	c0.12	
v/s Ratio Perm			0.12			0.19			0.14			0.03
v/c Ratio	0.79	0.95	0.12	1.33	0.76	0.44	0.46	0.47	0.14	0.64	0.66	0.18
Uniform Delay, d1	42.4	34.5	0.0	32.8	21.4	17.9	31.9	32.0	0.0	33.1	33.3	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	58.5	21.2	0.2	164.4	1.6	0.5	4.8	4.8	0.2	9.9	10.3	1.3
Delay (s)	100.8	55.7	0.2	197.2	22.9	18.3	36.7	36.8	0.2	43.0	43.5	31.6
Level of Service	F	E	A	F	C	B	D	D	A	D	D	C
Approach Delay (s)		46.1			63.3			21.0			42.0	
Approach LOS		D			E			C			D	

Intersection Summary

HCM Average Control Delay	52.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: SOLEDAD DR. & MUNRAS AV.

1/14/2004

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		 						 		 		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	58	285	112	54	225	192	183	33	17	102	194	40
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
Adj. Flow (vph)	64	317	124	60	250	213	203	37	19	113	216	44
Lane Group Flow (vph)	64	317	124	60	250	213	203	37	19	113	216	44
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2		6	6
Actuated Green, G (s)	5.4	28.2	28.2	5.4	28.2	28.2	14.0	29.8	29.8	5.4	21.2	21.2
Effective Green, g (s)	6.4	29.2	29.2	6.4	29.2	29.2	15.0	30.8	30.8	6.4	22.2	22.2
Actuated g/C Ratio	0.07	0.33	0.33	0.07	0.33	0.33	0.17	0.35	0.35	0.07	0.25	0.25
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	128	1164	521	128	613	521	299	1227	549	247	885	396
v/s Ratio Prot	c0.04	0.09		0.03	0.13		c0.11	0.01		c0.03	c0.06	
v/s Ratio Perm			0.08			0.13			0.01			0.03
v/c Ratio	0.50	0.27	0.24	0.47	0.41	0.41	0.68	0.03	0.03	0.46	0.24	0.11
Uniform Delay, d1	39.7	22.0	21.7	39.6	23.1	23.1	34.6	19.1	19.2	39.5	26.6	25.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.6	1.1	2.7	2.0	2.4	6.0	0.0	0.1	1.3	0.7	0.6
Delay (s)	42.7	22.5	22.8	42.3	25.1	25.5	40.7	19.2	19.3	40.9	27.3	26.3
Level of Service	D	C	C	D	C	C	D	B	B	D	C	C
Approach Delay (s)		25.2			27.2			36.0			31.3	
Approach LOS		C			C			D			C	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: HOFFMAN AV. & LIGHTHOUSE AV.

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆			⬆			⬆			⬆	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.89			1.00			1.00			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1658			1842			3534			3535	
Flt Permitted		0.99			0.94			1.00			1.00	
Satd. Flow (perm)		1643			1739			3534			3535	
Volume (vph)	3	16	78	31	124	2	0	493	5	0	1043	8
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	4	19	94	37	149	2	0	594	6	0	1257	10
Lane Group Flow (vph)	0	117	0	0	188	0	0	600	0	0	1267	0
Tum Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		12.2			12.2			45.6			45.6	
Effective Green, g (s)		12.2			12.2			45.6			45.6	
Actuated g/C Ratio		0.19			0.19			0.69			0.69	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		305			322			2449			2450	
v/s Ratio Prot								0.17			c0.36	
v/s Ratio Perm		0.07			c0.11							
v/c Ratio		0.38			0.58			0.24			0.52	
Uniform Delay, d1		23.5			24.5			3.7			4.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.8			2.7			0.2			0.8	
Delay (s)		24.3			27.2			4.0			5.6	
Level of Service		C			C			A			A	
Approach Delay (s)		24.3			27.2			4.0			5.6	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	A
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 13: RAGSDALE DR. & HWY 68

1/14/2004

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	76	1379	22	440	979
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	0	79	1436	23	458	1020
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
vC, conflicting volume	3373	1436			1459	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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	52			1	
cM capacity (veh/h)	0	164			463	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	0	79	1436	23	458	1020
Volume Left	0	0	0	0	458	0
Volume Right	0	79	0	23	0	0
cSH	1700	164	1700	1700	463	1700
Volume to Capacity	0.00	0.48	0.84	0.01	0.99	0.60
Queue Length (ft)	0	58	0	0	320	0
Control Delay (s)	0.0	46.1	0.0	0.0	69.3	0.0
Lane LOS	A	E			F	
Approach Delay (s)	46.1		0.0		21.5	
Approach LOS	E					

Intersection Summary

Average Delay	11.7				
Intersection Capacity Utilization	107.7%		ICU Level of Service		F

HCM Signalized Intersection Capacity Analysis
 15: 1 SB Off & HWY 68 (Holman)

2/2/2004

Movement												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		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			1.00	1.00
Frt	1.00		0.85		1.00	0.85	1.00	1.00			0.85	0.85
Flt Protected	0.95		1.00		1.00	1.00	0.95	0.95			1.00	1.00
Satd. Flow (prot)	1770		1583		1860	1583	1770	1770			1583	1583
Flt Permitted	0.25		1.00		1.00	1.00	0.25	0.95			1.00	1.00
Satd. Flow (perm)	466		1583		1860	1583	466	1770			1583	1583
Volume (vph)	40	0	235	16	450	644	125	308	0	0	557	467
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	0	253	17	484	692	134	331	0	0	599	502
Lane Group Flow (vph)	43	0	253	0	501	692	134	331	0	0	599	502
Turn Type	custom		custom	Split		Perm	Perm					Perm
Protected Phases				6	6			8				4
Permitted Phases	2		2		6	6	8	8				4
Actuated Green, G (s)	16.0		16.0		16.0	16.0	16.0	16.0				16.0
Effective Green, g (s)	16.0		16.0		16.0	16.0	16.0	16.0				16.0
Actuated g/C Ratio	0.27		0.27		0.27	0.27	0.27	0.27				0.27
Clearance Time (s)	4.0		4.0		4.0	4.0	4.0	4.0				4.0
Lane Grp Cap (vph)	124		422		496	422	124	472				422
v/s Ratio Prot					0.27			0.19				c0.38
v/s Ratio Perm	0.09		0.16			0.44	0.29					0.32
v/c Ratio	0.35		0.60		1.01	1.64	1.08	0.70				1.42
Uniform Delay, d1	17.8		19.2		22.0	22.0	22.0	19.8				22.0
Progression Factor	1.00		1.00		1.00	1.00	1.00	1.00				1.00
Incremental Delay, d2	7.5		6.2		42.9	298.5	104.1	8.4				202.2
Delay (s)	25.3		25.4		64.9	320.5	126.1	28.3				224.2
Level of Service	C		C		E	F	F	C				F
Approach Delay (s)		25.4			213.2			56.5		180.7		
Approach LOS		C			F			E		F		

Intersection Summary

HCM Average Control Delay	159.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: PRESCOTT AV. & LIGHTHOUSE AV.

1/14/2004

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0			4.0		
Lane Util. Factor		1.00			1.00			0.95			0.95		
Frt		0.91			0.98			1.00			1.00		
Flt Protected		1.00			0.99			1.00			1.00		
Satd. Flow (prot)		1681			1807			3534			3534		
Flt Permitted		0.97			0.90			1.00			1.00		
Satd. Flow (perm)		1638			1649			3534			3534		
Volume (vph)	23	57	181	22	62	14	0	505	5	0	871	9	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	25	62	197	24	67	15	0	549	5	0	947	10	
Lane Group Flow (vph)	0	284	0	0	106	0	0	554	0	0	957	0	
Turn Type	Perm			Perm									
Protected Phases		4			8			2			6		
Permitted Phases	4			8									
Actuated Green, G (s)		16.5			16.5			43.2			43.2		
Effective Green, g (s)		16.5			16.5			43.2			43.2		
Actuated g/C Ratio		0.24			0.24			0.64			0.64		
Clearance Time (s)		4.0			4.0			4.0			4.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		399			402			2255			2255		
v/s Ratio Prot								0.16			0.27		
v/s Ratio Perm		0.17			0.06								
v/c Ratio		0.71			0.26			0.25			0.42		
Uniform Delay, d1		23.4			20.7			5.3			6.1		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		5.9			0.4			0.3			0.6		
Delay (s)		29.3			21.0			5.5			6.7		
Level of Service		C			C			A			A		
Approach Delay (s)		29.3			21.0			5.5			6.7		
Approach LOS		C			C			A			A		
Intersection Summary													
HCM Average Control Delay			10.5									HCM Level of Service	B
HCM Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			67.7									Sum of lost time (s)	8.0
Intersection Capacity Utilization			56.6%									ICU Level of Service	A
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 17: DEL MONTE AV. & FIGUEROA ST.

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5047		1770	5062		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	1770	5047		1770	5062		1362	1863	1583	1360	1863	1583
Volume (vph)	29	1149	61	72	1349	43	55	37	56	37	36	28
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
Adj. Flow (vph)	32	1277	68	80	1499	48	61	41	62	41	40	31
Lane Group Flow (vph)	32	1345	0	80	1547	0	61	41	62	41	40	31
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4		4	8		8
Actuated Green, G (s)	3.4	52.8		8.4	57.8		9.8	9.8	9.8	9.8	9.8	9.8
Effective Green, g (s)	3.4	52.8		8.4	57.8		9.8	9.8	9.8	9.8	9.8	9.8
Actuated g/C Ratio	0.04	0.64		0.10	0.70		0.12	0.12	0.12	0.12	0.12	0.12
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	73	3211		179	3525		161	220	187	161	220	187
v/s Ratio Prot	0.02	0.27		c0.05	c0.31			0.02			0.02	
v/s Ratio Perm							c0.04		0.04	0.03		0.02
v/c Ratio	0.44	0.42		0.45	0.44		0.38	0.19	0.33	0.25	0.18	0.17
Uniform Delay, d1	38.9	7.5		35.1	5.5		33.8	33.0	33.6	33.3	33.0	32.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.1		1.8	0.4		1.5	0.4	1.0	0.8	0.4	0.4
Delay (s)	43.0	7.6		36.9	5.9		35.3	33.4	34.6	34.1	33.4	33.3
Level of Service	D	A		D	A		D	C	C	C	C	C
Approach Delay (s)		8.4			7.4			34.6			33.6	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 18: FREMONT ST. & CASANOVA AV.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1729			1783	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.68	1.00			0.73	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1273	1729			1361	1583
Volume (vph)	16	644	29	95	1081	34	44	12	11	94	11	106
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	700	32	103	1175	37	48	13	12	102	12	115
Lane Group Flow (vph)	17	700	32	103	1175	37	48	25	0	0	114	115
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Free
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4			8	6			2		Free
Actuated Green, G (s)	1.1	21.6	21.6	5.3	25.8	25.8	11.2	11.2			11.2	50.1
Effective Green, g (s)	1.1	21.6	21.6	5.3	25.8	25.8	11.2	11.2			11.2	50.1
Actuated g/C Ratio	0.02	0.43	0.43	0.11	0.51	0.51	0.22	0.22			0.22	1.00
Clearance Time (s)	4.0	4.0	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	3.0			3.0	
Lane Grp Cap (vph)	39	1526	682	187	1822	815	285	387			304	1583
v/s Ratio Prot	0.01	0.20		c0.06	c0.33			0.01				
v/s Ratio Perm			0.02			0.02	0.04				c0.08	0.07
v/c Ratio	0.44	0.46	0.05	0.55	0.64	0.05	0.17	0.06			0.38	0.07
Uniform Delay, d1	24.2	10.1	8.3	21.3	8.8	6.0	15.7	15.3			16.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	7.6	0.2	0.0	3.5	0.8	0.0	0.3	0.1			0.8	0.1
Delay (s)	31.8	10.3	8.3	24.8	9.6	6.1	16.0	15.4			17.3	0.1
Level of Service	C	B	A	C	A	A	B	B			B	A
Approach Delay (s)		10.7			10.7			15.8			8.6	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	A
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: HWY 68 & OLMSTEAD RD.

1/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	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		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583		1802	1583		1793	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.68	1.00		0.72	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583		1264	1583		1341	1583
Volume (vph)	139	904	33	96	787	237	53	25	75	110	32	78
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	148	962	35	102	837	252	56	27	80	117	34	83
Lane Group Flow (vph)	148	962	35	102	837	252	0	83	80	0	151	83
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	8.5	48.7	48.7	6.5	46.7	46.7		14.3	14.3		14.3	14.3
Effective Green, g (s)	8.0	50.7	50.7	6.0	48.7	48.7		14.3	14.3		14.3	14.3
Actuated g/C Ratio	0.10	0.61	0.61	0.07	0.59	0.59		0.17	0.17		0.17	0.17
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0		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	3.0		3.0	3.0
Lane Grp Cap (vph)	171	1138	967	128	1093	929		218	273		231	273
v/s Ratio Prot	c0.08	c0.52		0.06	0.45							
v/s Ratio Perm			0.02			0.16		0.07	0.05		c0.11	0.05
v/c Ratio	0.87	0.85	0.04	0.80	0.77	0.27		0.38	0.29		0.65	0.30
Uniform Delay, d1	37.0	13.0	6.4	37.9	12.9	8.4		30.4	29.9		32.0	30.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	33.7	7.8	0.1	28.1	5.1	0.7		1.1	0.6		6.5	0.6
Delay (s)	70.7	20.8	6.5	66.0	18.0	9.1		31.5	30.5		38.5	30.6
Level of Service	E	C	A	E	B	A		C	C		D	C
Approach Delay (s)		26.8			20.2			31.1			35.7	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

93: Hwy 68 & York

1/23/2004

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Volume (vph)	129	877	1035	215	34	28
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	140	953	1125	234	37	30
Lane Group Flow (vph)	140	953	1125	234	37	30
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	7.0	61.0	50.0	50.0	7.2	7.2
Effective Green, g (s)	7.0	63.0	52.0	52.0	7.2	7.2
Actuated g/C Ratio	0.09	0.81	0.66	0.66	0.09	0.09
Clearance Time (s)	4.0	6.0	6.0	6.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	158	1501	1239	1053	163	146
v/s Ratio Prot	c0.08	0.51	c0.60		c0.02	
v/s Ratio Perm				0.15		0.02
v/c Ratio	0.89	0.63	0.91	0.22	0.23	0.21
Uniform Delay, d1	35.2	3.0	11.1	5.2	32.9	32.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.2	0.9	9.7	0.1	0.7	0.7
Delay (s)	75.4	3.9	20.8	5.3	33.6	33.6
Level of Service	E	A	C	A	C	C
Approach Delay (s)		13.1	18.1		33.6	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	78.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
c Critical Lane Group			

APPENDIX D2

**EXISTING PM PEAK HOUR
SYNCHRO ANALYSIS SHEETS**

HCM Signalized Intersection Capacity Analysis

1: DAVID AV. & LIGHTHOUSE AV.

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		0.95			0.95		1.00	1.00	
Frt		1.00	0.85		0.89			0.99		1.00	0.99	
Flt Protected		0.98	1.00		1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1835	1583		3120			3499		1770	1840	
Flt Permitted		0.62	1.00		0.79			0.95		0.37	1.00	
Satd. Flow (perm)		1162	1583		2468			3315		692	1840	
Volume (vph)	136	309	284	39	68	347	10	427	32	262	372	33
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	140	319	293	40	70	358	10	440	33	270	384	34
Lane Group Flow (vph)	0	459	293	0	468	0	0	483	0	270	418	0
Turn Type	Perm		Perm	Perm			Perm			pm+pt		
Protected Phases		4			4			2		1	6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)		25.0	25.0		25.0			30.2		43.0	43.0	
Effective Green, g (s)		25.0	25.0		25.0			30.2		43.0	43.0	
Actuated g/C Ratio		0.33	0.33		0.33			0.40		0.57	0.57	
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)		382	521		812			1317		516	1041	
v/s Ratio Prot										c0.06	0.23	
v/s Ratio Perm		c0.39	0.19		0.19			0.15		c0.24		
v/c Ratio		1.20	0.56		0.58			0.37		0.52	0.40	
Uniform Delay, d1		25.5	21.0		21.1			16.2		9.0	9.3	
Progression Factor		1.00	1.00		1.00			1.00		1.00	1.00	
Incremental Delay, d2		113.2	1.4		1.0			0.8		1.0	1.2	
Delay (s)		138.7	22.4		22.1			16.9		10.0	10.4	
Level of Service		F	C		C			B		A	B	
Approach Delay (s)		93.4			22.1			16.9			10.2	
Approach LOS		F			C			B			B	

Intersection Summary

HCM Average Control Delay	40.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	D
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 2: REESIDE AV. & FOAM ST.

1/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.99			0.99				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3502			3484				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3502			3484				
Volume (vph)	0	0	0	0	202	15	135	1135	99	0	0	0
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	0	0	0	213	16	142	1195	104	0	0	0
Lane Group Flow (vph)	0	0	0	0	229	0	0	1441	0	0	0	0
Turn Type							Perm					
Protected Phases					8			2				
Permitted Phases							2					
Actuated Green, G (s)					12.0			20.0				
Effective Green, g (s)					11.0			19.0				
Actuated g/C Ratio					0.29			0.50				
Clearance Time (s)					3.0			3.0				
Lane Grp Cap (vph)					1014			1742				
v/s Ratio Prot					0.07							
v/s Ratio Perm								0.41				
v/c Ratio					0.23			0.83				
Uniform Delay, d1					10.3			8.1				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.5			4.7				
Delay (s)					10.8			12.8				
Level of Service					B			B				
Approach Delay (s)		0.0			10.8			12.8			0.0	
Approach LOS		A			B			B			A	
Intersection Summary												
HCM Average Control Delay			12.5									B
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			38.0									8.0
Intersection Capacity Utilization			53.5%									A
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: FRANKLIN ST. & PACIFIC ST.

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.97		1.00	0.98	
Flt Protected		1.00	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1857	1583				1770	1810		1770	1826	
Flt Permitted		1.00	1.00				0.23	1.00		0.41	1.00	
Satd. Flow (perm)		1857	1583				423	1810		766	1826	
Volume (vph)	32	472	68	0	0	0	52	326	75	248	499	76
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)	34	497	72	0	0	0	55	343	79	261	525	80
Lane Group Flow (vph)	0	531	72	0	0	0	55	422	0	261	605	0
Turn Type	Perm		Perm				Perm		Perm		Perm	
Protected Phases		4						2				2
Permitted Phases	4		4				2			2		
Actuated Green, G (s)		17.1	17.1				18.2	18.2		18.2	18.2	
Effective Green, g (s)		17.1	17.1				18.2	18.2		18.2	18.2	
Actuated g/C Ratio		0.39	0.39				0.42	0.42		0.42	0.42	
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)		733	625				178	761		322	768	
v/s Ratio Prot								0.23			0.33	
v/s Ratio Perm		0.29	0.05				0.13			0.34		
v/c Ratio		0.72	0.12				0.31	0.55		0.81	0.79	
Uniform Delay, d1		11.1	8.3				8.4	9.5		11.0	10.9	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.6	0.1				4.5	2.9		19.5	8.0	
Delay (s)		14.7	8.4				12.8	12.4		30.5	18.9	
Level of Service		B	A				B	B		C	B	
Approach Delay (s)		13.9			0.0			12.4			22.4	
Approach LOS		B			A			B			C	
Intersection Summary												
HCM Average Control Delay			17.3				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			43.3				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			80.5%				ICU Level of Service			D		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 4: DEL MONTE AV. & WASHINGTON

4/19/2004

Movement						
	NBL2	NBL	NBR2	SET	NWL	NWT
Lane Configurations		 		  	 	 
Ideal Flow (vphpl)	1900	1900	1900	1500	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.97	1.00	0.91	0.97	0.95
Frt	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3433	1583	4015	3433	3539
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3433	1583	4015	3433	3539
Volume (vph)	71	272	197	1512	408	1438
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	73	280	203	1559	421	1482
Lane Group Flow (vph)	73	280	203	1559	421	1482
Turn Type	Split		Perm	Prot		custom
Protected Phases	8	8		6	5	
Permitted Phases			8			2
Actuated Green, G (s)	30.0	30.0	30.0	35.0	30.0	71.0
Effective Green, g (s)	32.0	32.0	32.0	36.0	31.0	71.0
Actuated g/C Ratio	0.29	0.29	0.29	0.32	0.28	0.64
Clearance Time (s)	6.0	6.0	6.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	510	990	456	1302	959	2264
v/s Ratio Prot	0.04	0.08		0.39	0.12	
v/s Ratio Perm			0.13			0.42
v/c Ratio	0.14	0.28	0.45	1.20	0.44	0.65
Uniform Delay, d1	29.3	30.6	32.3	37.5	32.9	12.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2	0.7	96.5	1.5	1.5
Delay (s)	29.5	30.8	32.9	134.0	34.3	13.9
Level of Service	C	C	C	F	C	B
Approach Delay (s)		31.4		134.0		18.4
Approach LOS		C		F		B

Intersection Summary

HCM Average Control Delay	65.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	111.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 5: REESIDE AV. & LIGHTHOUSE AV.

