TECHNICAL APPENDICES TO THE FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR THE EASTLAKE I SECTIONAL PLANNING AREA (SPA) PLAN AMENDMENT/ KAISER PERMANENTE CHULA VISTA MEDICAL CENTER

APPENDICES A, C-J

EIR #92-01
SCH #92031049

Prepared for:

City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 91910

Prepared by:

Lettieri-McIntyre and Associates
1551 Fourth Avenue, Suite 430
San Diego, CA 92101

June 12, 1992

CITY OF
CHULA VISTA

VOLUME II

PROJECT DESCRIPTION

2.1 Location

The proposed EastLake I Sectional Planning Area (SPA) Amendment/Kaiser Hospital project site is located on 71.8 acres of vacant land in the City of Chula Vista's EastLake planning area (see Figures 1 and 2). The site is divided into two principal areas. The western portion is bounded by the right-of-way for State Route 125 on the west, EastLake Parkway on the north, and Otay Lakes Road on the south. The eastern portion of the project site extends to the east of EastLake Parkway and is bounded by Fenton Street on the north, Hale Place on the east, and Otay Lakes Road on the south (Figure 2). Access to the project site would be provided by Otay Lakes Road, Eastlake Parkway, and Fenton Street.

The project site is surrounded by other EastLake planning areas; bounded on the north and east by the EastLake Business Center, on