1/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙		↘	↙	↘	↘		↕	↘		↕	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00		1.00	0.95	0.95			0.95			0.95	
Frt	1.00		0.85	1.00	0.99			1.00			1.00	
Flt Protected	0.95		1.00	0.95	0.97			1.00			1.00	
Satd. Flow (prot)	1770		1583	1681	1710			3539			3538	
Flt Permitted	0.29		1.00	0.95	0.97			1.00			1.00	
Satd. Flow (perm)	548		1583	1681	1710			3539			3538	
Volume (vph)	2	0	296	262	71	8	0	761	0	0	1517	3
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	0	315	279	76	9	0	810	0	0	1614	3
Lane Group Flow (vph)	2	0	315	179	185	0	0	810	0	0	1617	0
Turn Type	custom		custom		Split							
Protected Phases				8	8			2			6	
Permitted Phases	4		4									
Actuated Green, G (s)	14.1		14.1	13.6	13.6			40.9			40.9	
Effective Green, g (s)	13.6		13.6	13.1	13.1			40.9			40.9	
Actuated g/C Ratio	0.17		0.17	0.16	0.16			0.51			0.51	
Clearance Time (s)	3.5		3.5	3.5	3.5			4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	94		270	277	281			1818			1818	
v/s Ratio Prot				0.11	c0.11			0.23			c0.46	
v/s Ratio Perm	0.00		0.20									
v/c Ratio	0.02		1.17	0.65	0.66			0.45			0.89	
Uniform Delay, d1	27.5		33.0	31.1	31.2			12.2			17.3	
Progression Factor	1.00		1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1		107.5	5.1	5.5			0.8			7.0	
Delay (s)	27.6		140.5	36.2	36.6			13.0			24.3	
Level of Service	C		F	D	D			B			C	
Approach Delay (s)		139.8			36.4			13.0			24.3	
Approach LOS		F			D			B			C	

Intersection Summary

HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	D
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: DEL MONTE AV. & CAMINO ESTERO

1/14/2004

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
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	1.00	0.91	0.97	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	3433	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	3433	1583
Volume (vph)	5	1524	321	39	1727	293	349
Peak-hour factor, PHF	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1604	338	41	1818	308	367
Lane Group Flow (vph)	5	1604	338	41	1818	308	367
Turn Type	Prot		Perm	Prot			Perm
Protected Phases	7	4		3	8	2	
Permitted Phases			4			2	2
Actuated Green, G (s)	0.7	40.1	40.1	5.1	44.5	38.7	38.7
Effective Green, g (s)	0.7	40.6	40.6	5.1	45.0	38.7	38.7
Actuated g/C Ratio	0.01	0.42	0.42	0.05	0.47	0.40	0.40
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	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)	13	1490	667	94	2374	1378	635
v/s Ratio Prot	0.00	c0.45		c0.02	c0.36	0.09	
v/s Ratio Perm			0.21				0.23
v/c Ratio	0.38	1.08	0.51	0.44	0.77	0.22	0.58
Uniform Delay, d1	47.6	27.9	20.5	44.3	21.3	19.0	22.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.9	46.9	2.7	3.2	1.5	0.4	3.8
Delay (s)	65.5	74.8	23.3	47.5	22.9	19.3	26.3
Level of Service	E	E	C	D	C	B	C
Approach Delay (s)		65.8			23.4	23.1	
Approach LOS		E			C	C	

Intersection Summary

HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	96.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 7: DEL MONTE AV. & CAMINO AGUAJITO

4/8/2004

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	0.97	
Frt	0.98		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3478		1770	3539	3384	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3478		1770	3539	3384	
Volume (vph)	1779	230	61	1108	285	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1934	250	66	1204	310	60
Lane Group Flow (vph)	2184	0	66	1204	370	0
Turn Type			Prot			
Protected Phases	2		1	6	4	
Permitted Phases						
Actuated Green, G (s)	56.2		6.7	65.9	14.9	
Effective Green, g (s)	57.2		5.7	66.9	15.4	
Actuated g/C Ratio	0.63		0.06	0.74	0.17	
Clearance Time (s)	5.0		3.0	5.0	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2203		112	2622	577	
v/s Ratio Prot	c0.63		c0.04	0.34	c0.11	
v/s Ratio Perm						
v/c Ratio	0.99		0.59	0.46	0.64	
Uniform Delay, d1	16.3		41.2	4.6	34.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	17.2		7.7	0.6	2.4	
Delay (s)	33.6		48.9	5.2	37.3	
Level of Service	C		D	A	D	
Approach Delay (s)	33.6			7.4	37.3	
Approach LOS	C			A	D	
Intersection Summary						
HCM Average Control Delay			25.2		HCM Level of Service	C
HCM Volume to Capacity ratio			0.89			
Actuated Cycle Length (s)			90.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			85.8%		ICU Level of Service	D
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 8: DEL MONTE AV. & SLOAT AV.

1/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frt		0.99			1.00			1.00	0.85		1.00	
Flt Protected		1.00			1.00			0.95	1.00		0.97	
Satd. Flow (prot)		3518			3533			1770	1583		1808	
Flt Permitted		0.95			0.70			0.75	1.00		0.90	
Satd. Flow (perm)		3352			2465			1399	1583		1686	
Volume (vph)	4	1766	71	47	1270	1	95	0	116	6	4	0
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	4	1802	72	48	1296	1	97	0	118	6	4	0
Lane Group Flow (vph)	0	1878	0	0	1345	0	0	97	118	0	10	0
Turn Type	Perm			pm+pt			Perm		Perm	Perm	Perm	
Protected Phases		4		3	8			2				6
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		65.5			65.5			26.0	26.0			26.0
Effective Green, g (s)		66.0			66.0			26.0	26.0			26.0
Actuated g/C Ratio		0.66			0.66			0.26	0.26			0.26
Clearance Time (s)		4.5			4.5			4.0	4.0			4.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		2212			1627			364	412			438
v/s Ratio Prot												
v/s Ratio Perm		c0.56			0.55			0.07	0.07			0.01
v/c Ratio		0.85			0.83			0.27	0.29			0.02
Uniform Delay, d1		13.1			12.7			29.4	29.6			27.5
Progression Factor		1.00			1.00			1.00	1.00			1.00
Incremental Delay, d2		4.3			3.6			0.4	0.4			0.1
Delay (s)		17.4			16.3			29.8	30.0			27.6
Level of Service		B			B			C	C			C
Approach Delay (s)		17.4			16.3			29.9				27.6
Approach LOS		B			B			C				C

Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: FREMONT ST. & ABREGO ST.

2/2/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		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	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3500		1770	3466		1770	1863	1583	1770	1845	
Flt Permitted	0.39	1.00		0.28	1.00		0.34	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	732	3500		531	3466		630	1863	1583	794	1845	
Volume (vph)	10	513	40	191	552	88	98	247	312	182	249	17
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	546	43	203	587	94	104	263	332	194	265	18
Lane Group Flow (vph)	11	589	0	203	681	0	104	263	332	194	283	0
Turn Type	pm+pt			pm+pt			pm+pt		pm+ov	pm+pt		
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	19.9	19.1		29.7	24.4		15.1	11.6	18.2	14.1	10.6	
Effective Green, g (s)	20.9	19.6		30.7	25.4		15.6	12.1	19.2	14.6	11.6	
Actuated g/C Ratio	0.36	0.34		0.53	0.44		0.27	0.21	0.33	0.25	0.20	
Clearance Time (s)	4.5	4.5		4.5	5.0		4.0	4.5	4.5	3.5	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	288	1187		434	1523		239	390	635	251	370	
v/s Ratio Prot	0.00	0.17		0.06	0.20		0.03	0.14	c0.06	c0.04	0.15	
v/s Ratio Perm	0.01			c0.19			0.09		0.15	c0.16		
v/c Ratio	0.04	0.50		0.47	0.45		0.44	0.67	0.52	0.77	0.76	
Uniform Delay, d1	11.9	15.2		7.9	11.3		16.6	21.0	15.6	19.8	21.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.8	0.2		1.3	4.6	0.8	13.7	9.1	
Delay (s)	11.9	15.5		8.7	11.5		17.9	25.6	16.4	33.6	30.9	
Level of Service	B	B		A	B		B	C	B	C	C	
Approach Delay (s)		15.4			10.9			20.1			32.0	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

2/2/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.99	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1681	1752	1583	1681	1730	1583
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.99	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1681	1752	1583	1681	1730	1583
Volume (vph)	91	1477	316	299	1018	353	216	151	314	385	149	36
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)	96	1555	333	315	1072	372	227	159	331	405	157	38
Lane Group Flow (vph)	96	1555	333	315	1072	372	188	198	331	274	288	38
Turn Type	Prot		Free	Prot		Perm	Split		Free	Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			Free			8			Free			6
Actuated Green, G (s)	6.9	27.9	83.9	11.0	32.0	32.0	13.4	13.4	83.9	15.6	15.6	15.6
Effective Green, g (s)	6.9	27.9	83.9	11.0	32.0	32.0	13.4	13.4	83.9	15.6	15.6	15.6
Actuated g/C Ratio	0.08	0.33	1.00	0.13	0.38	0.38	0.16	0.16	1.00	0.19	0.19	0.19
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	146	1177	1583	232	1939	604	268	280	1583	313	322	294
v/s Ratio Prot	0.05	c0.44		c0.18	0.21		0.11	c0.11		0.16	c0.17	
v/s Ratio Perm			0.21			0.23			0.21			0.02
v/c Ratio	0.66	1.32	0.21	1.36	0.55	0.62	0.70	0.71	0.21	0.88	0.89	0.13
Uniform Delay, d ₁	37.4	28.0	0.0	36.5	20.3	21.0	33.4	33.4	0.0	33.2	33.3	28.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	10.2	150.6	0.3	186.4	0.3	1.9	8.0	7.9	0.3	22.8	25.4	0.2
Delay (s)	47.6	178.6	0.3	222.9	20.7	22.9	41.4	41.3	0.3	56.0	58.8	28.7
Level of Service	D	F	A	F	C	C	D	D	A	E	E	C
Approach Delay (s)		142.3			57.4			22.4			55.6	
Approach LOS		F			E			C			E	

Intersection Summary

HCM Average Control Delay	85.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

11: SOLEDAD DR. & MUNRAS AV.

1/14/2004

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	113	332	194	54	317	408	185	539	31	475	614	140
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	124	365	213	59	348	448	203	592	34	522	675	154
Lane Group Flow (vph)	124	365	213	59	348	448	203	592	34	522	675	154
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2		6	6
Actuated Green, G (s)	8.0	30.4	30.4	5.6	28.0	28.0	14.0	28.0	28.0	7.0	21.0	21.0
Effective Green, g (s)	9.0	31.4	31.4	6.6	29.0	29.0	15.0	29.0	29.0	8.0	22.0	22.0
Actuated g/C Ratio	0.10	0.35	0.35	0.07	0.32	0.32	0.16	0.32	0.32	0.09	0.24	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	175	1221	546	128	594	504	292	1128	504	302	856	383
v/s Ratio Prot	c0.07	0.10		0.03	0.19		c0.11	0.17		c0.15	c0.19	
v/s Ratio Perm			0.13			0.28			0.02			0.10
v/c Ratio	0.71	0.30	0.39	0.46	0.59	0.89	0.70	0.52	0.07	1.73	0.79	0.40
Uniform Delay, d1	39.7	21.8	22.6	40.5	26.0	29.5	35.8	25.4	21.6	41.5	32.3	29.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.3	0.6	2.1	2.6	4.2	20.3	7.0	1.7	0.3	341.4	7.3	3.1
Delay (s)	52.1	22.4	24.6	43.1	30.2	49.8	42.9	27.1	21.8	382.9	39.6	32.1
Level of Service	D	C	C	D	C	D	D	C	C	F	D	C
Approach Delay (s)		28.3			41.3			30.7			171.4	
Approach LOS		C			D			C			F	

Intersection Summary

HCM Average Control Delay	83.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: HOFFMAN AV. & LIGHTHOUSE AV.

1/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.93			0.99			1.00			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1707			1807			3527			3521	
Flt Permitted		0.94			0.86			1.00			1.00	
Satd. Flow (perm)		1615			1586			3527			3521	
Volume (vph)	15	19	42	87	111	16	0	924	21	0	869	31
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	17	21	47	98	125	18	0	1038	24	0	976	35
Lane Group Flow (vph)	0	85	0	0	241	0	0	1062	0	0	1011	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		15.3			15.3			44.4			44.4	
Effective Green, g (s)		15.3			15.3			44.4			44.4	
Actuated g/C Ratio		0.23			0.23			0.66			0.66	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		365			358			2313			2309	
v/s Ratio Prot								c0.30			0.29	
v/s Ratio Perm		0.05			c0.15							
v/c Ratio		0.23			0.67			0.46			0.44	
Uniform Delay, d1		21.4			23.9			5.7			5.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			4.9			0.7			0.6	
Delay (s)		21.7			28.8			6.4			6.2	
Level of Service		C			C			A			A	
Approach Delay (s)		21.7			28.8			6.4			6.2	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	A
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 13: RAGSDALE DR. & HWY 68

1/14/2004

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	298	1743	25	137	1043
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	0	304	1779	26	140	1064
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
vC, conflicting volume	3122	1779			1804	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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	0			59	
cM capacity (veh/h)	7	102			341	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	0	304	1779	26	140	1064
Volume Left	0	0	0	0	140	0
Volume Right	0	304	0	26	0	0
cSH	1700	102	1700	1700	341	1700
Volume to Capacity	0.00	2.98	1.05	0.02	0.41	0.63
Queue Length (ft)	0	729	0	0	48	0
Control Delay (s)	0.0	980.1	0.0	0.0	22.7	0.0
Lane LOS	A	F			C	
Approach Delay (s)	980.1		0.0		2.6	
Approach LOS	F					

Intersection Summary

Average Delay		90.9				
Intersection Capacity Utilization		119.1%		ICU Level of Service		G

HCM Signalized Intersection Capacity Analysis

15: HWY 68 (Holman) & Hwy. 1

2/2/2004

Movement	WBL2	WBL	WBR	SEL	SET	SER	NWL	NWT	NWR	NEL	NER	NER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		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		1.00		0.95
Frt		1.00	0.85		1.00	0.85	1.00	1.00		0.92		0.85
Flt Protected		0.95	1.00		1.00	1.00	0.95	1.00		0.98		1.00
Satd. Flow (prot)		1770	1583		1863	1583	1770	1863		1669		1504
Flt Permitted		0.95	1.00		1.00	1.00	0.25	1.00		0.34		1.00
Satd. Flow (perm)		1770	1583		1863	1583	466	1863		575		1504
Volume (vph)	12	209	728	0	698	369	68	506	0	27	0	375
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)	13	220	766	0	735	388	72	533	0	28	0	395
Lane Group Flow (vph)	0	233	766	0	735	388	72	533	0	64	0	359
Turn Type	Split		Perm			Perm	Perm			custom		custom
Protected Phases	6	6			4			8				
Permitted Phases		6	6		4	4	8			2		2
Actuated Green, G (s)		16.0	16.0		16.0	16.0	16.0	16.0		16.0		16.0
Effective Green, g (s)		16.0	16.0		16.0	16.0	16.0	16.0		16.0		16.0
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.27	0.27		0.27		0.27
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0		4.0
Lane Grp Cap (vph)		472	422		497	422	124	497		153		401
v/s Ratio Prot		0.13			0.39			0.29				
v/s Ratio Perm			0.48			0.25	0.15			0.11		0.24
v/c Ratio		0.49	1.82		1.48	0.92	0.58	1.07		0.42		0.90
Uniform Delay, d1		18.6	22.0		22.0	21.4	19.1	22.0		18.2		21.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00		1.00
Incremental Delay, d2		3.7	376.1		226.2	27.6	18.3	61.2		8.2		25.1
Delay (s)		22.2	398.1		248.2	49.0	37.4	83.2		26.4		46.2
Level of Service		C	F		F	D	D	F		C		D
Approach Delay (s)		310.4			179.3			77.7		43.2		
Approach LOS		F			F			E		D		

Intersection Summary

HCM Average Control Delay	183.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: PRESCOTT AV. & LIGHTHOUSE AV.

1/14/2004

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0			4.0		
Lane Util. Factor		1.00			1.00			0.95			0.95		
Flt		0.93			0.98			1.00			0.99		
Flt Protected		0.99			0.99			1.00			1.00		
Satd. Flow (prot)		1719			1794			3529			3517		
Flt Permitted		0.95			0.82			1.00			1.00		
Satd. Flow (perm)		1647			1491			3529			3517		
Volume (vph)	21	71	107	77	154	49	0	935	18	0	680	29	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	23	77	116	84	167	53	0	1016	20	0	739	32	
Lane Group Flow (vph)	0	216	0	0	304	0	0	1036	0	0	771	0	
Turn Type	Perm			Perm									
Protected Phases		4			8			2			6		
Permitted Phases	4			8									
Actuated Green, G (s)		17.9			17.9			43.2			43.2		
Effective Green, g (s)		17.9			17.9			43.2			43.2		
Actuated g/C Ratio		0.26			0.26			0.63			0.63		
Clearance Time (s)		4.0			4.0			4.0			4.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		427			386			2206			2199		
v/s Ratio Prot								0.29			0.22		
v/s Ratio Perm		0.13			0.20								
v/c Ratio		0.51			0.79			0.47			0.35		
Uniform Delay, d1		21.8			23.8			6.9			6.2		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.9			10.2			0.7			0.4		
Delay (s)		22.8			34.0			7.6			6.7		
Level of Service		C			C			A			A		
Approach Delay (s)		22.8			34.0			7.6			6.7		
Approach LOS		C			C			A			A		
Intersection Summary													
HCM Average Control Delay			12.1									HCM Level of Service	B
HCM Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			69.1									Sum of lost time (s)	8.0
Intersection Capacity Utilization			67.8%									ICU Level of Service	B
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 17: DEL MONTE AV. & FIGUEROA ST.

1/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5044		1770	5022		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	1770	5044		1770	5022		1340	1863	1583	1343	1863	1583
Volume (vph)	90	1699	96	112	1657	150	100	53	118	159	56	146
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	93	1752	99	115	1708	155	103	55	122	164	58	151
Lane Group Flow (vph)	93	1851	0	115	1863	0	103	55	122	164	58	151
Turn Type	Prot			Prot			Perm			Perm	Perm	Perm
Protected Phases	1	6		5	2			4		4	8	
Permitted Phases							4		4	8		8
Actuated Green, G (s)	8.1	47.4		9.2	48.5		15.6	15.6	15.6	15.6	15.6	15.6
Effective Green, g (s)	8.1	47.4		9.2	48.5		15.6	15.6	15.6	15.6	15.6	15.6
Actuated g/C Ratio	0.10	0.56		0.11	0.58		0.19	0.19	0.19	0.19	0.19	0.19
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	170	2839		193	2893		248	345	293	249	345	293
v/s Ratio Prot	0.05	0.37		c0.06	c0.37			0.03			0.03	
v/s Ratio Perm							0.08		0.08	c0.12		0.10
v/c Ratio	0.55	0.65		0.60	0.64		0.42	0.16	0.42	0.66	0.17	0.52
Uniform Delay, d1	36.3	12.7		35.7	12.0		30.3	28.8	30.3	31.8	28.8	30.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.5		4.9	1.1		1.1	0.2	1.0	6.2	0.2	1.5
Delay (s)	39.9	13.2		40.6	13.1		31.4	29.0	31.2	38.0	29.1	32.4
Level of Service	D	B		D	B		C	C	C	D	C	C
Approach Delay (s)		14.5			14.7			30.9			34.4	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

4/14/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.94	1.00	
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	3539	1583	4990	1803	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	4990	1803	
Volume (vph)	41	683	126	540	1831	271	214	149	222	553	211	57
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	47	776	143	614	2081	308	243	169	252	628	240	65
Lane Group Flow (vph)	47	776	143	614	2081	308	243	169	252	628	305	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	2.2	20.1	28.0	16.1	34.0	48.8	7.9	8.9	25.0	14.8	15.8	
Effective Green, g (s)	2.2	20.1	28.0	16.1	34.0	48.8	7.9	8.9	25.0	14.8	15.8	
Actuated g/C Ratio	0.03	0.26	0.37	0.21	0.45	0.64	0.10	0.12	0.33	0.19	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	51	1347	667	728	2278	1018	357	415	521	973	375	
v/s Ratio Prot	0.03	0.15	0.02	c0.18	c0.41	0.06	c0.07	0.05	0.10	0.13	c0.17	
v/s Ratio Perm			0.07			0.14			0.06			
v/c Ratio	0.92	0.58	0.21	0.84	0.91	0.30	0.68	0.41	0.48	0.65	0.81	
Uniform Delay, d1	36.8	24.2	16.4	28.7	19.6	6.0	32.8	31.1	20.3	28.1	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	96.7	0.6	0.2	8.8	6.2	0.2	5.3	0.7	0.7	1.5	12.7	
Delay (s)	133.5	24.8	16.6	37.5	25.7	6.2	38.1	31.7	21.0	29.6	41.3	
Level of Service	F	C	B	D	C	A	D	C	C	C	D	
Approach Delay (s)		28.9			26.1			30.0			33.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

4/14/2004

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	3	7	7	3	7	7	3	7	3	7	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.94	1.00	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	3539	1583	4990	1820	1820
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	4990	1820	1820
Volume (vph)	106	1726	301	344	1416	360	284	437	357	697	274	49
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	120	1961	342	391	1609	409	323	497	406	792	311	56
Lane Group Flow (vph)	120	1961	342	391	1609	409	323	497	406	792	367	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.7	34.0	44.8	10.0	35.3	49.6	10.8	15.5	25.5	14.3	19.0	
Effective Green, g (s)	8.7	34.0	44.8	10.0	35.3	49.6	10.8	15.5	25.5	14.3	19.0	
Actuated g/C Ratio	0.10	0.38	0.50	0.11	0.39	0.55	0.12	0.17	0.28	0.16	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	171	1925	790	382	1999	874	413	611	520	795	385	
v/s Ratio Prot	0.07	c0.39	0.05	c0.11	0.32	0.07	0.09	c0.14	c0.09	0.16	c0.20	
v/s Ratio Perm			0.16			0.18			0.17			
v/c Ratio	0.70	1.02	0.43	1.02	0.80	0.47	0.78	0.81	0.78	1.00	0.95	
Uniform Delay, d1	39.3	27.9	14.4	39.9	24.2	12.1	38.4	35.8	29.6	37.7	35.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.3	25.3	0.4	52.2	2.5	0.4	9.3	8.1	7.5	30.8	33.7	
Delay (s)	51.5	53.2	14.8	92.1	26.7	12.5	47.7	43.9	37.1	68.5	68.7	
Level of Service	D	D	B	F	C	B	D	D	D	E	E	
Approach Delay (s)		47.7			34.9			42.6			68.5	
Approach LOS		D			C			D			E	

Intersection Summary

HCM Average Control Delay	45.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 18: FREMONT ST. & CASANOVA AV.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1776			1796	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00			0.77	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1354	1776			1440	1583
Volume (vph)	20	1902	62	213	1022	47	61	18	8	31	11	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	2067	67	232	1111	51	66	20	9	34	12	217
Lane Group Flow (vph)	22	2067	67	232	1111	51	66	29	0	0	46	217
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Free
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4			8	6			2		Free
Actuated Green, G (s)	1.9	60.5	60.5	13.0	71.6	71.6	9.8	9.8			9.8	95.3
Effective Green, g (s)	1.9	60.5	60.5	13.0	71.6	71.6	9.8	9.8			9.8	95.3
Actuated g/C Ratio	0.02	0.63	0.63	0.14	0.75	0.75	0.10	0.10			0.10	1.00
Clearance Time (s)	4.0	4.0	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	3.0			3.0	
Lane Grp Cap (vph)	35	2247	1005	241	2659	1189	139	183			148	1583
v/s Ratio Prot	0.01	c0.58		c0.13	0.31			0.02				
v/s Ratio Perm			0.04			0.03	c0.05				0.03	0.14
v/c Ratio	0.63	0.92	0.07	0.96	0.42	0.04	0.47	0.16			0.31	0.14
Uniform Delay, d1	46.3	15.3	6.6	40.9	4.3	3.0	40.3	39.0			39.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	30.3	6.6	0.0	47.3	0.1	0.0	2.5	0.4			1.2	0.2
Delay (s)	76.7	21.9	6.7	88.2	4.4	3.1	42.9	39.4			40.8	0.2
Level of Service	E	C	A	F	A	A	D	D			D	A
Approach Delay (s)		22.0			18.3			41.8			7.3	
Approach LOS		C			B			D			A	

Intersection Summary

HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	95.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Hwy 68 & OLMSTED RD.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1697		1770	1675	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.66	1.00		0.67	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1229	1697		1249	1675	
Volume (vph)	157	1000	103	104	886	254	221	52	75	119	44	90
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	167	1064	110	111	943	270	235	55	80	127	47	96
Lane Group Flow (vph)	167	1064	110	111	943	270	235	135	0	127	143	0
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	7.5	28.7	28.7	5.8	27.0	27.0	16.3	16.3		16.3	16.3	
Effective Green, g (s)	7.0	30.7	30.7	5.3	29.0	29.0	16.3	16.3		16.3	16.3	
Actuated g/C Ratio	0.11	0.48	0.48	0.08	0.45	0.45	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0	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	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	1690	756	146	1596	714	312	430		317	425	
v/s Ratio Prot	c0.09	c0.30		0.06	0.27			0.08			0.09	
v/s Ratio Perm			0.07			0.17	c0.19			0.10		
v/c Ratio	0.87	0.63	0.15	0.76	0.59	0.38	0.75	0.31		0.40	0.34	
Uniform Delay, d1	28.2	12.6	9.4	28.9	13.2	11.7	22.1	19.5		19.9	19.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.8	1.8	0.4	20.5	1.6	1.5	9.9	0.4		0.8	0.5	
Delay (s)	59.0	14.3	9.8	49.4	14.8	13.2	32.0	19.9		20.8	20.1	
Level of Service	E	B	A	D	B	B	C	B		C	C	
Approach Delay (s)		19.5			17.4			27.6			20.4	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Hwy 68 & OLMSTED RD.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.87	
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1696		1770	1625	
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1696		1770	1625	
Volume (vph)	109	792	173	38	965	146	141	32	47	268	49	277
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	116	843	184	40	1027	155	150	34	50	285	52	295
Lane Group Flow (vph)	116	843	184	40	1027	155	150	84	0	285	347	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	6.5	30.4	30.4	3.7	27.6	27.6	7.0	7.1		13.9	14.0	
Effective Green, g (s)	6.0	32.4	32.4	3.2	29.6	29.6	7.0	7.1		13.9	14.0	
Actuated g/C Ratio	0.08	0.45	0.45	0.04	0.41	0.41	0.10	0.10		0.19	0.19	
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0	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	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	1579	706	78	1443	645	171	166		339	313	
v/s Ratio Prot	c0.07	c0.24		0.02	c0.29		0.08	0.05		c0.16	c0.21	
v/s Ratio Perm			0.12			0.10						
v/c Ratio	0.79	0.53	0.26	0.51	0.71	0.24	0.88	0.51		0.84	1.11	
Uniform Delay, d ₁	32.7	14.6	12.6	33.9	17.9	14.1	32.4	31.1		28.3	29.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	25.0	1.3	0.9	5.6	3.0	0.9	36.0	2.4		16.9	83.3	
Delay (s)	57.7	15.9	13.5	39.5	20.9	15.0	68.4	33.5		45.2	112.6	
Level of Service	E	B	B	D	C	B	E	C		D	F	
Approach Delay (s)		19.8			20.8			55.9			82.2	
Approach LOS		B			C			E			F	

Intersection Summary

HCM Average Control Delay	35.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	C

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

20: Hwy 68 & York

1/26/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	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	1.00	0.95	0.91	0.95
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.95	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1770	1860		1770	1863	1583		1791	1583	1681	1568	1504
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.82	1.00	0.75	0.81	1.00
Satd. Flow (perm)	1770	1860		1770	1863	1583		1534	1583	1335	1302	1504
Volume (vph)	151	996	8	6	1212	271	4	1	4	57	3	54
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	164	1083	9	7	1317	295	4	1	4	62	3	59
Lane Group Flow (vph)	164	1092	0	7	1317	295	0	5	4	31	49	44
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2		2	6		6
Actuated Green, G (s)	11.0	100.2		0.7	89.9	89.9		9.1	9.1	9.1	9.1	9.1
Effective Green, g (s)	11.0	102.2		0.7	91.9	91.9		9.1	9.1	9.1	9.1	9.1
Actuated g/C Ratio	0.09	0.82		0.01	0.74	0.74		0.07	0.07	0.07	0.07	0.07
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		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	3.0	3.0	3.0
Lane Grp Cap (vph)	157	1533		10	1381	1173		113	116	98	96	110
v/s Ratio Prot	c0.09	0.59		0.00	c0.71							
v/s Ratio Perm						0.19		0.00	0.00	0.02	c0.04	0.03
v/c Ratio	1.04	0.71		0.70	0.95	0.25		0.04	0.03	0.32	0.51	0.40
Uniform Delay, d1	56.5	4.6		61.5	14.2	5.1		53.4	53.4	54.5	55.3	54.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	84.1	1.6		120.0	14.5	0.1		0.2	0.1	1.9	4.5	2.4
Delay (s)	140.6	6.2		181.6	28.7	5.2		53.6	53.5	56.4	59.8	57.2
Level of Service	F	A		F	C	A		D	D	E	E	E
Approach Delay (s)		23.8			25.1			53.5			58.0	
Approach LOS		C			C			D			E	

Intersection Summary

HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

20: Hwy 68 & York

1/26/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	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	1.00	0.95	0.91	0.95
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.97	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (prot)	1770	1861		1770	1863	1583		1791	1583	1681	1586	1504
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.76	1.00
Satd. Flow (perm)	1770	1861		1770	1863	1583		1556	1583	1335	1261	1504
Volume (vph)	75	1149	8	6	1121	115	4	1	1	259	3	265
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	1249	9	7	1218	125	4	1	1	282	3	288
Lane Group Flow (vph)	82	1258	0	7	1218	125	0	5	1	141	175	257
Turn Type	Prot			Prot		Perm	Perm		pm+ov	Perm		pt+ov
Protected Phases	7	4		3	8			2	3		6	6
Permitted Phases						8	2		2	6		
Actuated Green, G (s)	5.0	69.6		0.8	65.4	65.4		14.7	15.5	14.7	14.7	23.7
Effective Green, g (s)	5.0	71.6		0.8	67.4	67.4		14.7	15.5	14.7	14.7	23.7
Actuated g/C Ratio	0.05	0.72		0.01	0.68	0.68		0.15	0.16	0.15	0.15	0.24
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		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	3.0	3.0	
Lane Grp Cap (vph)	89	1345		14	1267	1077		231	311	198	187	360
v/s Ratio Prot	c0.05	c0.68		0.00	0.65				0.00			c0.17
v/s Ratio Perm						0.08		0.00	0.00	0.11	c0.14	
v/c Ratio	0.92	0.94		0.50	0.96	0.12		0.02	0.00	0.71	0.94	0.71
Uniform Delay, d1	46.9	11.8		49.0	14.6	5.5		36.1	35.3	40.2	41.7	34.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	69.6	12.1		25.4	16.8	0.0		0.0	0.0	11.4	47.3	6.6
Delay (s)	116.5	23.9		74.4	31.5	5.6		36.1	35.3	51.6	89.0	41.2
Level of Service	F	C		E	C	A		D	D	D	F	D
Approach Delay (s)		29.6			29.3			36.0			58.4	
Approach LOS		C			C			D			E	

Intersection Summary

HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	E
c Critical Lane Group			

APPENDIX I

**TRAFFIC MODEL VOLUMES
FOR THE BASE YEAR (2000)**

Traffic Model Validation On Monterey City Streets and Roads Selected Locations

Updated: January 25, 2004

Loc Code	Street	From:	To:	Capc		2000-02	2000-02	Total Model	Total Count	Percent Diff	PM	PM	AM	AM
				Code	Lane	Model-ADT	Dir-Count				Vol	V/C	Vol	V/C
85	Highway 1	Hwy 218	Del Monte	1	2	37993	38387	76,590	75,286	1.7%	3,048	76	3,628	91
		Del Monte	Hwy 218	1	2	38597	36899				3,635	91	2,652	66
89	Highway 218	Hwy 68	Noth-South Rd	3	1	8038	8100	16,241	16,421	-1.1%	696	50	870	62
		Noth-South Rd	Hwy 68	3	1	8203	8321				942	67	591	42
90	Highway 68	Josselyn Cyn	Garden Rd.	2	1	8969	10003	18,666	19,606	-4.8%	841	48	841	48
		Garden Rd.	Josselyn Cyn	2	1	9697	9603				994	57	791	45
92	Highway 68	Chomp Driveway	Highway 1	2	1	12537	13889	24,890	27,223	-8.6%	1,289	74	1,034	59
		Highway 1	Chomp Driveway	2	1	12353	13334				1,255	72	1,074	61
271	Highway 68	Ragsdale	York Rd.	3	1	11989	13201	23,158	25,802	-10.2%	1,375	98	839	60
		York Rd.	Ragsdale	3	1	11169	12601				917	65	1,256	90
274	Highway 1	Hwy 68 (Holman)	Munras Ave	1	3	32954	30700	66,629	63,700	4.6%	3,241	54	2,820	47
		Munras Ave	Hwy 68 (Holman)	1	2	33675	33000				3,260	81	2,845	71
201	Abrego St	El Dorado	Freemont	3	2	8013	9247	14,872	15,724	-5.4%	812	29	590	21
		Freemont	El Dorado	3	2	6859	6477				654	23	561	20
202	Airport Rd	Fairground	Euclid	5	1	2386	2126	4,688	4,253	10.2%	279	40	161	23
		Euclid	Fairground	5	1	2302	2127				194	28	251	36
203	Camino Aguajito	Second	Third	4	1	3326	3275	6,947	7,515	-7.6%	289	26	325	30
		Third	Second	4	1	3621	4240				430	39	250	23
204	Casa Verde	Encina	Hwy 1	4	1	3503	4054	7,220	7,806	-7.5%	320	29	331	30
		Hwy 1	Encina	4	1	3717	3752				386	35	279	25
205	David Ave	Hawthorne	Pine	4	1	4953	4900	10,453	10,100	3.5%	417	38	540	49
		Pine	Hawthorne	4	1	5500	5200				661	60	351	32
206	Del Monte Ave	Washington	Figueroa	3	4	22161	21135	40,166	43,293	-7.2%	2,068	37	2,019	36
		Figueroa	Washington	3	4	18005	22158				1,733	31	1,541	28
207	Del Monte Ave	Camino El Estero	Camino Agujito	3	2	19697	20521	42,565	39,914	6.6%	1,819	65	1,866	67
		Camino Agujito	Camino El Estero	3	2	22868	19393				2,419	86	1,681	60
208	Del Monte Ave	Sloat	Naval Post Gate	3	2	18004	20775	39,356	40,585	-3.0%	1,561	56	1,792	64
		Naval Post Gate	Sloat	3	2	21352	19810				2,324	83	1,481	53
209	Del Monte Ave	Palo Verde	Casa Verde	3	2	20386	20863	44,177	40,714	8.5%	1,712	61	2,126	76
		Casa Verde	Palo Verde	3	2	23791	19851				2,660	95	1,594	57

210 El Dorado	Cass	Munras Ave	5	1	3116	2974				329	47	212	30
210	Munras Ave	Cass	5	1	2802	3104	5,918	6,078	-2.6%	248	35	253	36
212 Foam	Drake	Dickman	4	2	7328	7984	7,328	7,984	-8.2%	666	30	538	24
213 Franklin	Monroe	Clay	4	1	5094	5230				580	53	346	31
213	Clay	Monroe	4	1	4906	5088	10,000	10,318	-3.1%	381	35	602	55
215 Franklin	Alvarado	Tyler	4	2	15592	13821	15,592	13,821	12.8%	1,717	78	974	44
216 Fremont	Hwy 1	Camino Aquajito	2	2	16756	19000				1,957	56	1,078	31
216	Camino Aquajito	Hwy 1	2	3	18123	18677	34,879	37,677	-7.4%	1,419	27	2,108	40
217 Munras	Webster	Fremont	3	1	5324	4378				565	40	325	23
217	Fremont	Webster	3	1	5010	6400	10,334	10,778	-4.1%	465	33	394	28
218 Garden Rd	Sky Park Way	Henderson	5	1	2714	2847				291	42	195	28
218	Henderson	Sky Park Way	5	1	2309	2493	5,023	5,340	-5.9%	191	27	232	33
219 Hawthorne	Hoffman	Prescott	4	1	823	1091				80	7	73	7
219	Prescott	Hoffman	4	1	6415	5249	7,238	6,340	14.2%	560	51	632	57
221 Lighthouse	David	Prescott	3	2	17115	19288				1,454	52	1,640	59
221	Prescott	David	3	2	11457	12300	28,572	31,588	-9.5%	1,311	47	819	29
222 Lighthouse Curve	Pacific	Foam	3	2	28601	28456				2,898	103	2,262	81
222	Foam	Pacific	3	2	29005	31106	57,606	59,562	-3.3%	2,687	96	2,541	91
223 Mar Vista	Skyline	Soledad	5	1	836	916				85	12	80	11
223	Soledad	Skyline	5	1	938	1137	1,774	2,053	-13.6%	95	14	84	12
224 Mark Thomas Dr	Sloat	Sylvan	5	1	4893	4562				465	66	449	64
224	Sylvan	Sloat	5	1	5090	5353	9,983	9,915	0.7%	533	76	397	57
225 Munras	Soledad Dr	Del Monte Shopping Ctr.	3	2	11891	12005				1,342	48	670	24
225	Del Monte Shopping Ctr.	Soledad Dr	3	2	12620	12090	24,511	24,095	1.7%	1,043	37	1,189	42
226 N Fremont	Ramona	Casonova	3	2	14981	15515				1,007	41	1,545	66
226	Casonova	Ramona	3	2	14873	15216	29,854	30,731	-2.9%	1,705	64	1,283	41
227 Pacific St.	Grove	Alameda	4	1	5296	4275				533	48	398	36
227	Alameda	Grove	4	1	4654	4692	9,950	8,967	11.0%	404	37	456	41
228 Pacific St.	Madison	Jefferson	4	1	5571	5804				516	47	503	46
228	Jefferson	Madison	4	1	6201	6283	11,772	12,087	-2.6%	616	56	474	43
230 Prescott	Pine	Oak	4	1	1760	2105				177	16	152	14
230	Oak	Pine	5	1	2823	2578	4,583	4,683	-2.1%	330	47	198	28
231 Prescott	Tyler	Lotte	4	1	5462	5769				453	41	594	54
231	Lotte	Tyler	4	1	4398	4652	9,860	10,421	-5.4%	529	48	283	26
232 Skyline Dr	Vets Park	Mar Vista	5	1	666	841				56	8	97	14
232	Mar Vista	Vets Park	5	1	1084	938	1,750	1,779	-1.6%	138	20	70	10

233 Skyline Forest	Skyline Dr.	Holman Hwy	5	1	1624	2371				141	20	173	25
233	Holman Hwy	Skyline Dr.	5	1	2231	2150	3,855	4,521	-14.7%	254	36	180	26
234 Sloat	Third	Fifth	5	1	3391	3121				369	53	247	35
234	Fifth	Third	5	1	3013	3234	6,404	6,355	0.8%	268	38	310	44
235 Soledad	Pacific	Munras Ave	4	1	8271	8941				804	73	709	64
235	Munras Ave	Pacific	4	1	7927	7719	16,198	16,660	-2.8%	775	70	699	64
237 Foam	Reeside	Lighthouse	4	2	13280	15803	13,280	14,803	-10.3%	1,133	51	1,174	53
238 Lighthouse	Reeside	Foam	3	2	29497	29998				2,678	96	2,613	93
238	Foam	Reeside	3	2	15320	15563	44,817	45,561	-1.6%	1,765	63	1,088	39
240 Hawthorne	David	Prescott	4	2	3881	4821				369	17	296	13
240	Prescott	David	4	2	2960	2476	6,841	7,297	-6.2%	276	13	245	11
241 David	Filmore	Cypress	4	1	4715	5723				390	35	520	47
241	Cypress	Filmore	4	1	5469	5889	10,184	11,612	-12.3%	648	59	360	33
242 Pine	Irving	David	5	1	359	501				37	5	29	4
242	David	Irving	5	1	598	601	957	1,102	-13.2%	64	9	48	7
243 Reeside	Foam	Lighthouse	3	2	2928	2956	2,928	2,956	-0.9%	310	11	194	7
244 Hawthorne	Reeside	Dickman	5	1	5977	4733				484	69	652	93
244	Dickman	Reeside	5	1	1669	1782	7,646	6,515	17.4%	206	29	108	15
245 Wave	Drake	McClellan	5	1	710	601				26	4	6	1
245	McClellan	Drake	5	1	1769	1942	2,479	2,543	-2.5%	360	51	48	7
246 David	Foam	Dickman	3	1	8545	9697				889	63	521	37
246	Dickman	Foam	3	1	1033	1469	9,578	11,166	-14.2%	85	6	97	7
248 Washington	Franklin	Del Monte	4	2	4681	5198	4,681	5,198	-9.9%	514	23	278	13
249 Camino El Estero	Franklin	Del Monte	4	1	3528	5061				307	28	336	31
249	Del Monte	Franklin	4	1	10334	8833	13,862	13,894	-0.2%	1,051	96	663	60
250 Sloat	DelMonte	Pearl	5	1	1612	1925				173	25	108	15
250	Pearl	DelMonte	5	1	1678	2025	3,290	3,950	-16.7%	148	21	153	22
251 Camino El Estero	Freemont	Webster	4	1	4282	5113				372	34	383	35
251	Webster	Freemont	4	1	6403	6642	10,685	11,755	-9.1%	655	60	496	45
252 Mark Thomas	Jossselyn Cyn	Old Salinas Rd.	5	1	4505	5223				452	65	382	55
252	Old Salinas Rd.	Jossselyn Cyn	5	1	4605	4276	9,110	9,499	-4.1%	457	65	386	55
253 Camino Aquajito	Freemont	Via Lavendera	3	2	6359	6993				673	24	483	17
253	Via Lavendera	Freemont	3	2	6183	7103	12,542	14,096	-11.0%	556	20	601	21
254 Del Monte Ave	Hwy 1	Casa Verde	3	3	22885	21713				2,578	61	1,523	36
254	Casa Verde	Hwy 1	3	2	19592	22869	42,477	44,582	-4.7%	1,632	58	2,066	74
256 Freemont	Ramona	Airport Rd.	3	2	11942	12569				954	34	1,362	49

256	Airport Rd.	Ramona	3	2	12026	11936	23,968	24,505	-2.2%	1,471	53	725	26
257 Josselyn Cyn	Hwy 68	Mark Thomas Dr.	5	1	1524	1311				129	18	170	24
257	Mark Thomas Dr.	Hwy 68	5	1	1521	1504	3,045	2,815	8.2%	177	25	103	15
258 Pacific Street	Del Monte	Franklin	4	1	8370	9488				751	68	698	63
258	Franklin	Del Monte	4	1	4826	4560	13,196	14,048	-6.1%	504	46	389	35
259 Franklin	Van Buren	Pacific	4	1	4619	4875				526	48	310	28
259	Pacific	Van Buren	4	1	5810	4746	10,429	9,621	8.4%	490	45	648	59
262 Pacific	Alameda	Soledad	4	1	5212	4938				527	48	388	35
262	Soledad	Alameda	4	1	4833	3939	10,045	8,877	13.2%	425	39	471	43
263 Tyler	Franklin	Bonifacio	5	1	2475	1822				210	30	215	31
263	Bonifacio	Franklin	5	1	1651	2310	4,126	4,132	-0.1%	142	20	137	20
264 Pearl	Tyler	Abrego	5	1	1500	1750				49	7	45	6
264	Abrego	Tyler	5	1	2247	1750	3,747	3,500	7.1%	223	32	159	23
266 Del Monte	Parking Garage	Tyler	3	3	5212	5394	5,212	5,394	-3.4%	419	10	549	13
268 Ragsdale	Lower Ragsdale	Hwy 68	5	1	3418	3400				237	34	448	64
268	Hwy 68	Lower Ragsdale	5	1	3649	3400	7,067	6,800	3.9%	477	68	193	28
269 Ryan Ranch	Hwy 68	Park Rd.	5	1	3194	3100				420	60	169	24
269	Park Rd.	Hwy 68	5	1	2990	3100	6,184	6,200	-0.3%	207	30	395	56
270 General Jim Moore	S. Boundary Road	Canyon Del Rey		1	2126	2050				257	23	134	12
270	Canyon Del Rey	S. Boundary Road		1	2146	2150	4,272	4,200	1.7%	171	16	245	22
272 Olmstead Rd.	Garden Road	Hwy 68	5	1	2716	2700				330	47	154	22
272	Hwy 68	Garden Road	5	1	2840	2700	5,556	5,400	2.9%	209	30	339	48
275 Foam	McClellan	Hoffman	4	2	16290	14875	16,290	14,875	9.5%	1,418	64	1,363	62
91 Highway 218	Freemont	N Street	3	2	9433	9900				940	35	858	31
91	N Street	Freemont	3	2	9807	9820	19,240	19,720	-2.4%	971	34	743	27
901 Highway 1	Freemont Ave.	Highway 218	1	2	36366	36200				2,925	74	3,804	95
901	Highway 218	Freemont Ave.	1	2	36867	36800	73,233	73,000	0.3%	3,983	97	2,442	61
903 Highway 1	Highway 68	Freemont Avenue	1	4	43508	41674				4,706	59	2,962	37
903	Freemont Avenue	Highway 68	1	4	42734	45091	86,242	86,765	-0.6%	3,665	46	4,611	58
904 Highway 1	Aguajito	Soledad	1	2	29840	27950				2,759	69	2,329	58
904	Soledad	Aguajito	1	2	30177	31500	60,017	59,450	1.0%	3,107	78	2,813	70

APPENDIX J

**TRAFFIC MODEL VOLUMES
FOR THE FUTURE YEAR**

**Traffic Model Projections On Monterey City Streets and Roads
at Selected Locations in 2020**

Updated: January 25, 2004

Loc Code	Street	From:	To:	Capc Code	Lane	2000-02 Model-ADT	2000-02 Count	Total Model	Total Count	Growth (20 Year)	PM Vol	PM V/C	AM Vol	AM V/C
85	Highway 1	Hwy 218	Del Monte	1	2	43718	38387				3,432	86	3,850	96
85		Del Monte	Hwy 218	1	2	45172	36899	88,890	75,286	16%	4,219	105	3,303	83
89	Highway 218	Hwy 68	General Jim Moore Bl.	3	1	8968	8100				807	58	928	66
89		General Jim Moore Bl.	Hwy 68	3	1	8952	8321	17,920	16,421	10%	892	71	696	50
90	Highway 68	Josselyn Cyn	Garden Rd.	2	1	11575	10003				1,038	59	1,120	64
90		Garden Rd.	Josselyn Cyn	2	1	12302	9603	23,877	19,606	28%	1,200	69	975	56
92	Highway 68	Chomp Driveway	Highway 1	2	2	14536	13889				1,508	43	1,174	34
92		Highway 1	Chomp Driveway	2	2	13205	13334	27,741	27,223	11%	1,318	38	1,181	34
271	Highway 68	Ragsdale	York Rd.	3	1	14558	13201				1,576	113	1,010	72
271		York Rd.	Ragsdale	3	1	13479	12601	28,037	25,802	21%	1,089	78	1,503	107
274	Highway 1	Hwy 68 (Holman)	Munras Ave	1	3	38352	30700				3,897	62	3,284	55
274		Munras Ave	Hwy 68 (Holman)	1	2	39586	33000	77,938	63,700	17%	3,768	94	3,313	83
201	Abrego St	El Dorado	Freemont	3	2	8832	9247				991	35	655	23
201		Freemont	El Dorado	3	2	7875	6477	16,907	15,724	14%	732	26	686	24
202	Airport Rd	Fairground	Euclid	5	1	2792	2126				330	47	186	27
202		Euclid	Fairground	5	1	935	2127	3,727	4,253	-20%	87	12	92	13
203	Camino Aguajito	Second	Third	4	1	7707	3275				702	64	708	64
203		Third	Second	4	1	3881	4240	11,588	7,515	67%	421	38	274	25
204	Casa Verde	Encina	Hwy 1	4	1	3953	4054				367	33	352	32
204		Hwy 1	Encina	4	1	3932	3752	7,885	7,806	9%	528	48	283	26
205	David Ave	Hawthorne	Pine	4	1	6070	4900				519	47	649	59
205		Pine	Hawthorne	4	1	6511	5200	12,581	10,100	20%	709	64	448	41
206	Del Monte Ave	Washington	Figueroa	3	4	27194	21135				2,673	48	2,519	45
206		Figueroa	Washington	3	4	23117	22158	50,311	43,293	25%	2,193	39	1,889	34
207	Del Monte Ave	Camino El Estero	Camino Aguajito	3	3	23356	20521				2,112	50	2,371	56
207		Camino Aguajito	Camino El Estero	3	3	31196	19393	54,554	39,914	28%	3,161	75	2,242	53
208	Del Monte Ave	Sloat	Naval Post Gate	3	2	21646	20775				1,883	67	2,317	83
208		Naval Post Gate	Sloat	3	2	25476	19810	47,122	40,585	20%	2,562	95	1,679	60
209	Del Monte Ave	Palo Verde	Casa Verde	3	2	24134	20863				2,044	73	2,667	95
209		Casa Verde	Palo Verde	3	2	27993	19851	52,127	40,714	18%	3,002	107	1,795	64
210	El Dorado	Cass	Munras Ave	5	1	3542	2974				373	53	241	34
210		Munras Ave	Cass	5	1	3582	3104	7,124	6,078	20%	318	45	315	45
212	Foam	Drake	Dickman	4	2	9753	7984	9,753	7,984	33%	883	40	736	33
213	Franklin	Monroe	Clay	4	1	4236	5230				551	50	313	28

213	Clay	Monroe	4	1	5103	5088	9,339	10,316	-7%	378	34	623	57
215 Franklin	Alvarado	Tyler	4	2	16366	13821	16,366	13,821	5%	1,879	85	1,071	49
216 Fremont	Hwy 1	Camino Aquajito	2	2	21805	19000				2,563	73	1,497	43
216	Camino Aquajito	Hwy 1	2	3	23644	18677	45,249	37,677	30%	1,858	35	2,527	48
217 Munras	Webster	Fremont	3	1	6439	4378				666	48	407	29
217	Fremont	Webster	3	1	8209	6400	14,648	10,778	42%	782	56	689	49
218 Gardea Rd	Sky Park Way	Henderson	5	1	3090	2847				324	46	221	32
218	Henderson	Sky Park Way	5	1	2766	2493	5,856	5,340	17%	240	34	263	38
219 Hawthorne	Hoffman	Prescott	4	1	991	1091				100	9	89	8
219	Prescott	Hoffman	4	1	6717	5249	7,708	6,340	6%	597	54	647	59
221 Lighthouse	David	Prescott	3	2	21255	19288				1,827	65	1,990	71
221	Prescott	David	3	2	13372	12300	34,627	31,588	21%	1,437	51	1,000	36
222 Lighthouse Curve	Pacific	Foam	3	2	34924	28456				3,461	124	2,818	101
222	Foam	Pacific	3	2	36027	31106	70,951	59,562	23%	3,276	117	3,048	109
223 Mar Vista	Skyline	Soledad	5	1	861	916				87	12	84	12
223	Soledad	Skyline	5	1	964	1137	1,825	2,053	3%	97	14	88	13
224 Mark Thomas Dr	Sloat	Sylvan	5	1	5336	4562				509	73	506	72
224	Sylvan	Sloat	5	1	5759	5353	11,097	9,915	11%	625	89	446	64
225 Munras	Soledad Dr	Del Monte Shopping Ctr.	3	2	15208	12005				1,600	57	902	32
225	Del Monte Shopping Ctr.	Soledad Dr	3	2	14615	12090	29,823	24,095	22%	1,226	44	1,365	49
226 N Fremont	Ramona	Casonova	3	2	17418	15515				1,500	54	1,880	67
226	Casonova	Ramona	3	2	18035	15216	35,453	30,731	19%	2,366	85	1,182	42
227 Pacific St.	Grove	Alameda	4	1	5798	4275				534	49	442	40
227	Alameda	Grove	4	1	6479	4692	12,277	8,967	23%	471	43	578	53
228 Pacific St.	Madison	Jefferson	4	1	7430	5804				583	53	629	57
228	Jefferson	Madison	4	1	7463	6283	14,893	12,087	27%	704	64	566	51
230 Prescott	Pine	Oak	4	1	1436	2105				147	13	121	11
230	Oak	Pine	5	1	3061	2578	4,497	4,683	-2%	394	56	217	31
231 Prescott	Tyler	Lotte	4	1	4515	5769				384	35	493	45
231	Lotte	Tyler	4	1	4265	4652	8,780	10,421	-11%	549	50	283	26
232 Skyline Dr	Vets Park	Mar Vista	5	1	891	841				87	12	130	19
232	Mar Vista	Vets Park	5	1	1111	938	2,002	1,779	14%	142	20	70	10
233 Skyline Forest	Skyline Dr.	Holman Hwy	5	1	1718	2371				209	30	230	33
233	Holman Hwy	Skyline Dr.	5	1	2350	2150	4,068	4,521	6%	301	43	183	26
234 Sloat	Third	Fifth	5	1	3739	3121				428	61	281	40
234	Fifth	Third	5	1	3168	3234	6,907	6,355	8%	282	40	319	46
235 Soledad	Pacific	Munras Ave	4	1	8951	8941				859	78	772	70
235	Munras Ave	Pacific	4	1	9857	7719	18,808	16,660	16%	851	77	850	77

237	Foam	Reeside	Lighthouse	4	2	17040	15803	17,040	15,803	28%	1,460	66	1,493	68
238	Lighthouse	Reeside	Foam	3	2	35292	29998				3,187	114	3,069	110
238		Foam	Reeside	3	2	17882	15563	53,174	45,561	19%	2,001	71	1,324	47
240	Hawthorne	David	Prescott	4	2	4350	4821				408	19	332	15
240		Prescott	David	4	2	2907	2476	7,257	7,297	6%	266	12	238	11
241	David	Filmore	Cypress	4	1	5884	5723				501	46	631	57
241		Cypress	Filmore	4	1	6577	5889	12,461	11,612	22%	764	69	461	42
242	Pine	Irving	David	5	1	340	501				39	6	23	3
242		David	Irving	5	1	721	601	1,061	1,102	11%	133	19	55	8
243	Reeside	Foam	Lighthouse	3	2	4045	2956	4,045	2,956	38%	421	15	272	10
244	Hawthorne	Reeside	Dickman	5	1	6221	4733				520	74	572	82
244		Dickman	Reeside	5	1	1879	1782	8,100	6,515	6%	228	33	128	18
245	Wave	Drake	McClellan	5	1	375	601				84	12	10	1
245		McClellan	Drake	5	1	3266	1942	3,641	2,543	47%	493	70	161	23
246	David	Foam	Dickman	3	1	11348	9697				1,165	83	711	51
246		Dickman	Foam	3	1	1434	1469	12,782	11,166	33%	123	9	133	9
248	Washington	Franklin	Del Monte	4	2	125	5198	125	5,198	-97%	13	1	8	0
249	Camino El Estero	Franklin	Del Monte	4	1	954	5061				73	7	157	14
249		Del Monte	Franklin	4	1	11381	8833	12,315	13,894	-11%	1,200	109	669	61
250	Sloat	DelMonte	Pearl	5	1	1734	1925				183	26	119	17
250		Pearl	DelMonte	5	1	1845	2025	3,679	3,950	12%	169	24	200	29
251	Camino El Estero	Freemont	Webster	4	1	5076	5113				487	44	431	39
251		Webster	Freemont	4	1	4825	6642	9,901	11,755	-7%	628	57	415	38
252	Mark Thomas	Josselyn Cyn	Old Salinas Rd.	5	1	5019	5223				501	72	449	64
252		Old Salinas Rd.	Josselyn Cyn	5	1	5346	4276	10,365	9,499	14%	560	80	438	63
253	Camino Aquajito	Freemont	Via Lavendera	3	2	7613	6993				793	28	575	21
253		Via Lavendera	Freemont	3	2	7413	7103	15,026	14,096	20%	667	24	673	24
254	Del Monte Ave	Hwy 1	Casa Verde	3	3	27307	21713				2,828	67	1,745	42
254		Casa Verde	Hwy 1	3	2	23299	22869	50,606	44,582	19%	1,954	70	2,621	94
256	Freemont	Ramona	Airport Rd.	3	2	10889	12569				1,594	57	690	25
256		Airport Rd.	Ramona	3	2	10251	11936	21,140	24,505	-12%	854	31	1,163	42
257	Josselyn Cyn	Hwy 68	Mark Thomas Dr.	5	1	1543	1311				129	18	173	25
257		Mark Thomas Dr.	Hwy 68	5	1	1545	1504	3,088	2,815	1%	180	26	101	14
258	Pacific Street	Del Monte	Franklin	4	1	10635	9488				925	84	884	80
258		Franklin	Del Monte	4	1	6782	4560	17,417	14,048	32%	578	53	535	49
259	Franklin	Van Buren	Pacific	4	1	3949	4875				512	47	297	27
259		Pacific	Van Buren	4	1	5442	4746	9,391	9,621	-10%	401	36	617	56
262	Pacific	Alameda	Soledad	4	1	5573	4938				519	47	415	38

262	Soledad	Alameda	4	1	6482	3939	12,055	8,877	20%	468	43	582	53
263 Tyler	Franklin	Bonifacio	5	1	4587	1822				377	54	391	56
263	Bonifacio	Franklin	5	1	2181	2310	6,768	4,132	64%	192	27	175	25
264 Pearl	Tyler	Abrego	5	1	598	1750				60	9	51	7
264	Abrego	Tyler	5	1	3009	1750	3,607	3,500	-4%	292	42	265	38
266 Del Monte	Parking Garage	Tyler	3	3	7154	5394	7,154	5,394	37%	641	15	647	15
268 Ragsdale	Lower Ragsdale	Hwy 68	5	1	2762	3400				202	29	343	49
268	Hwy 68	Lower Ragsdale	5	1	2890	3400	5,652	6,800	-20%	358	51	159	23
269 Ryan Ranch	Hwy 68	Park Rd.	5	1	3681	3100				498	71	193	28
269	Park Rd.	Hwy 68	5	1	3433	3100	7,114	6,200	15%	230	33	481	69
270 General Jim Moore	S. Boundary Road	Canyon Del Rey	4	1	2446	2050				327	30	184	15
270	Canyon Del Rey	S. Boundary Road	4	1	2762	2150	5,208	4,200	22%	230	21	328	30
272 Olmstead Rd.	Garden Road	Hwy 68	5	1	3310	2700				407	58	187	27
272	Hwy 68	Garden Road	5	1	3344	2700	6,654	5,400	20%	238	34	401	57
275 Foam	McClellan	Hoffman	4	2	16936	14875	16,936	14,875	4%	1,476	67	1,392	63
91 Highway 218	Freemont	N Street	3	2	10364	9900				1,008	36	846	32
91	N Street	Freemont	3	2	10819	9820	21,183	19,720	10%	1,062	38	906	30
901 Highway 1	Freemont Ave.	Highway 218	1	3	44851	36200				4,809	80	3,024	51
901	Highway 218	Freemont Ave.	1	3	43114	36800	87,965	73,000	20%	3,531	59	4,516	75
903 Highway 1	Highway 68	Freemont Avenue	1	4	54076	41674				4,555	57	5,499	69
903	Freemont Avenue	Highway 68	1	4	53174	45091	107,250	86,765	24%	5,874	73	3,814	48
904 Highway 1	AguaJito	Soledad	1	2	36050	27950				3,689	92	2,788	70
904	Soledad	AguaJito	1	2	35132	31500	71,182	59,450	19%	3,240	81	3,297	82

APPENDIX K

CITY OF MONTEREY ROADWAY CLASSIFICATION

Table 2. Functional Street Classifications

Major Arterial Streets	
Street	Limits
Aguajito Road	Fremont Street to Mark Thomas Drive/Highway 1 NB Exit Ramp
Del Monte Avenue	Lighthouse Avenue/Washington Street to East City Limits
Foam Street	Lighthouse Avenue to Reeside Avenue
Fremont Street	Highway 1/Aguajito Road to Camino El Estero
Lighthouse Avenue	Washington/Del Monte Avenue to Reeside Avenue
Soledad Drive	Munras Avenue to Barnett Segal Drive/Viejo

Minor Arterial Streets	
Street	Limits
Abrego Street	Eldorado Street to Pearl Street/Washington Street
Camino El Estero	Del Monte Avenue to Franklin Street
David Avenue	Wave Street to Devisadero Street (West City Limit)
Del Monte Avenue	Washington Street to Pacific Street
English Avenue	Del Monte Avenue to Highway 1 NB Exit Ramp
Figuroa Street	Franklin Street to Del Monte Avenue
Foam Street	Reeside Avenue to David Avenue
Franklin Street	Pacific Street to Camino El Estero
Fremont Street	Camino El Estero to Munras Avenue
Lighthouse Avenue	Reeside Avenue to Central Avenue (North City Limit)
North Fremont Street	Highway 1 to East City Limits
Munras Avenue	Fremont Street to Alvarado Street
Munras Avenue	Eldorado Street/Abrego Street to Highway 1 SB Ramps
Olmsted Drive	Monterey/Salinas Highway (SR68) to Monterey Peninsula Airport Entrance
Pacific Street	Lighthouse Avenue to Soledad Drive
Soledad Drive	Pacific Street to Munras Avenue
Tyler Street	Lighthouse Avenue to Franklin Street
Washington Street	Pearl Street to Del Monte Avenue

A List of Road and Highway Projects to be Used in the Traffic Model for Monterey City's General Plan

List I: Road and Highway Projects Recently Constructed and Included in the 2002-2003 Traffic Model Network for Monterey City General Plan Update.

- A. The San Miguel Interchange at Highway 101 in Prunedale.
- B. The Imjin Parkway and 12th Street Improvements between Highway 1 and Reservation Road.
- C. Blanco Road Widening and Reservation Road Widening between MBEST Driveways and Imjin Parkway respectively.
- D. California Avenue, construct California Avenue between Imjin Parkway and Reindollar Avenue in Marina.
- E. Boronda Road, extend (2) lane arterial between Constitution and Williams.
- F. The collector Street Network in North and East Salinas.
- G. Del Monte Avenue Improvements and widening (1998-2002 time frame) between Washington and Highway 1 in Monterey City.
- H. Lighthouse Avenue, include left turn prohibitions.
- I. Presidio of Monterey, exclude through trips in the Presidio of Monterey caused by gate closures.
- J. Carmel Valley Road, widen to 4 lanes east of Highway 1.
- K. Bardin Road widening at Sherwood and North Main Street.

List II: Projects with Funding and High a Probability of Being Built by 2020 and Included in the 2022 Traffic Model Network for the City of Monterey General Plan Update.

- A. The Prunedale Improvement Project (the PIP) between Crazy Horse and Russell/Espinosa.
- B. The Salinas Road Interchange at Highway 1 and improvements between the county line and ¼ mile south of Salinas Road.
- C. Airport Road Interchange at Highway 101.
- D. Highway 1, add (1) Northbound lane by Carmel between Rio Road and Carmel Valley Road.
- E. California Avenue, upgrade California Avenue between Reindollar and Carmel Avenue.
- F. Crescent Court, construct collector street to Abrams.
- G. River Road, widen to four lanes between Highway 68 and Las Palmas.

- H. Highway 68, widen to (4) lanes between Ragsdale and Highway 218 and Signal at Ragsdale.
- I. Davis Road, widen to (4 lanes) between Blanco Road and Salinas City Limit (FORA).
- J. Del Monte Boulevard widening at select location in the City of Monterey: (6) lanes west of El Estero; (5) lanes between El Estero and Aguajito; (5) lanes between Aguajito and Sloat .
- K. City of Monterey Operational Improvements including additional lanes at the following intersections: Del Monte and Washington, Freemont and Camino Aguajito, Del Monte and Figueroa.
- L. Del Monte Extension, Construct (2) lane collector between 2nd Avenue and Reindollar Avenue in Marina (FORA).
- M. 2nd Avenue, upgrade to (4) lane arterial between Light fighter Drive and Imjin Parkway.
- N. Imjin Parkway, widen to (4) lanes between California Avenue and Reservation Road (FORA).
- O. 8th Street, construct (2) lane arterial from Highway 1 overpass to Inter-Garrison (FORA).
- P. Inter-Garrison, upgrade to a (2) lane arterial between 8th Street and Reservation Road (FORA).
- Q. Gigling Road, construct (4) lane arterial between General Jim Moore Boulevard to Eastside Road (FORA).
- R. General Jim Moore Boulevard, widen to (4) lanes between Normandy Road and Coe Avenue. Upgrade General Jim to arterial status between Highway 218 and Coe Avenue (FORA).
- S. Salinas Avenue, construct a (2) lane arterial from Salinas Avenue to Abrams Drive near Barth Court (FORA).
- T. Eucalyptus Road, upgrade (2) lane collector from General Jim Moore Blvd. to Parker Flats (FORA).
- U. The Highway 101 & Highway 156 interchange Improvements including Prunedale North and Prunedale South Connection and Highway 156 on ramp.
- V. **OPTIONAL:** Open York Road between Highway 68 and South Boundary Road; open South Boundary Road to General Jim Moore Boulevard, construct a collector street between Upper Ragsdale and South Boundary Road.
- W. **OPTIONAL:** Holman Highway (68), widen Holman Highway to (4) lanes between Highway 1 and ¾ mile past CHOMP driveway.
- X. Blanco Road, widen to (4) lanes from MBEST to Davis Road.
- Y. Highway 218, widen to (4) lanes between General Jim Moore Boulevard and Highway 68.
- Z. Highway 156, widen to (4) lanes from Highway 101 to Highway 183 and Interchange at Highway 156 and Castroville Boulevard.
- AA. 68 operational improvements by MCPWD at San Benancio, Corral De Tiera, and Los Laureles Grade that will include additional left turn lanes at each intersection

- BB. SR 1 widening in Sand City-Seaside, add a third lane in both directions from Canyon Del Rey to the existing 3 lane section at Fremont to the North.**
- CC. San Pablo and Hilby Gates, provide access to Seaside at General Jim Moore.**

APPENDIX G1

**FUTURE AM PEAK HOUR
SYNCHRO ANALYSIS SHEETS**

HCM Signalized Intersection Capacity Analysis
 1: DAVID AV. & LIGHTHOUSE AV.

2/3/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1732	
Fl _t Permitted	0.69	1.00	1.00	0.37	1.00	1.00	0.59	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	1284	1863	1583	685	1863	1583	1095	1863	1583	362	1732	
Volume (vph)	36	267	233	116	99	430	131	442	3	253	140	123
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	38	284	248	123	105	457	139	470	3	269	149	131
Lane Group Flow (vph)	38	284	248	123	105	457	139	470	3	269	280	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	23.5	21.3	21.3	28.3	23.7	23.7	25.2	25.2	25.2	30.4	30.4	
Effective Green, g (s)	23.5	21.3	21.3	28.3	23.7	23.7	25.2	25.2	25.2	30.4	30.4	
Actuated g/C Ratio	0.31	0.28	0.28	0.37	0.31	0.31	0.33	0.33	0.33	0.40	0.40	
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	406	516	438	317	574	488	399	611	519	323	685	
v/s Ratio Prot	0.00	0.15		c0.02	0.06		0.02	c0.25		c0.11	0.16	
v/s Ratio Perm	0.03		0.16	0.12		0.29	0.09		0.00	c0.22		
v/c Ratio	0.09	0.55	0.57	0.39	0.18	0.94	0.35	0.77	0.01	0.83	0.41	
Uniform Delay, d ₁	18.9	23.7	23.8	17.1	19.5	25.9	19.9	23.2	17.4	18.9	16.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂	0.1	1.3	1.7	0.8	0.2	25.5	0.5	9.0	0.0	16.6	1.8	
Delay (s)	19.0	25.0	25.5	17.9	19.7	51.4	20.4	32.3	17.4	35.5	18.6	
Level of Service	B	C	C	B	B	D	C	C	B	D	B	
Approach Delay (s)		24.8			40.5			29.5			26.9	
Approach LOS		C			D			C			C	

Intersection Summary

HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	C

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: REESIDE AV. & FOAM ST.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑↑				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.99			0.98				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					3521			3450				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					3521			3450				
Volume (vph)	0	0	0	0	120	4	201	907	146	0	0	0
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	0	141	5	236	1067	172	0	0	0
Lane Group Flow (vph)	0	0	0	0	146	0	0	1475	0	0	0	0
Tum Type							Perm					
Protected Phases					8			2				
Permitted Phases							2					
Actuated Green, G (s)					16.0			28.0				
Effective Green, g (s)					15.0			27.0				
Actuated g/C Ratio					0.30			0.54				
Clearance Time (s)					3.0			3.0				
Lane Grp Cap (vph)					1056			1863				
v/s Ratio Prot					0.04							
v/s Ratio Perm								0.43				
v/c Ratio					0.14			0.79				
Uniform Delay, d1					12.8			9.2				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.3			3.5				
Delay (s)					13.1			12.8				
Level of Service					B			B				
Approach Delay (s)		0.0			13.1			12.8			0.0	
Approach LOS		A			B			B			A	
Intersection Summary												
HCM Average Control Delay			12.8								B	
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			50.0						8.0			
Intersection Capacity Utilization			52.7%						A			
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: FRANKLIN ST. & PACIFIC ST.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗				↘	↑		↘	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.97		1.00	0.96	
Flt Protected		1.00	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1856	1583				1770	1799		1770	1796	
Flt Permitted		1.00	1.00				0.32	1.00		0.42	1.00	
Satd. Flow (perm)		1856	1583				604	1799		792	1796	
Volume (vph)	22	270	37	0	0	0	12	311	93	199	395	124
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	26	318	44	0	0	0	14	366	109	234	465	146
Lane Group Flow (vph)	0	344	44	0	0	0	14	475	0	234	611	0
Turn Type	Perm		Perm				Perm			Perm		
Protected Phases		4						2			2	
Permitted Phases	4		4				2			2		
Actuated Green, G (s)		14.5	14.5				30.1	30.1		30.1	30.1	
Effective Green, g (s)		14.5	14.5				30.1	30.1		30.1	30.1	
Actuated g/C Ratio		0.28	0.28				0.57	0.57		0.57	0.57	
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	436				346	1029		453	1028	
v/s Ratio Prot								0.26			c0.34	
v/s Ratio Perm		0.19	0.03				0.02			0.30		
v/c Ratio		0.67	0.10				0.04	0.46		0.52	0.59	
Uniform Delay, d1		16.9	14.2				4.9	6.5		6.8	7.3	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.5	0.1				0.2	1.5		4.2	2.5	
Delay (s)		20.4	14.3				5.1	8.0		11.0	9.8	
Level of Service		C	B				A	A		B	A	
Approach Delay (s)		19.7			0.0			7.9			10.1	
Approach LOS		B			A			A			B	

Intersection Summary

HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 4: DEL MONTE & LIGHTHOUSE

4/19/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↘		↗	↑↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1500	1900	1900
Total Lost time (s)					4.0		4.0			4.0		
Lane Util. Factor					0.95		1.00			0.94		
Flt					1.00		1.00			1.00		
Flt Protected					1.00		0.95			0.95		
Satd. Flow (prot)					3539		1770			3940		
Flt Permitted					1.00		0.95			0.95		
Satd. Flow (perm)					3539		1770			3940		
Volume (vph)	0	0	0	0	604	0	46	0	0	1427	0	0
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	0	694	0	53	0	0	1640	0	0
Lane Group Flow (vph)	0	0	0	0	694	0	53	0	0	1640	0	0
Turn Type							custom			custom	custom	
Protected Phases					5		8			6		
Permitted Phases							8		8	6		
Actuated Green, G (s)					17.0		5.4			29.5		
Effective Green, g (s)					18.0		7.4			30.5		
Actuated g/C Ratio					0.27		0.11			0.45		
Clearance Time (s)					5.0		6.0			5.0		
Vehicle Extension (s)					3.0		3.0			3.0		
Lane Grp Cap (vph)					938		193			1770		
v/s Ratio Prot					c0.20		c0.03			c0.42		
v/s Ratio Perm												
v/c Ratio					0.74		0.27			0.93		
Uniform Delay, d1					22.8		27.8			17.6		
Progression Factor					1.00		1.00			1.00		
Incremental Delay, d2					3.1		0.8			9.9		
Delay (s)					25.9		28.6			27.5		
Level of Service					C		C			C		
Approach Delay (s)		0.0			25.9			28.6			27.5	
Approach LOS		A			C			C			C	
Intersection Summary												
HCM Average Control Delay			27.1									HCM Level of Service C
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			67.9									Sum of lost time (s) 12.0
Intersection Capacity Utilization			65.4%									ICU Level of Service B
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 5: REESIDE AV. & LIGHTHOUSE AV.

2/3/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor			0.88	0.95	0.95			0.95			0.91	
Fr _t			0.85	1.00	1.00			1.00			1.00	
Fl _t Protected			1.00	0.95	0.96			1.00			1.00	
Satd. Flow (prot)			2787	1681	1690			3539			5084	
Fl _t Permitted			1.00	0.95	0.96			1.00			1.00	
Satd. Flow (perm)			2787	1681	1690			3539			5084	
Volume (vph)	0	0	173	352	19	3	0	643	0	0	1976	3
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	0	214	435	23	4	0	794	0	0	2440	4
Lane Group Flow (vph)	0	0	214	228	234	0	0	794	0	0	2444	0
Turn Type			custom	Split								
Protected Phases			4	8	8			6			2	
Permitted Phases			4									
Actuated Green, G (s)			10.7	15.2	15.2			44.7			44.7	
Effective Green, g (s)			10.7	14.7	14.7			44.7			44.7	
Actuated g/C Ratio			0.13	0.18	0.18			0.54			0.54	
Clearance Time (s)			4.0	3.5	3.5			4.0			4.0	
Vehicle Extension (s)			3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)			363	301	303			1927			2768	
v/s Ratio Prot			c0.08	0.14	c0.14			0.22			c0.48	
v/s Ratio Perm												
v/c Ratio			0.59	0.76	0.77			0.41			0.88	
Uniform Delay, d1			33.6	32.0	32.1			11.0			16.4	
Progression Factor			1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2			2.4	10.4	11.6			0.7			4.5	
Delay (s)			36.1	42.4	43.7			11.6			20.9	
Level of Service			D	D	D			B			C	
Approach Delay (s)		36.1			43.0			11.6			20.9	
Approach LOS		D			D			B			C	

Intersection Summary

HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	82.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: DEL MONTE AV. & CAMINO ESTERO

1/25/2004

							
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↓	↑↑	↗	↘	↑↑↑	↖↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
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	1.00	0.91	0.97	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	3433	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	3433	1583
Volume (vph)	5	1656	208	93	1921	174	492
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	1762	221	99	2044	185	523
Lane Group Flow (vph)	5	1762	221	99	2044	185	523
Turn Type	Prot		Perm	Prot			Perm
Protected Phases	7	4		3	8	2	
Permitted Phases			4			2	2
Actuated Green, G (s)	0.8	46.1	46.1	7.7	53.0	23.6	23.6
Effective Green, g (s)	0.8	46.6	46.6	7.7	53.5	23.6	23.6
Actuated g/C Ratio	0.01	0.52	0.52	0.09	0.60	0.26	0.26
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	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)	16	1834	821	152	3026	901	416
v/s Ratio Prot	0.00	c0.50		c0.06	0.40	0.05	
v/s Ratio Perm			0.14				0.33
v/c Ratio	0.31	0.96	0.27	0.65	0.68	0.21	1.26
Uniform Delay, d1	44.3	20.8	12.1	39.8	12.3	25.8	33.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.9	13.6	0.8	9.6	0.6	0.5	134.0
Delay (s)	55.1	34.4	12.9	49.4	12.9	26.4	167.2
Level of Service	E	C	B	D	B	C	F
Approach Delay (s)		32.0			14.6	130.4	
Approach LOS		C			B	F	

Intersection Summary

HCM Average Control Delay	38.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	D

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 7: DEL MONTE AV. & CAMINO AGUAJITO

1/25/2004

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑	↓↓	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	0.97	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)	5085	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	1770	3539	3433	1583
Volume (vph)	1103	591	48	1748	203	28
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1226	657	53	1942	226	31
Lane Group Flow (vph)	1226	657	53	1942	226	31
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Actuated Green, G (s)	33.8	33.8	3.3	40.1	10.4	10.4
Effective Green, g (s)	34.8	34.8	2.3	41.1	10.9	10.9
Actuated g/C Ratio	0.58	0.58	0.04	0.69	0.18	0.18
Clearance Time (s)	5.0	5.0	3.0	5.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2949	918	68	2424	624	288
v/s Ratio Prot	0.24		0.03	c0.55	c0.07	
v/s Ratio Perm		0.41				0.02
v/c Ratio	0.42	0.72	0.78	0.80	0.36	0.11
Uniform Delay, d1	7.0	9.0	28.6	6.6	21.5	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	4.8	41.9	2.9	0.4	0.2
Delay (s)	7.4	13.8	70.5	9.5	21.9	20.7
Level of Service	A	B	E	A	C	C
Approach Delay (s)	9.6			11.1	21.7	
Approach LOS	A			B	C	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 8: DEL MONTE AV. & SLOAT AV.

1/25/2004

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↘	↑↑	↖↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.95	0.97	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5013		1770	3539	3433	1583
Flt Permitted	1.00		0.12	1.00	0.95	1.00
Satd. Flow (perm)	5013		228	3539	3433	1583
Volume (vph)	1056	110	242	1766	44	95
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1304	136	299	2180	54	117
Lane Group Flow (vph)	1440	0	299	2180	54	117
Turn Type			pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases			8		2	2
Actuated Green, G (s)	35.4		49.8	49.8	5.7	5.7
Effective Green, g (s)	35.9		50.3	50.3	5.7	5.7
Actuated g/C Ratio	0.56		0.79	0.79	0.09	0.09
Clearance Time (s)	4.5		4.0	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2812		430	2781	306	141
v/s Ratio Prot	0.29		0.11	0.62		
v/s Ratio Perm			0.43		0.02	0.07
v/c Ratio	0.51		0.70	0.78	0.18	0.83
Uniform Delay, d1	8.7		10.1	3.8	27.0	28.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		4.8	2.3	0.3	31.4
Delay (s)	9.3		14.9	6.1	27.3	60.1
Level of Service	A		B	A	C	E
Approach Delay (s)	9.3			7.2	49.7	
Approach LOS	A			A	D	

Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: FREMONT ST. & ABREGO ST.

2/2/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		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	1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3500		1770	3350		1770	1863	1583	1770	1844	
Flt Permitted	0.21	1.00		0.46	1.00		0.67	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	396	3500		856	3350		1247	1863	1583	1102	1844	
Volume (vph)	4	283	22	321	676	376	73	145	182	142	119	8
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	304	24	345	727	404	78	156	196	153	128	9
Lane Group Flow (vph)	4	328	0	345	1131	0	78	156	196	153	137	0
Turn Type	pm+pt			pm+pt			pm+pt		pm+ov	pm+pt		
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	19.8	19.1		31.6	26.4		11.8	9.2	17.7	12.8	9.2	
Effective Green, g (s)	20.8	19.6		32.6	27.4		12.3	9.7	18.7	13.3	10.2	
Actuated g/C Ratio	0.36	0.34		0.57	0.48		0.21	0.17	0.33	0.23	0.18	
Clearance Time (s)	4.5	4.5		4.5	5.0		4.0	4.5	4.5	3.5	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	172	1195		629	1599		291	315	626	291	328	
v/s Ratio Prot	0.00	0.09		c0.09	c0.34		0.01	0.08	c0.05	c0.03	0.07	
v/s Ratio Perm	0.01			0.23			0.05		0.07	c0.09		
v/c Ratio	0.02	0.27		0.55	0.71		0.27	0.50	0.31	0.53	0.42	
Uniform Delay, d1	11.8	13.7		6.9	11.8		18.5	21.6	14.5	18.8	21.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.1		1.0	1.5		0.5	1.2	0.3	1.7	0.9	
Delay (s)	11.8	13.9		7.8	13.3		19.0	22.9	14.8	20.6	21.8	
Level of Service	B	B		A	B		B	C	B	C	C	
Approach Delay (s)		13.8			12.0			18.5			21.2	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	4.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

2/2/2004

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Volume (vph)	41	683	126	540	1831	271	214	149	222	553	211	57
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	47	776	143	614	2081	308	243	169	252	628	240	65
Lane Group Flow (vph)	47	776	143	614	2081	308	243	169	252	628	240	65
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	4.0	33.1	33.1	49.1	78.2	78.2	15.2	15.2	15.2	28.2	28.2	28.2
Effective Green, g (s)	4.0	33.1	33.1	49.1	78.2	78.2	15.2	15.2	15.2	28.2	28.2	28.2
Actuated g/C Ratio	0.03	0.23	0.23	0.35	0.55	0.55	0.11	0.11	0.11	0.20	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	50	827	370	614	2808	874	369	200	170	684	371	315
v/s Ratio Prot	0.03	c0.22		c0.35	0.41		0.07	0.09		c0.18	0.13	
v/s Ratio Perm			0.09			0.19			0.16			0.04
v/c Ratio	0.94	0.94	0.39	1.00	0.74	0.35	0.66	0.84	1.48	0.92	0.65	0.21
Uniform Delay, d ₁	68.7	53.2	45.7	46.2	24.0	17.6	60.7	62.0	63.2	55.6	52.1	47.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	103.6	17.9	0.7	36.3	1.1	0.2	4.2	26.5	245.8	17.2	3.9	0.3
Delay (s)	172.2	71.1	46.4	82.6	25.1	17.9	64.9	88.5	309.0	72.8	56.0	47.7
Level of Service	F	E	D	F	C	B	E	F	F	E	E	D
Approach Delay (s)		72.4			36.1			163.6			66.7	
Approach LOS		E			D			F			E	

Intersection Summary

HCM Average Control Delay	62.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	141.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: SOLEDAD DR. & MUNRAS AV.

1/25/2004

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↗↗	↗	↘	↗	↗↗	↘	↗↗	↗	↗↗	↗↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.88	1.00	0.95	1.00	0.97	0.95	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	2787	1770	3539	1583	3433	3539	1583
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1863	2787	1770	3539	1583	3433	3539	1583
Volume (vph)	94	297	127	54	255	261	194	403	17	257	159	151
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
Adj. Flow (vph)	104	330	141	60	283	290	216	448	19	286	177	168
Lane Group Flow (vph)	104	330	141	60	283	290	216	448	19	286	177	168
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2		6	6
Actuated Green, G (s)	5.5	28.1	28.1	5.5	28.1	28.1	14.0	28.1	28.1	7.0	21.1	21.1
Effective Green, g (s)	6.5	29.1	29.1	6.5	29.1	29.1	15.0	29.1	29.1	8.0	22.1	22.1
Actuated g/C Ratio	0.07	0.33	0.33	0.07	0.33	0.33	0.17	0.33	0.33	0.09	0.25	0.25
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	130	1161	519	130	611	914	299	1161	519	310	882	394
v/s Ratio Prot	c0.06	0.09		0.03	c0.15		c0.12	0.13		c0.08	0.05	
v/s Ratio Perm			0.09			0.10			0.01			0.11
v/c Ratio	0.80	0.28	0.27	0.46	0.46	0.32	0.72	0.39	0.04	0.92	0.20	0.43
Uniform Delay, d1	40.5	22.1	22.0	39.4	23.6	22.3	34.9	22.9	20.3	40.0	26.3	28.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	28.6	0.6	1.3	2.6	2.5	0.9	8.3	1.0	0.1	31.6	0.5	3.4
Delay (s)	69.0	22.7	23.3	42.0	26.1	23.3	43.2	23.9	20.4	71.7	26.8	31.3
Level of Service	E	C	C	D	C	C	D	C	C	E	C	C
Approach Delay (s)		31.2			26.3			29.9			48.4	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	33.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 12: HOFFMAN AV. & LIGHTHOUSE AV.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑↑			↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.97			1.00			1.00			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1795			1842			3535			3536	
Flt Permitted		0.99			0.88			1.00			1.00	
Satd. Flow (perm)		1781			1640			3535			3536	
Volume (vph)	8	215	78	31	124	2	0	670	5	0	1115	6
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	10	259	94	37	149	2	0	807	6	0	1343	7
Lane Group Flow (vph)	0	363	0	0	188	0	0	813	0	0	1350	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		14.5			14.5			29.1			29.1	
Effective Green, g (s)		14.5			14.5			29.1			29.1	
Actuated g/C Ratio		0.28			0.28			0.56			0.56	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		500			461			1994			1994	
v/s Ratio Prot								0.23			c0.38	
v/s Ratio Perm		c0.20			0.11							
v/c Ratio		0.73			0.41			0.41			0.68	
Uniform Delay, d1		16.8			15.1			6.4			7.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.2			0.6			0.6			1.9	
Delay (s)		22.0			15.7			7.0			9.8	
Level of Service		C			B			A			A	
Approach Delay (s)		22.0			15.7			7.0			9.8	
Approach LOS		C			B			A			A	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: RAGSDALE DR. & HWY 68

1/25/2004

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑	↑↑	↑	↑	↑↑
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.88	0.95	1.00	1.00	0.95
Frt		0.85	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		2787	3539	1583	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2787	3539	1583	1770	3539
Volume (vph)	0	37	1612	36	321	1145
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	39	1679	38	334	1193
Lane Group Flow (vph)	0	39	1679	38	334	1193
Turn Type		custom		Perm	Prot	
Protected Phases			2		1	6
Permitted Phases		8		2		6
Actuated Green, G (s)		3.2	45.5	45.5	17.6	67.1
Effective Green, g (s)		3.2	45.5	45.5	17.6	67.1
Actuated g/C Ratio		0.04	0.58	0.58	0.22	0.86
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		114	2057	920	398	3033
v/s Ratio Prot			c0.47		c0.19	0.34
v/s Ratio Perm		0.01		0.02		
v/c Ratio		0.34	0.82	0.04	0.84	0.39
Uniform Delay, d1		36.5	13.1	7.0	29.0	1.2
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.8	3.7	0.1	14.3	0.4
Delay (s)		38.3	16.8	7.1	43.3	1.6
Level of Service		D	B	A	D	A
Approach Delay (s)	38.3		16.6			10.7
Approach LOS	D		B			B
Intersection Summary						
HCM Average Control Delay			14.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			78.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			71.6%		ICU Level of Service	C
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

15: HWY 68 (Holman) & Hwy. 1

2/3/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑		↖		↗	↖	↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	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	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		1863	1583	1770	1863		1770		1583	1770	1863	1583
Flt Permitted		1.00	1.00	0.18	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		1863	1583	327	1863		1770		1583	1770	1863	1583
Volume (vph)	0	654	511	142	390	0	40	0	255	16	503	670
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	703	549	153	419	0	43	0	274	17	541	720
Lane Group Flow (vph)	0	703	549	153	419	0	43	0	274	17	541	720
Turn Type			Perm	Perm			custom		custom	Prot		Free
Protected Phases		4			8		5			1	6	
Permitted Phases		4	4	8			5		2			Free
Actuated Green, G (s)		39.8	39.8	39.8	39.8		2.1		27.6	1.3	26.8	80.7
Effective Green, g (s)		39.8	39.8	39.8	39.8		2.1		27.6	1.3	26.8	80.7
Actuated g/C Ratio		0.49	0.49	0.49	0.49		0.03		0.34	0.02	0.33	1.00
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		919	781	161	919		46		541	29	619	1583
v/s Ratio Prot		0.38			0.22		0.02			0.01	c0.29	
v/s Ratio Perm			0.35	c0.47					0.17			0.45
v/c Ratio		0.76	0.70	0.95	0.46		0.93		0.51	0.59	0.87	0.45
Uniform Delay, d1		16.6	15.9	19.5	13.4		39.2		21.1	39.4	25.4	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		3.8	2.9	56.1	0.4		107.1		0.7	26.8	13.0	0.9
Delay (s)		20.5	18.7	75.6	13.7		146.3		21.9	66.2	38.4	0.9
Level of Service		C	B	E	B		F		C	E	D	A
Approach Delay (s)		19.7			30.3			38.8			17.6	
Approach LOS		B			C			D			B	
Intersection Summary												
HCM Average Control Delay			22.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			80.7			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			83.9%			ICU Level of Service			D			
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 16: PRESCOTT AV. & LIGHTHOUSE AV.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.91			0.99			1.00			1.00	
Flt Protected		1.00			0.98			1.00			1.00	
Satd. Flow (prot)		1697			1813			3533			3535	
Flt Permitted		0.98			0.61			1.00			1.00	
Satd. Flow (perm)		1665			1132			3533			3535	
Volume (vph)	18	87	187	65	118	16	0	689	8	0	898	7
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	95	203	71	128	17	0	749	9	0	976	8
Lane Group Flow (vph)	0	318	0	0	216	0	0	758	0	0	984	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		14.5			14.5			43.2			43.2	
Effective Green, g (s)		14.5			14.5			43.2			43.2	
Actuated g/C Ratio		0.22			0.22			0.66			0.66	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		367			250			2323			2324	
v/s Ratio Prot								0.21			c0.28	
v/s Ratio Perm		c0.19			0.19							
v/c Ratio		0.87			0.86			0.33			0.42	
Uniform Delay, d1		24.7			24.7			4.9			5.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		18.8			25.2			0.4			0.6	
Delay (s)		43.5			49.8			5.3			5.9	
Level of Service		D			D			A			A	
Approach Delay (s)		43.5			49.8			5.3			5.9	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: DEL MONTE AV. & FIGUEROA ST.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	0.97	1.00		0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5047		1770	5085	1583	3433	1699		3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5047		1770	5085	1583	3433	1699		3433	1863	1583
Volume (vph)	28	1481	78	72	1794	46	109	40	56	3	37	29
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
Adj. Flow (vph)	31	1646	87	80	1993	51	121	44	62	3	41	32
Lane Group Flow (vph)	31	1733	0	80	1993	51	121	106	0	3	41	32
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						8
Actuated Green, G (s)	1.8	40.4		3.9	42.5	42.5	6.6	13.3		0.8	7.5	7.5
Effective Green, g (s)	1.8	40.4		3.9	42.5	42.5	6.6	13.3		0.8	7.5	7.5
Actuated g/C Ratio	0.02	0.54		0.05	0.57	0.57	0.09	0.18		0.01	0.10	0.10
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	43	2741		93	2905	904	305	304		37	188	160
v/s Ratio Prot	0.02	0.34		c0.05	c0.39		c0.04	c0.06		0.00	0.02	
v/s Ratio Perm						0.03						0.02
v/c Ratio	0.72	0.63		0.86	0.69	0.06	0.40	0.35		0.08	0.22	0.20
Uniform Delay, d1	36.1	11.8		35.0	11.2	7.1	32.0	26.8		36.4	30.8	30.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	45.2	0.5		51.0	1.3	0.1	0.9	0.7		0.9	0.6	0.6
Delay (s)	81.2	12.3		86.0	12.6	7.2	32.9	27.5		37.4	31.3	31.3
Level of Service	F	B		F	B	A	C	C		D	C	C
Approach Delay (s)		13.5			15.2			30.3			31.6	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	74.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 18: FREMONT ST. & CASANOVA AV.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	↘	↗↗	↗	↘	↗↗	↗	↘	↗			↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1729			1787	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.67	1.00			0.74	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1252	1729			1383	1583
Volume (vph)	16	800	48	95	1383	34	43	12	11	103	19	106
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	870	52	103	1503	37	47	13	12	112	21	115
Lane Group Flow (vph)	17	870	52	103	1503	37	47	25	0	0	133	115
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Free
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4			8	6			2		Free
Actuated Green, G (s)	0.6	22.8	22.8	4.5	26.7	26.7	9.8	9.8			9.8	49.1
Effective Green, g (s)	0.6	22.8	22.8	4.5	26.7	26.7	9.8	9.8			9.8	49.1
Actuated g/C Ratio	0.01	0.46	0.46	0.09	0.54	0.54	0.20	0.20			0.20	1.00
Clearance Time (s)	4.0	4.0	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	3.0			3.0	
Lane Grp Cap (vph)	22	1643	735	162	1924	861	250	345			276	1583
v/s Ratio Prot	0.01	0.25		c0.06	c0.42			0.01				
v/s Ratio Perm			0.03			0.02	0.04				c0.10	0.07
v/c Ratio	0.77	0.53	0.07	0.64	0.78	0.04	0.19	0.07			0.48	0.07
Uniform Delay, d1	24.2	9.3	7.3	21.5	8.9	5.2	16.3	16.0			17.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	93.0	0.3	0.0	7.9	2.1	0.0	0.4	0.1			1.3	0.1
Delay (s)	117.2	9.7	7.3	29.4	11.0	5.3	16.7	16.0			18.7	0.1
Level of Service	F	A	A	C	B	A	B	B			B	A
Approach Delay (s)		11.5			12.0			16.5			10.1	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	B

c Critical Lane Group

APPENDIX G2

**FUTURE PM PEAK HOUR
SYNCHRO ANALYSIS SHEETS**

HCM Signalized Intersection Capacity Analysis
 1: DAVID AV. & LIGHTHOUSE AV.

2/3/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	0.95
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1772	1772
Fl _t Permitted	0.64	1.00	1.00	0.17	1.00	1.00	0.50	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)	1199	1863	1583	313	1863	1583	935	1863	1583	401	1772	1772
Volume (vph)	134	453	318	180	169	382	80	484	34	327	287	138
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	143	482	338	191	180	406	85	515	36	348	305	147
Lane Group Flow (vph)	143	482	338	191	180	406	85	515	36	348	452	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	25.2	22.0	22.0	28.8	23.8	23.8	21.8	21.8	21.8	29.7	29.7	
Effective Green, g (s)	25.2	22.0	22.0	28.8	23.8	23.8	21.8	21.8	21.8	29.7	29.7	
Actuated g/C Ratio	0.33	0.29	0.29	0.38	0.31	0.31	0.29	0.29	0.29	0.39	0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	422	540	459	215	584	496	304	535	455	357	693	
v/s Ratio Prot	0.01	0.26		c0.06	0.10		0.01	c0.28		c0.14	0.26	
v/s Ratio Perm	0.10		0.21	c0.28		0.26	0.07		0.02	c0.24		
v/c Ratio	0.34	0.89	0.74	0.89	0.31	0.82	0.28	0.96	0.08	0.97	0.65	
Uniform Delay, d1	18.5	25.8	24.3	20.4	19.8	24.1	21.2	26.6	19.7	20.0	18.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	16.9	6.1	32.6	0.3	10.1	0.5	30.7	0.3	40.6	4.7	
Delay (s)	19.0	42.7	30.4	53.0	20.1	34.2	21.7	57.3	20.1	60.6	23.6	
Level of Service	B	D	C	D	C	C	C	E	C	E	C	
Approach Delay (s)		34.9			35.6			50.5			39.7	
Approach LOS		C			D			D			D	

Intersection Summary

HCM Average Control Delay	39.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: REESIDE AV. & FOAM ST.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑↑				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					1.00			0.98				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3532			3453				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3532			3453				
Volume (vph)	0	0	0	0	313	4	135	1331	231	0	0	0
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	0	368	5	159	1566	272	0	0	0
Lane Group Flow (vph)	0	0	0	0	373	0	0	1997	0	0	0	0
Turn Type							Perm					
Protected Phases					8			2				
Permitted Phases							2					
Actuated Green, G (s)					16.0			38.0				
Effective Green, g (s)					15.0			37.0				
Actuated g/C Ratio					0.25			0.62				
Clearance Time (s)					3.0			3.0				
Lane Grp Cap (vph)					883			2129				
v/s Ratio Prot					0.11							
v/s Ratio Perm								0.58				
v/c Ratio					0.42			0.94				
Uniform Delay, d1					18.9			10.5				
Progression Factor					1.00			1.00				
Incremental Delay, d2					1.5			9.5				
Delay (s)					20.3			20.0				
Level of Service					C			B				
Approach Delay (s)		0.0			20.3			20.0			0.0	
Approach LOS		A			C			B			A	
Intersection Summary												
HCM Average Control Delay			20.0									C
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			60.0						8.0			
Intersection Capacity Utilization			73.6%									C
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: FRANKLIN ST. & PACIFIC ST.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.96		1.00	0.98	
Flt Protected		1.00	1.00				0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1858	1583				1770	1789		1770	1828	
Flt Permitted		1.00	1.00				0.28	1.00		0.31	1.00	
Satd. Flow (perm)		1858	1583				514	1789		575	1828	
Volume (vph)	23	472	76	0	0	0	9	410	146	345	527	76
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	27	555	89	0	0	0	11	482	172	406	620	89
Lane Group Flow (vph)	0	582	89	0	0	0	11	654	0	406	709	0
Turn Type	Perm		Perm				Perm			Perm		
Protected Phases		4						2			2	
Permitted Phases	4		4				2			2		
Actuated Green, G (s)		28.0	28.0				64.0	64.0		64.0	64.0	
Effective Green, g (s)		28.0	28.0				64.0	64.0		64.0	64.0	
Actuated g/C Ratio		0.28	0.28				0.64	0.64		0.64	0.64	
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)		520	443				329	1145		368	1170	
v/s Ratio Prot								0.37			0.39	
v/s Ratio Perm		0.31	0.06				0.02			c0.71		
v/c Ratio		1.12	0.20				0.03	0.57		1.10	0.61	
Uniform Delay, d1		36.0	27.5				6.6	10.2		18.0	10.6	
Progression Factor		1.00	1.00				1.00	1.00		1.00	1.00	
Incremental Delay, d2		76.5	0.2				0.2	2.1		77.7	2.3	
Delay (s)		112.5	27.7				6.8	12.3		95.7	12.9	
Level of Service		F	C				A	B		F	B	
Approach Delay (s)		101.2			0.0			12.2			43.1	
Approach LOS		F			A			B			D	

Intersection Summary

HCM Average Control Delay	50.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.0%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 4: DEL MONTE AV. & LIGHTHOUSE

4/19/2004

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↘		↗	↑↑↑			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1500	1900	1900	
Total Lost time (s)					4.0		4.0		4.0	4.0			
Lane Util. Factor					0.95		1.00		1.00	0.94			
Frt					1.00		1.00		0.85	1.00			
Flt Protected					1.00		0.95		1.00	0.95			
Satd. Flow (prot)					3539		1770		1583	3940			
Flt Permitted					1.00		0.95		1.00	0.95			
Satd. Flow (perm)					3539		1770		1583	3940			
Volume (vph)	0	0	0	0	417	0	75	0	197	1972	0	0	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	
Adj. Flow (vph)	0	0	0	0	479	0	86	0	226	2267	0	0	
Lane Group Flow (vph)	0	0	0	0	479	0	86	0	226	2267	0	0	
Turn Type							custom		custom	custom			
Protected Phases					5		8			6			
Permitted Phases							8		8	6			
Actuated Green, G (s)					12.0		10.6		10.6	61.4			
Effective Green, g (s)					13.0		12.6		12.6	62.4			
Actuated g/C Ratio					0.13		0.13		0.13	0.62			
Clearance Time (s)					5.0		6.0		6.0	5.0			
Vehicle Extension (s)					3.0		3.0		3.0	3.0			
Lane Grp Cap (vph)					460		223		199	2459			
v/s Ratio Prot					c0.14		0.05			c0.58			
v/s Ratio Perm									0.14				
v/c Ratio					1.04		0.39		1.14	0.92			
Uniform Delay, d1					43.5		40.1		43.7	16.6			
Progression Factor					1.00		1.00		1.00	1.00			
Incremental Delay, d2					53.1		1.1		105.1	7.2			
Delay (s)					96.6		41.3		148.8	23.8			
Level of Service					F		D		F	C			
Approach Delay (s)		0.0			96.6			119.1			23.8		
Approach LOS		A			F			F			C		
Intersection Summary													
HCM Average Control Delay			44.9									HCM Level of Service	D
HCM Volume to Capacity ratio			0.97										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			75.3%									ICU Level of Service	C
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 5: REESIDE AV. & LIGHTHOUSE AV.

2/3/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor			0.88	0.95	0.95			0.95			0.91	
Fr _t			0.85	1.00	0.99			1.00			1.00	
Fl _t Protected			1.00	0.95	0.95			1.00			1.00	
Satd. Flow (prot)			2787	1681	1678			3539			5084	
Fl _t Permitted			1.00	0.95	0.95			1.00			1.00	
Satd. Flow (perm)			2787	1681	1678			3539			5084	
Volume (vph)	0	0	332	373	0	8	0	880	0	0	1879	3
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	0	410	460	0	10	0	1086	0	0	2320	4
Lane Group Flow (vph)	0	0	410	247	223	0	0	1086	0	0	2324	0
Turn Type			custom	Split								
Protected Phases				8	8			6			2	
Permitted Phases			4									
Actuated Green, G (s)			15.0	16.1	16.1			44.6			44.6	
Effective Green, g (s)			15.0	15.6	15.6			44.6			44.6	
Actuated g/C Ratio			0.17	0.18	0.18			0.51			0.51	
Clearance Time (s)			4.0	3.5	3.5			4.0			4.0	
Vehicle Extension (s)			3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)			479	301	300			1810			2600	
v/s Ratio Prot				c0.15	0.13			0.31			c0.46	
v/s Ratio Perm			0.15									
v/c Ratio			0.86	0.82	0.74			0.60			0.89	
Uniform Delay, d1			35.1	34.5	33.9			15.0			19.2	
Progression Factor			1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2			14.0	16.2	9.6			1.5			5.3	
Delay (s)			49.0	50.7	43.5			16.5			24.4	
Level of Service			D	D	D			B			C	
Approach Delay (s)		49.0			47.3			16.5			24.4	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM Average Control Delay			27.3									C
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			87.2						12.0			
Intersection Capacity Utilization			82.3%									D
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 6: DEL MONTE AV. & CAMINO ESTERO

1/25/2004

							
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	⇓	↑↑	↗	↘	↑↑↑	↘↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
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	1.00	0.91	0.97	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	3433	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	3433	1583
Volume (vph)	5	2208	85	43	2016	384	407
Peak-hour factor, PHF	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	2349	90	46	2145	409	433
Lane Group Flow (vph)	5	2349	90	46	2145	409	433
Turn Type	Prot		Perm	Prot		Perm	
Protected Phases	7	4		3	8	2	
Permitted Phases			4			2	2
Actuated Green, G (s)	0.8	97.1	97.1	7.4	103.7	32.5	32.5
Effective Green, g (s)	0.8	97.6	97.6	7.4	104.2	32.5	32.5
Actuated g/C Ratio	0.01	0.65	0.65	0.05	0.70	0.22	0.22
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	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)	9	2310	1033	88	3544	746	344
v/s Ratio Prot	0.00	c0.66		c0.03	0.42	0.12	
v/s Ratio Perm			0.06				0.27
v/c Ratio	0.56	1.02	0.09	0.52	0.61	0.55	1.26
Uniform Delay, d1	74.2	26.0	9.6	69.3	11.9	52.0	58.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	58.1	23.1	0.2	5.5	0.3	2.9	137.9
Delay (s)	132.3	49.0	9.7	74.8	12.2	54.9	196.4
Level of Service	F	D	A	E	B	D	F
Approach Delay (s)		47.7			13.5	127.7	
Approach LOS		D			B	F	

Intersection Summary

HCM Average Control Delay	46.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	149.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 7: DEL MONTE AV. & CAMINO AGUAJITO

1/25/2004

Movement	→	↘	↙	←	↖	↗
	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	0.97	1.00
Fr _t	1.00	0.85	1.00	1.00	1.00	0.85
Fl _t Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	3433	1583
Fl _t Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	1770	3539	3433	1583
Volume (vph)	2108	643	61	1408	277	55
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2342	714	68	1564	308	61
Lane Group Flow (vph)	2342	714	68	1564	308	61
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Actuated Green, G (s)	34.4	34.4	4.1	41.5	11.4	11.4
Effective Green, g (s)	35.4	35.4	3.1	42.5	11.9	11.9
Actuated g/C Ratio	0.57	0.57	0.05	0.68	0.19	0.19
Clearance Time (s)	5.0	5.0	3.0	5.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2885	898	88	2410	655	302
v/s Ratio Prot	c0.46		0.04	c0.44	c0.09	
v/s Ratio Perm		0.45				0.04
v/c Ratio	0.81	0.80	0.77	0.65	0.47	0.20
Uniform Delay, d ₁	10.8	10.6	29.3	5.7	22.4	21.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	2.6	7.2	33.4	1.4	0.5	0.3
Delay (s)	13.4	17.9	62.7	7.1	23.0	21.6
Level of Service	B	B	E	A	C	C
Approach Delay (s)	14.5			9.4	22.8	
Approach LOS	B			A	C	

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	B
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 8: DEL MONTE AV. & SLOAT AV.

1/25/2004

Movement	→	↘	↙	←	↖	↗
	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↖	↑↑	↖↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.95	0.97	1.00
Fr _t	1.00		1.00	1.00	1.00	0.85
Fl _t Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5060		1770	3539	3433	1583
Fl _t Permitted	1.00		0.08	1.00	0.95	1.00
Satd. Flow (perm)	5060		146	3539	3433	1583
Volume (vph)	2095	71	78	1570	95	126
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	2586	88	96	1938	117	156
Lane Group Flow (vph)	2674	0	96	1938	117	156
Turn Type			pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases			8		2	2
Actuated Green, G (s)	46.6		55.4	55.4	8.3	8.3
Effective Green, g (s)	47.1		55.9	55.9	8.3	8.3
Actuated g/C Ratio	0.65		0.77	0.77	0.11	0.11
Clearance Time (s)	4.5		4.0	4.5	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3301		221	2740	395	182
v/s Ratio Prot	c0.53		0.03	c0.55		
v/s Ratio Perm			0.31		0.03	0.10
v/c Ratio	0.81		0.43	0.71	0.30	0.86
Uniform Delay, d ₁	9.3		10.5	4.1	29.3	31.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d ₂	2.3		1.4	1.6	0.4	30.6
Delay (s)	11.5		11.9	5.6	29.7	61.9
Level of Service	B		B	A	C	E
Approach Delay (s)	11.5			5.9	48.1	
Approach LOS	B			A	D	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: FREMONT ST. & ABREGO ST.

2/2/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		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	1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3505		1770	3362		1770	1863	1583	1770	1847	
Flt Permitted	0.20	1.00		0.17	1.00		0.50	1.00	1.00	0.20	1.00	
Satd. Flow (perm)	379	3505		317	3362		933	1863	1583	363	1847	
Volume (vph)	10	625	43	246	640	322	110	330	407	259	274	17
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	672	46	265	688	346	118	355	438	278	295	18
Lane Group Flow (vph)	11	718	0	265	1034	0	118	355	438	278	313	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+ov	pm+pt	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	23.3	22.4		37.1	31.7		22.8	18.3	29.0	31.5	23.0	
Effective Green, g (s)	24.3	22.9		38.1	32.7		23.3	18.8	30.0	32.5	24.0	
Actuated g/C Ratio	0.31	0.29		0.48	0.42		0.30	0.24	0.38	0.41	0.31	
Clearance Time (s)	4.5	4.5		4.5	5.0		4.0	4.5	4.5	3.5	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	142	1021		361	1399		324	446	685	324	564	
v/s Ratio Prot	0.00	0.20		c0.10	c0.31		0.02	0.19	c0.09	c0.11	0.17	
v/s Ratio Perm	0.02			0.25			0.09		0.19	c0.25		
v/c Ratio	0.08	0.70		0.73	0.74		0.36	0.80	0.64	0.86	0.55	
Uniform Delay, d1	19.1	24.8		14.5	19.4		20.9	28.1	19.9	17.9	22.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	2.2		7.5	2.1		0.7	9.5	2.0	19.5	1.2	
Delay (s)	19.3	27.0		22.0	21.4		21.6	37.6	21.8	37.5	24.0	
Level of Service	B	C		C	C		C	D	C	D	C	
Approach Delay (s)		26.9			21.6			28.0			30.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	78.6	Sum of lost time (s)	4.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	D
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

2/2/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↗	↘	↗↗↗	↗	↗↗	↑	↗	↗↗	↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Volume (vph)	106	1726	301	344	1416	360	284	437	357	697	274	49
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	120	1961	342	391	1609	409	323	497	406	792	311	56
Lane Group Flow (vph)	120	1961	342	391	1609	409	323	497	406	792	311	56
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	9.0	48.0	48.0	18.0	57.0	57.0	28.0	28.0	28.0	33.0	33.0	33.0
Effective Green, g (s)	9.0	48.0	48.0	18.0	57.0	57.0	28.0	28.0	28.0	33.0	33.0	33.0
Actuated g/C Ratio	0.06	0.34	0.34	0.13	0.40	0.40	0.20	0.20	0.20	0.23	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	111	1188	531	223	2027	631	672	365	310	792	430	365
v/s Ratio Prot	0.07	c0.55		c0.22	0.32		0.09	c0.27		c0.23	0.17	
v/s Ratio Perm			0.22			0.26			0.26			0.04
v/c Ratio	1.08	1.65	0.64	1.75	0.79	0.65	0.48	1.36	1.31	1.00	0.72	0.15
Uniform Delay, d ₁	67.0	47.5	40.3	62.5	37.8	34.9	51.0	57.5	57.5	55.0	50.8	43.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	108.9	296.6	2.7	356.9	2.2	2.3	0.5	179.6	160.7	32.0	5.9	0.2
Delay (s)	175.9	344.1	42.9	419.4	40.1	37.2	51.6	237.1	218.2	87.0	56.7	44.1
Level of Service	F	F	D	F	D	D	D	F	F	F	E	D
Approach Delay (s)		293.3			101.1			181.9			76.8	
Approach LOS		F			F			F			E	

Intersection Summary

HCM Average Control Delay	175.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	143.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	137.9%	ICU Level of Service	H
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: SOLEDAD DR. & MUNRAS AV.

1/25/2004

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↗↗	↘	↘	↗	↗↗	↘	↗↗	↘	↗↗	↗↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.88	1.00	0.95	1.00	0.97	0.95	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	2787	1770	3539	1583	3433	3539	1583
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1863	2787	1770	3539	1583	3433	3539	1583
Volume (vph)	164	358	171	54	329	478	160	600	31	696	562	229
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
Adj. Flow (vph)	182	398	190	60	366	531	178	667	34	773	624	254
Lane Group Flow (vph)	182	398	190	60	366	531	178	667	34	773	624	254
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2		6	6
Actuated Green, G (s)	15.3	37.0	37.0	6.3	28.0	28.0	17.7	27.0	27.0	28.7	38.0	38.0
Effective Green, g (s)	16.3	38.0	38.0	7.3	29.0	29.0	18.7	28.0	28.0	29.7	39.0	39.0
Actuated g/C Ratio	0.14	0.32	0.32	0.06	0.24	0.24	0.16	0.24	0.24	0.25	0.33	0.33
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	242	1130	505	109	454	679	278	833	372	857	1160	519
v/s Ratio Prot	c0.10	0.11		0.03	c0.20		0.10	c0.19		c0.23	0.18	
v/s Ratio Perm			0.12			0.19			0.02			0.16
v/c Ratio	0.75	0.35	0.38	0.55	0.81	0.78	0.64	0.80	0.09	0.90	0.54	0.49
Uniform Delay, d1	49.4	31.1	31.3	54.3	42.4	42.0	47.0	42.9	35.6	43.2	32.6	32.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	0.9	2.1	5.9	14.2	8.7	5.0	8.0	0.5	12.6	1.8	3.3
Delay (s)	61.8	31.9	33.5	60.2	56.5	50.8	52.0	50.8	36.0	55.9	34.4	35.3
Level of Service	E	C	C	E	E	D	D	D	D	E	C	D
Approach Delay (s)		39.4			53.6			50.5			44.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	46.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	119.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	D

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 12: HOFFMAN AV. & LIGHTHOUSE AV.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.98			0.99			1.00			0.99	
Flt Protected		1.00			0.98			1.00			1.00	
Satd. Flow (prot)		1821			1805			3529			3519	
Flt Permitted		0.97			0.60			1.00			1.00	
Satd. Flow (perm)		1766			1108			3529			3519	
Volume (vph)	20	233	42	108	114	16	0	1051	21	0	1018	40
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	24	281	51	130	137	19	0	1266	25	0	1227	48
Lane Group Flow (vph)	0	356	0	0	286	0	0	1291	0	0	1275	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		15.7			15.7			28.2			28.2	
Effective Green, g (s)		15.7			15.7			28.2			28.2	
Actuated g/C Ratio		0.30			0.30			0.54			0.54	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		534			335			1917			1912	
v/s Ratio Prot								c0.37			0.36	
v/s Ratio Perm		0.20			c0.26							
v/c Ratio		0.67			0.85			0.67			0.67	
Uniform Delay, d1		15.8			17.0			8.5			8.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.1			18.6			1.9			1.9	
Delay (s)		19.0			35.6			10.4			10.3	
Level of Service		B			D			B			B	
Approach Delay (s)		19.0			35.6			10.4			10.3	
Approach LOS		B			D			B			B	

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	51.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

13: RAGSDALE DR. & HWY 68

1/25/2004

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗↗	↖↖	↗	↘	↖↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.88	0.95	1.00	1.00	0.95
Fr _t		0.85	1.00	0.85	1.00	1.00
Fl _t Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		2787	3539	1583	1770	3539
Fl _t Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2787	3539	1583	1770	3539
Volume (vph)	0	163	1907	32	95	1228
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	170	1986	33	99	1279
Lane Group Flow (vph)	0	170	1986	33	99	1279
Turn Type		custom		Perm	Prot	
Protected Phases			2		1	6
Permitted Phases		8		2		6
Actuated Green, G (s)		6.1	50.4	50.4	5.0	59.4
Effective Green, g (s)		6.1	50.4	50.4	5.0	59.4
Actuated g/C Ratio		0.08	0.69	0.69	0.07	0.81
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		231	2427	1085	120	2860
v/s Ratio Prot			c0.56		c0.06	0.36
v/s Ratio Perm		0.06		0.02		
v/c Ratio		0.74	0.82	0.03	0.82	0.45
Uniform Delay, d ₁		32.9	8.3	3.7	33.8	2.1
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂		11.5	3.2	0.1	34.9	0.5
Delay (s)		44.4	11.5	3.8	68.7	2.6
Level of Service		D	B	A	E	A
Approach Delay (s)	44.4		11.4			7.4
Approach LOS	D		B			A



Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	B

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

15: HWY 68 (Holman) & Hwy 1

2/3/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑		↘		↗	↘	↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	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	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		1863	1583	1770	1863		1770		1583	1770	1863	1583
Flt Permitted		1.00	1.00	0.17	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		1863	1583	317	1863		1770		1583	1770	1863	1583
Volume (vph)	0	789	495	90	565	0	28	0	409	12	278	508
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	848	532	97	608	0	30	0	440	13	299	546
Lane Group Flow (vph)	0	848	532	97	608	0	30	0	440	13	299	546
Turn Type			Perm	Perm			custom		custom	Prot		Free
Protected Phases		4			8		5			1	6	
Permitted Phases			4	8			5		2		6	Free
Actuated Green, G (s)		46.8	46.8	46.8	46.8		1.7		18.0	1.3	17.6	78.1
Effective Green, g (s)		46.8	46.8	46.8	46.8		1.7		18.0	1.3	17.6	78.1
Actuated g/C Ratio		0.60	0.60	0.60	0.60		0.02		0.23	0.02	0.23	1.00
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		1116	949	190	1116		39		365	29	420	1583
v/s Ratio Prot		0.46			0.33		0.02			0.01	0.16	
v/s Ratio Perm			0.34	0.31					0.28			0.34
v/c Ratio		0.76	0.56	0.51	0.54		0.77		1.21	0.45	0.71	0.34
Uniform Delay, d1		11.5	9.4	9.0	9.3		38.0		30.0	38.0	27.9	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		3.0	0.8	2.3	0.5		60.6		115.6	10.6	5.6	0.6
Delay (s)		14.5	10.2	11.3	9.9		98.6		145.7	48.7	33.5	0.6
Level of Service		B	B	B	A		F		F	D	C	A
Approach Delay (s)		12.9			10.1			142.7			12.8	
Approach LOS		B			B			F			B	

Intersection Summary

HCM Average Control Delay	30.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	78.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	D

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 16: PRESCOTT AV. & LIGHTHOUSE AV.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Flt		0.95			0.99			1.00			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1745			1816			3529			3516	
Flt Permitted		0.64			0.80			1.00			1.00	
Satd. Flow (perm)		1127			1477			3529			3516	
Volume (vph)	100	105	115	103	316	49	0	1068	20	0	703	32
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	114	125	112	343	53	0	1161	22	0	764	35
Lane Group Flow (vph)	0	348	0	0	508	0	0	1183	0	0	799	0
Turn Type	Perm		Perm									
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		25.0			25.0			43.0			43.0	
Effective Green, g (s)		25.0			25.0			43.0			43.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		371			486			1997			1989	
v/s Ratio Prot								0.34			0.23	
v/s Ratio Perm		0.31			0.34							
v/c Ratio		0.94			1.05			0.59			0.40	
Uniform Delay, d1		24.7			25.5			10.8			9.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		30.9			53.1			1.3			0.6	
Delay (s)		55.7			78.6			12.1			9.9	
Level of Service		E			E			B			A	
Approach Delay (s)		55.7			78.6			12.1			9.9	
Approach LOS		E			E			B			A	
Intersection Summary												
HCM Average Control Delay			28.7					HCM Level of Service			C	
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			76.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			89.9%					ICU Level of Service		D		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 17: DEL MONTE AV. & FIGUEROA ST.

1/25/2004

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	0.97	1.00		0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5045		1770	5085	1583	3433	1695		3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5045		1770	5085	1583	3433	1695		3433	1863	1583
Volume (vph)	90	2137	118	112	1997	154	363	57	85	164	57	147
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
Adj. Flow (vph)	100	2374	131	124	2219	171	403	63	94	182	63	163
Lane Group Flow (vph)	100	2505	0	124	2219	171	403	157	0	182	63	163
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						8
Actuated Green, G (s)	9.4	59.2		9.0	58.8	58.8	14.0	15.9		10.1	12.0	12.0
Effective Green, g (s)	9.4	59.2		9.0	58.8	58.8	14.0	15.9		10.1	12.0	12.0
Actuated g/C Ratio	0.09	0.54		0.08	0.53	0.53	0.13	0.14		0.09	0.11	0.11
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	151	2710		145	2713	845	436	245		315	203	172
v/s Ratio Prot	0.06	c0.50		c0.07	0.44		c0.12	c0.09		0.05	0.03	
v/s Ratio Perm						0.11						0.10
v/c Ratio	0.66	0.92		0.86	0.82	0.20	0.92	0.64		0.58	0.31	0.95
Uniform Delay, d1	48.9	23.4		50.0	21.3	13.4	47.6	44.5		48.0	45.3	48.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.4	6.0		35.9	2.9	0.5	25.2	5.6		2.6	0.9	52.8
Delay (s)	59.3	29.5		85.9	24.1	14.0	72.8	50.1		50.6	46.2	101.6
Level of Service	E	C		F	C	B	E	D		D	D	F
Approach Delay (s)		30.6			26.5			66.4			70.3	
Approach LOS		C			C			E			E	

Intersection Summary

HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	D

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 18: FREMONT ST. & CASANOVA AV.

1/25/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1776			1796	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00			0.78	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1354	1776			1450	1583
Volume (vph)	20	1902	62	213	1022	47	61	18	8	31	11	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	2067	67	232	1111	51	66	20	9	34	12	217
Lane Group Flow (vph)	22	2067	67	232	1111	51	66	29	0	0	46	217
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Free
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4			8	6			2		Free
Actuated Green, G (s)	1.4	27.5	27.5	11.4	37.5	37.5	8.2	8.2			8.2	59.1
Effective Green, g (s)	1.4	27.5	27.5	11.4	37.5	37.5	8.2	8.2			8.2	59.1
Actuated g/C Ratio	0.02	0.47	0.47	0.19	0.63	0.63	0.14	0.14			0.14	1.00
Clearance Time (s)	4.0	4.0	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	3.0			3.0	
Lane Grp Cap (vph)	42	1647	737	341	2246	1004	188	246			201	1583
v/s Ratio Prot	0.01	c0.58		c0.13	0.31			0.02				
v/s Ratio Perm			0.04			0.03	c0.05				0.03	0.14
v/c Ratio	0.52	1.26	0.09	0.68	0.49	0.05	0.35	0.12			0.23	0.14
Uniform Delay, d1	28.5	15.8	8.8	22.2	5.8	4.1	23.0	22.3			22.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	11.3	119.9	0.1	5.5	0.2	0.0	1.1	0.2			0.6	0.2
Delay (s)	39.8	135.7	8.9	27.7	5.9	4.1	24.2	22.5			23.2	0.2
Level of Service	D	F	A	C	A	A	C	C			C	A
Approach Delay (s)		130.8			9.5			23.7			4.2	
Approach LOS		F			A			C			A	

Intersection Summary

HCM Average Control Delay	76.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: HWY 68 & OLMSTED RD.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	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		1.00	1.00		1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583		1790	1583		1787	1583
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.33	1.00		0.55	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583		613	1583		1025	1583
Volume (vph)	109	792	173	38	965	146	141	32	47	268	49	277
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	116	843	184	40	1027	155	150	34	50	285	52	295
Lane Group Flow (vph)	116	843	184	40	1027	155	0	184	50	0	337	295
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	6.5	55.2	55.2	2.7	51.4	51.4		30.0	30.0		30.0	30.0
Effective Green, g (s)	6.0	57.2	57.2	2.2	53.4	53.4		30.0	30.0		30.0	30.0
Actuated g/C Ratio	0.06	0.56	0.56	0.02	0.53	0.53		0.30	0.30		0.30	0.30
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0		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	3.0		3.0	3.0
Lane Grp Cap (vph)	105	1051	893	38	981	834		181	468		303	468
v/s Ratio Prot	c0.07	c0.45		0.02	c0.55							
v/s Ratio Perm			0.12			0.10		0.30	0.03		c0.33	0.19
v/c Ratio	1.10	0.80	0.21	1.05	1.05	0.19		1.02	0.11		1.11	0.63
Uniform Delay, d1	47.7	17.6	10.9	49.6	24.0	12.6		35.7	26.0		35.7	30.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	118.9	6.5	0.5	162.1	41.8	0.5		71.3	0.1		85.3	2.8
Delay (s)	166.6	24.1	11.4	211.7	65.8	13.1		107.0	26.1		121.0	33.7
Level of Service	F	C	B	F	E	B		F	C		F	C
Approach Delay (s)		36.5			63.9			89.7			80.3	
Approach LOS		D			E			F			F	

Intersection Summary

HCM Average Control Delay	59.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	101.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	E
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

20: Hwy 68 & York

1/26/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	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	1.00		1.00	1.00	
Fr't	1.00	1.00		1.00	1.00	0.85		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1861		1770	1863	1583		1791	1583		1775	1583	
Flt Permitted	0.95	1.00		0.06	1.00	1.00		1.00	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1861		116	1863	1583		1863	1583		1775	1583	
Volume (vph)	75	1149	8	6	1121	115	4	1	4	259	4	265	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	82	1249	9	7	1218	125	4	1	4	282	4	288	
Lane Group Flow (vph)	82	1258	0	7	1218	125	0	5	4	0	286	288	
Turn Type	Prot			Perm		Perm	Perm		Perm	custom		custom	
Protected Phases	7	4			8			2		6	6	6	
Permitted Phases				8		8	2		2	6		6	
Actuated Green, G (s)	5.0	71.1		62.1	62.1	62.1		1.4	1.4		19.0	19.0	
Effective Green, g (s)	5.0	73.1		64.1	64.1	64.1		1.4	1.4		19.0	19.0	
Actuated g/C Ratio	0.05	0.69		0.61	0.61	0.61		0.01	0.01		0.18	0.18	
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	84	1289		70	1132	962		25	21		320	285	
v/s Ratio Prot	0.05	c0.68			c0.65						0.16	c0.18	
v/s Ratio Perm				0.06		0.08		c0.00	0.00				
v/c Ratio	0.98	0.98		0.10	1.08	0.13		0.20	0.19		0.89	1.01	
Uniform Delay, d1	50.2	15.4		8.6	20.7	8.8		51.5	51.5		42.3	43.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	89.5	19.4		0.6	49.7	0.1		3.9	4.4		25.4	56.0	
Delay (s)	139.6	34.7		9.3	70.4	8.9		55.4	55.9		67.7	99.3	
Level of Service	F	C		A	E	A		E	E		E	F	
Approach Delay (s)		41.1			64.4			55.6			83.5		
Approach LOS		D			E			E			F		

Intersection Summary

HCM Average Control Delay	58.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	105.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	F
c Critical Lane Group			

APPENDIX H

**FUTURE CONDITIONS MITIGATED
ANALYSIS WORKSHEETS**

HCM Signalized Intersection Capacity Analysis
 5: REESIDE AV. & LIGHTHOUSE AV.

4/13/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↖	↗					↑↑			↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	4.0					4.0			4.0		
Lane Util. Factor		0.95	0.95					0.95			0.95		
Frt		0.85	0.85					1.00			1.00		
Flt Protected		1.00	1.00					1.00			1.00		
Satd. Flow (prot)		1504	1504					3539			3539		
Flt Permitted		1.00	1.00					1.00			1.00		
Satd. Flow (perm)		1504	1504					3539			3539		
Volume (vph)	0	0	300	0	0	0	0	643	0	0	2200	0	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	
Adj. Flow (vph)	0	0	370	0	0	0	0	794	0	0	2716	0	
Lane Group Flow (vph)	0	185	185	0	0	0	0	794	0	0	2716	0	
Turn Type		custom							Perm				
Protected Phases		4	4					6			2		
Permitted Phases			4							2			
Actuated Green, G (s)		12.3	12.3					44.6			44.6		
Effective Green, g (s)		12.3	12.3					44.6			44.6		
Actuated g/C Ratio		0.19	0.19					0.69			0.69		
Clearance Time (s)		4.0	4.0					4.0			4.0		
Vehicle Extension (s)		3.0	3.0					3.0			3.0		
Lane Grp Cap (vph)		285	285					2432			2432		
v/s Ratio Prot		c0.12	0.12					0.22			c0.77		
v/s Ratio Perm													
v/c Ratio		0.65	0.65					0.33			1.12		
Uniform Delay, d1		24.3	24.3					4.1			10.2		
Progression Factor		1.00	1.00					1.00			1.00		
Incremental Delay, d2		5.0	5.0					0.4			58.9		
Delay (s)		29.3	29.3					4.5			69.0		
Level of Service		C	C					A			E		
Approach Delay (s)		29.3			0.0			4.5			69.0		
Approach LOS		C			A			A			E		
Intersection Summary													
HCM Average Control Delay			52.0									HCM Level of Service	D
HCM Volume to Capacity ratio			1.02										
Actuated Cycle Length (s)			64.9									Sum of lost time (s)	8.0
Intersection Capacity Utilization			97.0%									ICU Level of Service	E
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 5: REESIDE AV. & LIGHTHOUSE AV.

4/13/2004

Movement													
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								 			  		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	4.0					4.0			4.0		
Lane Util. Factor		0.95	0.95					0.95			0.95		
Frt		0.86	0.85					1.00			1.00		
Flt Protected		1.00	1.00					1.00			1.00		
Satd. Flow (prot)		1524	1504					3539			3539		
Flt Permitted		1.00	1.00					1.00			1.00		
Satd. Flow (perm)		1524	1504					3539			3539		
Volume (vph)	0	20	500	0	0	0	0	880	0	0	2100	0	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	
Adj. Flow (vph)	0	25	617	0	0	0	0	1086	0	0	2593	0	
Lane Group Flow (vph)	0	333	309	0	0	0	0	1086	0	0	2593	0	
Turn Type			Perm										
Protected Phases		4						6			2		
Permitted Phases			4										
Actuated Green, G (s)		20.7	20.7					61.0			61.0		
Effective Green, g (s)		20.7	20.7					61.0			61.0		
Actuated g/C Ratio		0.23	0.23					0.68			0.68		
Clearance Time (s)		4.0	4.0					4.0			4.0		
Vehicle Extension (s)		3.0	3.0					3.0			3.0		
Lane Grp Cap (vph)		352	347					2407			2407		
v/s Ratio Prot		c0.22						0.31			c0.73		
v/s Ratio Perm			0.21										
v/c Ratio		0.95	0.89					0.45			1.08		
Uniform Delay, d1		34.0	33.4					6.6			14.4		
Progression Factor		1.00	1.00					1.00			1.00		
Incremental Delay, d2		33.8	23.5					0.6			43.2		
Delay (s)		67.8	56.9					7.2			57.5		
Level of Service		E	E					A			E		
Approach Delay (s)		62.6			0.0			7.2			57.5		
Approach LOS		E			A			A			E		
Intersection Summary													
HCM Average Control Delay			45.6									HCM Level of Service	D
HCM Volume to Capacity ratio			1.04										
Actuated Cycle Length (s)			89.7									Sum of lost time (s)	8.0
Intersection Capacity Utilization			103.8%									ICU Level of Service	F
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 10: FREMONT ST. & CAMINO AGUAJITO

4/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.94	1.00	
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	3539	1583	4990	1803	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	4990	1803	
Volume (vph)	41	683	126	540	1831	271	214	149	222	553	211	57
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	47	776	143	614	2081	308	243	169	252	628	240	65
Lane Group Flow (vph)	47	776	143	614	2081	308	243	169	252	628	305	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	2.2	20.1	28.0	16.1	34.0	48.8	7.9	8.9	25.0	14.8	15.8	
Effective Green, g (s)	2.2	20.1	28.0	16.1	34.0	48.8	7.9	8.9	25.0	14.8	15.8	
Actuated g/C Ratio	0.03	0.26	0.37	0.21	0.45	0.64	0.10	0.12	0.33	0.19	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	51	1347	667	728	2278	1018	357	415	521	973	375	
v/s Ratio Prot	0.03	0.15	0.02	c0.18	c0.41	0.06	c0.07	0.05	0.10	0.13	c0.17	
v/s Ratio Perm			0.07			0.14			0.06			
v/c Ratio	0.92	0.58	0.21	0.84	0.91	0.30	0.68	0.41	0.48	0.65	0.81	
Uniform Delay, d1	36.8	24.2	16.4	28.7	19.6	6.0	32.8	31.1	20.3	28.1	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	96.7	0.6	0.2	8.8	6.2	0.2	5.3	0.7	0.7	1.5	12.7	
Delay (s)	133.5	24.8	16.6	37.5	25.7	6.2	38.1	31.7	21.0	29.6	41.3	
Level of Service	F	C	B	D	C	A	D	C	C	C	D	
Approach Delay (s)		28.9			26.1			30.0			33.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 18: FREMONT ST. & CASANOVA AV.

1/25/2004

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1776			1796	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00			0.77	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1354	1776			1440	1583
Volume (vph)	20	1902	62	213	1022	47	61	18	8	31	11	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	2067	67	232	1111	51	66	20	9	34	12	217
Lane Group Flow (vph)	22	2067	67	232	1111	51	66	29	0	0	46	217
Tum Type	Prot		Perm	Prot		Perm	Perm			Perm		Free
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4			8	6			2		Free
Actuated Green, G (s)	1.9	60.5	60.5	13.0	71.6	71.6	9.8	9.8			9.8	95.3
Effective Green, g (s)	1.9	60.5	60.5	13.0	71.6	71.6	9.8	9.8			9.8	95.3
Actuated g/C Ratio	0.02	0.63	0.63	0.14	0.75	0.75	0.10	0.10			0.10	1.00
Clearance Time (s)	4.0	4.0	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	3.0			3.0	
Lane Grp Cap (vph)	35	2247	1005	241	2659	1189	139	183			148	1583
v/s Ratio Prot	0.01	c0.58		c0.13	0.31			0.02				
v/s Ratio Perm			0.04			0.03	c0.05				0.03	0.14
v/c Ratio	0.63	0.92	0.07	0.96	0.42	0.04	0.47	0.16			0.31	0.14
Uniform Delay, d1	46.3	15.3	6.6	40.9	4.3	3.0	40.3	39.0			39.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	30.3	6.6	0.0	47.3	0.1	0.0	2.5	0.4			1.2	0.2
Delay (s)	76.7	21.9	6.7	88.2	4.4	3.1	42.9	39.4			40.8	0.2
Level of Service	E	C	A	F	A	A	D	D			D	A
Approach Delay (s)		22.0			18.3			41.8			7.3	
Approach LOS		C			B			D			A	

Intersection Summary

HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	95.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 19: Hwy 68 & OLMSTED RD.

1/25/2004

Movement												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.87	
Fl _t Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1696		1770	1625	
Fl _t Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1696		1770	1625	
Volume (vph)	109	792	173	38	965	146	141	32	47	268	49	277
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	116	843	184	40	1027	155	150	34	50	285	52	295
Lane Group Flow (vph)	116	843	184	40	1027	155	150	84	0	285	347	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	6.5	30.4	30.4	3.7	27.6	27.6	7.0	7.1		13.9	14.0	
Effective Green, g (s)	6.0	32.4	32.4	3.2	29.6	29.6	7.0	7.1		13.9	14.0	
Actuated g/C Ratio	0.08	0.45	0.45	0.04	0.41	0.41	0.10	0.10		0.19	0.19	
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0	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	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	1579	706	78	1443	645	171	166		339	313	
v/s Ratio Prot	c0.07	c0.24		0.02	c0.29		0.08	0.05		c0.16	c0.21	
v/s Ratio Perm			0.12			0.10						
v/c Ratio	0.79	0.53	0.26	0.51	0.71	0.24	0.88	0.51		0.84	1.11	
Uniform Delay, d ₁	32.7	14.6	12.6	33.9	17.9	14.1	32.4	31.1		28.3	29.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	25.0	1.3	0.9	5.6	3.0	0.9	36.0	2.4		16.9	83.3	
Delay (s)	57.7	15.9	13.5	39.5	20.9	15.0	68.4	33.5		45.2	112.6	
Level of Service	E	B	B	D	C	B	E	C		D	F	
Approach Delay (s)		19.8			20.8			55.9			82.2	
Approach LOS		B			C			E			F	

Intersection Summary

HCM Average Control Delay	35.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	C

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

20: Hwy 68 & York

1/26/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	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	1.00	0.95	0.91	0.95
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.97	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.96	1.00
Satd. Flow (prot)	1770	1861		1770	1863	1583		1791	1583	1681	1586	1504
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.84	1.00	0.75	0.76	1.00
Satd. Flow (perm)	1770	1861		1770	1863	1583		1556	1583	1335	1261	1504
Volume (vph)	75	1149	8	6	1121	115	4	1	1	259	3	265
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	1249	9	7	1218	125	4	1	1	282	3	288
Lane Group Flow (vph)	82	1258	0	7	1218	125	0	5	1	141	175	257
Turn Type	Prot			Prot		Perm	Perm		pm+ov	Perm		pt+ov
Protected Phases	7	4		3	8			2	3		6	6
Permitted Phases						8	2		2	6		
Actuated Green, G (s)	5.0	69.6		0.8	65.4	65.4		14.7	15.5	14.7	14.7	23.7
Effective Green, g (s)	5.0	71.6		0.8	67.4	67.4		14.7	15.5	14.7	14.7	23.7
Actuated g/C Ratio	0.05	0.72		0.01	0.68	0.68		0.15	0.16	0.15	0.15	0.24
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		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	3.0	3.0	
Lane Grp Cap (vph)	89	1345		14	1267	1077		231	311	198	187	360
v/s Ratio Prot	c0.05	c0.68		0.00	0.65				0.00			c0.17
v/s Ratio Perm						0.08		0.00	0.00	0.11	c0.14	
v/c Ratio	0.92	0.94		0.50	0.96	0.12		0.02	0.00	0.71	0.94	0.71
Uniform Delay, d1	46.9	11.8		49.0	14.6	5.5		36.1	35.3	40.2	41.7	34.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	69.6	12.1		25.4	16.8	0.0		0.0	0.0	11.4	47.3	6.6
Delay (s)	116.5	23.9		74.4	31.5	5.6		36.1	35.3	51.6	89.0	41.2
Level of Service	F	C		E	C	A		D	D	D	F	D
Approach Delay (s)		29.6			29.3			36.0			58.4	
Approach LOS		C			C			D			E	

Intersection Summary

HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	E
c Critical Lane Group			

APPENDIX I

**TRAFFIC MODEL VOLUMES
FOR THE BASE YEAR (2000)**

Traffic Model Validation On Monterey City Streets and Roads Selected Locations

Updated: January 25, 2004

Loc Code	Street	From:	To:	Capc Code	Lane	2000-02 Model-ADT	2000-02 Dir-Count	Total Model	Total Count	Percent Diff	PM Vol	PM V/C	AM Vol	AM V/C
85	Highway 1	Hwy 218	Del Monte	1	2	37993	38387	76,590	75,286	1.7%	3,048	76	3,628	91
85		Del Monte	Hwy 218	1	2	38597	36899				3,635	91	2,652	66
89	Highway 218	Hwy 68	North-South Rd	3	1	8038	8100	16,241	16,421	-1.1%	696	50	870	62
89		North-South Rd	Hwy 68	3	1	8203	8321				942	67	591	42
90	Highway 68	Josselyn Cyn	Garden Rd.	2	1	8969	10003	18,666	19,606	-4.8%	841	48	841	48
90		Garden Rd.	Josselyn Cyn	2	1	9697	9603				994	57	791	45
92	Highway 68	Chomp Driveway	Highway 1	2	1	12537	13889	24,890	27,223	-8.6%	1,289	74	1,034	59
92		Highway 1	Chomp Driveway	2	1	12353	13334				1,255	72	1,074	61
271	Highway 68	Ragsdale	York Rd.	3	1	11989	13201	23,158	25,802	-10.2%	1,375	98	839	60
271		York Rd.	Ragsdale	3	1	11169	12601				917	65	1,256	90
274	Highway 1	Hwy 68 (Holman)	Munras Ave	1	3	32954	30700	66,629	63,700	4.6%	3,241	54	2,820	47
274		Munras Ave	Hwy 68 (Holman)	1	2	33675	33000				3,260	81	2,845	71
201	Abrego St	El Dorado	Freemont	3	2	8013	9247	14,872	15,724	-5.4%	812	29	590	21
201		Freemont	El Dorado	3	2	6859	6477				654	23	561	20
202	Airport Rd	Fairground	Euclid	5	1	2386	2126	4,688	4,253	10.2%	279	40	161	23
202		Euclid	Fairground	5	1	2302	2127				194	28	251	36
203	Camino Aguaquito	Second	Third	4	1	3326	3275	6,947	7,515	-7.6%	289	26	325	30
203		Third	Second	4	1	3621	4240				430	39	250	23
204	Casa Verde	Encina	Hwy 1	4	1	3503	4054	7,220	7,806	-7.5%	320	29	331	30
204		Hwy 1	Encina	4	1	3717	3752				386	35	279	25
205	David Ave	Hawthorne	Pine	4	1	4953	4900	10,453	10,100	3.5%	417	38	540	49
205		Pine	Hawthorne	4	1	5500	5200				661	60	351	32
206	Del Monte Ave	Washington	Figueroa	3	4	22161	21135	40,166	43,293	-7.2%	2,068	37	2,019	36
206		Figueroa	Washington	3	4	18005	22158				1,733	31	1,541	28
207	Del Monte Ave	Camino El Estero	Camino Aguaquito	3	2	19697	20521	42,565	39,914	6.6%	1,819	65	1,866	67
207		Camino Aguaquito	Camino El Estero	3	2	22868	19393				2,419	86	1,681	60
208	Del Monte Ave	Sloat	Naval Post Gate	3	2	18004	20775	39,356	40,585	-3.0%	1,561	56	1,792	64
208		Naval Post Gate	Sloat	3	2	21352	19810				2,524	83	1,481	53
209	Del Monte Ave	Palo Verde	Casa Verde	3	2	20386	20863	44,177	40,714	8.5%	1,712	61	2,126	76
209		Casa Verde	Palo Verde	3	2	23791	19851				2,660	95	1,594	57

233	Skyline Forest	Skyline Dr.	Holman Hwy	5	1	1624	2371	3,855	4,521	-14.7%	141	20	173	25
233		Holman Hwy	Skyline Dr.	5	1	2231	2150				254	36	180	26
234	Stoat	Third	Fifth	5	1	3391	3121	6,404	6,355	0.8%	369	53	247	35
234		Fifth	Third	5	1	3013	3234				268	38	310	44
235	Soledad	Pacific	Munras Ave	4	1	8271	8941	16,198	16,660	-2.8%	804	73	709	64
235		Munras Ave	Pacific	4	1	7927	7719				775	70	699	64
237	Foam	Rees/de	Lighthouse	4	2	13280	15803	13,280	14,803	-10.3%	1,133	51	1,174	53
238	Lighthouse	Rees/de	Foam	3	2	29497	29998				2,678	96	2,613	93
238		Foam	Rees/de	3	2	15320	15563	44,817	45,561	-1.6%	1,765	63	1,088	39
240	Hawthorne	David	Prescott	4	2	3881	4821	6,841	7,297	-6.2%	369	17	296	13
240		Prescott	David	4	2	2960	2476				276	13	245	11
241	David	Filmore	Cypress	4	1	4715	5723	10,184	11,612	-12.3%	390	35	520	47
241		Cypress	Filmore	4	1	5469	5889				648	59	360	33
242	Pine	Irving	David	5	1	359	501	957	1,102	-13.2%	37	5	29	4
242		David	Irving	5	1	598	601				64	9	48	7
243	Reeside	Foam	Lighthouse	3	2	2928	2956	2,928	2,956	-0.9%	310	11	194	7
244	Hawthorne	Reeside	Dickman	5	1	5977	4733	7,646	6,515	17.4%	484	69	652	93
244		Dickman	Reeside	5	1	1669	1782				206	29	108	15
245	Wave	Drake	McClellan	5	1	710	601	2,479	2,543	-2.5%	26	4	6	1
245		McClellan	Drake	5	1	1769	1942				360	51	48	7
246	David	Foam	Dickman	3	1	8545	9697	9,578	11,166	-14.2%	889	63	521	37
246		Dickman	Foam	3	1	1033	1469				85	6	97	7
248	Washington	Franklin	Del Monte	4	2	4681	5198	4,681	5,198	-9.9%	514	23	278	13
249	Camino El Estero	Franklin	Del Monte	4	1	3528	5061	13,862	13,894	-0.2%	307	28	336	31
249		Del Monte	Franklin	4	1	10334	8833				1,051	96	663	60
250	Stoat	Del Monte	Pearl	5	1	1612	1925	3,290	3,950	-16.7%	173	25	108	15
250		Pearl	Del Monte	5	1	1678	2025				148	21	153	22
251	Camino El Estero	Freemont	Webster	4	1	4282	5113	10,685	11,755	-9.1%	372	34	383	35
251		Webster	Freemont	4	1	6403	6642				655	60	496	45
252	Mark Thomas	Josselyn Cyn	Old Salinas Rd.	5	1	4505	5223	9,110	9,499	-4.1%	452	65	382	55
252		Old Salinas Rd.	Josselyn Cyn	5	1	4605	4276				457	65	386	55
253	Camino Aquajito	Freemont	Via Lavendera	3	2	6359	6993	12,542	14,096	-11.0%	673	24	483	17
253		Via Lavendera	Freemont	3	2	6183	7103				556	20	601	21
254	Del Monte Ave	Hwy 1	Casa Verde	3	3	22885	21713	42,477	44,582	-4.7%	2,578	61	1,523	36
254		Casa Verde	Hwy 1	3	2	19592	22869				1,632	58	2,066	74
256	Freemont	Ramona	Airport Rd.	3	2	11942	12569				954	34	1,362	49

APPENDIX J

**TRAFFIC MODEL VOLUMES
FOR THE FUTURE YEAR**

Traffic Model Projections On Monterey City Streets and Roads at Selected Locations in 2020

Updated: January 25, 2004

Loc Code Street	From:	To:	Capc Code	Lane	Model-ADI	2000-02 Count	Total Model	Total Count	Growth (20 Year)	PM Vol	PM V/C	AM Vol	AM V/C
85 Highway 1	Hwy 218	Del Monte	1	2	43718	38387				3,432	86	3,850	96
85	Del Monte	Hwy 218	1	2	45172	36899	88,890	75,286	16%	4,219	105	3,303	83
89 Highway 218	Hwy 68	General Jim Moore Bl.	3	1	8968	8100				807	58	928	66
89	General Jim Moore Bl.	Hwy 68	3	1	8952	8321	17,920	16,421	10%	992	71	696	50
90 Highway 68	Joselyn Cyn	Garden Rd.	2	1	11575	10003				1,038	59	1,120	64
90	Garden Rd.	Joselyn Cyn	2	1	12302	9603	23,877	19,606	28%	1,200	69	975	56
92 Highway 68	Chomp Driveway	Highway 1	2	2	14536	13889				1,506	43	1,174	34
92	Highway 1	Chomp Driveway	2	2	13205	13334	27,741	27,223	11%	1,318	38	1,161	34
271 Highway 68	Ragsdale	York Rd.	3	1	14558	13201				1,578	113	1,010	72
271	York Rd.	Ragsdale	3	1	13479	12601	28,037	25,802	21%	1,089	78	1,503	107
274 Highway 1	Hwy 68 (Holman)	Munras Ave	1	3	38352	30700				3,697	62	3,284	55
274	Munras Ave	Hwy 68 (Holman)	1	2	39586	33000	77,938	63,760	17%	3,768	94	3,313	83
201 Abrego St	El Dorado	Freemont	3	2	8932	9247				891	35	655	23
201	Freemont	El Dorado	3	2	7975	6477	16,907	15,724	14%	732	26	685	24
202 Airport Rd	Fairground	Enclid	5	1	2782	2126				330	47	186	27
202	Enclid	Fairground	5	1	935	2127	3,727	4,253	-20%	87	12	92	13
203 Camino Agujillo	Second	Third	4	1	7707	3275				702	64	708	64
203	Third	Second	4	1	3881	4240	11,588	7,515	67%	421	38	274	25
204 Casa Verde	Enclua	Hwy 1	4	1	3853	4054				367	33	352	32
204	Hwy 1	Enclua	4	1	3932	3752	7,885	7,806	9%	528	48	283	25
205 David Ave	Hawthorne	Pine	4	1	6070	4900				519	47	649	59
205	Pine	Hawthorne	4	1	6511	5200	12,581	10,100	20%	709	64	448	41
206 Del Monte Ave	Washington	Figueroa	3	4	27184	21135				2,673	48	2,819	45
206	Figueroa	Washington	3	4	23117	22158	50,311	43,293	25%	2,183	39	1,889	34
207 Del Monte Ave	Camino El Estero	Camino Agujillo	3	3	23356	20521				2,112	50	2,371	56
207	Camino Agujillo	Camino El Estero	3	3	31188	19293	54,554	39,914	28%	3,161	75	2,242	53
208 Del Monte Ave	Shoat	Naval Post Gate	3	2	21646	20775				1,883	67	2,317	83
208	Naval Post Gate	Shoat	3	2	25476	19810	47,122	40,585	20%	2,662	85	1,678	60
209 Del Monte Ave	Palo Verde	Casa Verde	3	2	24134	20863				2,044	73	2,867	95
209	Casa Verde	Palo Verde	3	2	27683	19851	52,127	40,714	18%	3,002	107	1,795	64
210 El Dorado	Casa	Munras Ave	5	1	3542	2974				373	53	241	34
210	Munras Ave	Casa	5	1	3582	3104	7,124	6,078	20%	318	45	315	45
212 Foam	Drake	Dickman	4	2	9753	7984				883	40	736	33
213 Franklin	Monroe	City	4	1	4286	5290				551	50	313	28

237	Foam	Reside	Lighthouse	4	2	17040	15803	17,040	15,803	28%	1,460	66	1,483	68
238	Lighthouse	Reside	Foam	3	2	35292	29998				3,187	114	3,089	110
238		Foam	Reside	3	2	17882	15503	53,174	45,561	19%	2,001	71	1,324	47
240	Hawthorne	David	Prescott	4	2	4350	4821	7,257	7,297	6%	408	19	332	15
240		Prescott	David	4	2	2907	2476				286	12	238	11
241	David	Filmore	Cypress	4	1	5884	5723	12,461	11,612	22%	501	46	631	57
241		Cypress	Filmore	4	1	6577	5889				784	69	461	42
242	Pine	Irving	David	5	1	340	501				39	6	23	3
242		David	Irving	5	1	721	601	1,061	1,102	11%	133	19	55	8
243	Reside	Foam	Lighthouse	3	2	4045	2956	4,045	2,956	38%	421	15	272	10
244	Hawthorne	Reside	Dickman	5	1	6221	4733				520	74	572	62
244		Dickman	Reside	5	1	1879	1782	8,100	6,515	6%	228	33	128	16
245	Wave	Drake	McClellan	5	1	375	601	3,641	2,543	47%	84	12	10	1
245		McClellan	Drake	5	1	3266	1942				493	70	161	23
246	David	Foam	Dickman	3	1	11348	9697				1,165	83	711	51
246		Dickman	Foam	3	1	1434	1469	12,782	11,166	33%	123	9	133	9
248	Washington	Franklin	Del Monte	4	2	125	5198	125	5,198	-97%	13	1	8	0
249	Camino El Estero	Franklin	Del Monte	4	1	954	5061				73	7	157	14
249		Del Monte	Franklin	4	1	11361	8833	12,315	13,894	-11%	1,200	109	669	61
250	Sloat	DelMonte	Pearl	5	1	1734	1925				183	26	119	17
250		Pearl	DelMonte	5	1	1845	2015	3,679	3,950	12%	169	24	200	29
251	Cambao El Estero	Freemont	Webster	4	1	5076	5113				487	44	431	39
251		Webster	Freemont	4	1	4825	6642	9,901	11,755	-7%	628	57	415	38
252	Mark Thomas	Joselyn Cyn	Old Salinas Rd.	5	1	5019	5213				501	72	449	64
252		Old Salinas Rd.	Joselyn Cyn	5	1	5346	4276	10,365	9,499	14%	590	80	438	63
253	Cambao Aquilto	Freemont	Via Lavandera	3	2	7613	6993				793	28	575	21
253		Via Lavandera	Freemont	3	2	7413	7103	15,036	14,096	20%	667	24	673	24
254	Del Monte Ave	Hwy 1	Casa Verde	3	3	27307	21713				2,828	67	1,745	42
254		Casa Verde	Hwy 1	3	2	23289	22869	50,606	44,582	19%	1,954	70	2,621	94
256	Freemont	Ranoma	Alrport Rd.	3	2	10889	12569				1,594	57	890	25
256		Alrport Rd.	Ranoma	3	2	10251	11936	21,140	24,505	-12%	854	31	1,163	42
257	Joselyn Cyn	Hwy 68	Mark Thomas Dr.	5	1	1543	1311				129	18	173	25
257		Mark Thomas Dr.	Hwy 68	5	1	1545	1504	3,088	2,815	1%	180	26	101	14
258	Pacific Street	Del Monte	Franklin	4	1	10335	9488				925	64	884	80
258		Franklin	Del Monte	4	1	6782	4560	17,417	14,048	32%	578	53	535	49
259	Franklin	Van Buren	Pacific	4	1	3649	4875				512	47	297	27
259		Pacific	Van Buren	4	1	5442	4746	9,391	9,621	-10%	401	36	817	56
262	Pacific	Alameda	Soledad	4	1	5573	4938				519	47	415	38

APPENDIX K

CITY OF MONTEREY ROADWAY CLASSIFICATION

Table 2. Functional Street Classifications

Major Arterial Streets	
Street	Limits
Aguajito Road	Fremont Street to Mark Thomas Drive/Highway 1 NB Exit Ramp
Del Monte Avenue	Lighthouse Avenue/Washington Street to East City Limits
Foam Street	Lighthouse Avenue to Reeside Avenue
Fremont Street	Highway 1/Aguajito Road to Camino El Estero
Lighthouse Avenue	Washington/Del Monte Avenue to Reeside Avenue
Soledad Drive	Munras Avenue to Barnett Segal Drive/Viejo

Minor Arterial Streets	
Street	Limits
Abrego Street	Eldorado Street to Pearl Street/Washington Street
Camino El Estero	Del Monte Avenue to Franklin Street
David Avenue	Wave Street to Devisadero Street (West City Limit)
Del Monte Avenue	Washington Street to Pacific Street
English Avenue	Del Monte Avenue to Highway 1 NB Exit Ramp
Figueroa Street	Franklin Street to Del Monte Avenue
Foam Street	Reeside Avenue to David Avenue
Franklin Street	Pacific Street to Camino El Estero
Fremont Street	Camino El Estero to Munras Avenue
Lighthouse Avenue	Reeside Avenue to Central Avenue (North City Limit)
North Fremont Street	Highway 1 to East City Limits
Munras Avenue	Fremont Street to Alvarado Street
Munras Avenue	Eldorado Street/Abrego Street to Highway 1 SB Ramps
Olmsted Drive	Monterey/Salinas Highway (SR68) to Monterey Peninsula Airport Entrance
Pacific Street	Lighthouse Avenue to Soledad Drive
Soledad Drive	Pacific Street to Munras Avenue
Tyler Street	Lighthouse Avenue to Franklin Street
Washington Street	Pearl Street to Del Monte Avenue

Table 2. Functional Street Classifications Continued

Collector Streets (continued)	
Street	Limits
Olmsted Road	Monhollan Road to Monterey/Salinas Highway (SR68)
Pearl Street	Munras Avenue to Camino Aguajito
Pine Street	Line Street (North City Limit) to Pvt. Bolio Road
Polk Street	Calle Principal to Alvarado Street/Munras Avenue
Prescott Avenue	Devisadero Street/West City Limits to Wave Street
Ragsdale Drive	Monterey/Salinas Highway (SR68) to Lower Ragsdale Drive
Reeside Avenue	Cannery Row to Hawthorne Street
Rancho Saucito Road	Upper Ragsdale Drive to South Boundary Road
Skyline Drive	Mar Vista Drive (south intersection) to Veterans Drive
Skyline Forest Drive	Skyline Drive to Holman Highway (SR68)
Sloat Avenue	Mark Thomas Drive to Del Monte Avenue
Soledad Drive	Mar Vista Drive to Pacific Street
South Boundary Road	York Road to West City Limits
Taylor Street	Prescott Avenue to Presidio of Monterey Entrance
Third Street	Camino Aguajito to Sloat Avenue
Van Buren Street	Del Monte Avenue to Madison Street
Veterans Drive	Jefferson Street to Skyline Drive
Via Gayuba	San Bernabe Drive/Martin Street to Mar Vista Drive
Wilson Road	York Road to Lower Ragsdale Drive
York Road	Monterey/Salinas Highway (SR68) to South Boundary Road
Proposed Road	Connect Airport Road to Garden Road

Table 4. Visitor Routes

Street	Limits
Abrego Street	Eldorado Street to Pearl Street/Washington Street
Aguajito Road	Fremont Street to Mark Thomas Drive/Highway 1 NB Exit Ramp
Alvarado Street	Munras Avenue to Del Monte Avenue
Camino El Estero	Fremont Street to Del Monte Avenue
David Avenue	Wave Street to Devisadero Street (West City Limit)
Del Monte Avenue	Pacific Street to East City Limits
Foam Street	Lighthouse Avenue to David Avenue
Fremont Street	Highway 1/Aguajito Road to Munras Avenue
Lighthouse Avenue	Washington/Del Monte Avenue to North City Limit
North Fremont Street	Highway 1 to East City Limits
Munras Avenue	Fremont Street to Alvarado Street
Munras Avenue	Eldorado Street/Abrego Street to Highway 1 SB Ramps
Pacific Street	Lighthouse Avenue to Del Monte Avenue
Soledad Drive	Munras Avenue to Highway 1 NB Entrance Ramp
Washington Street	Pearl Street/Abrego Street to Del Monte Avenue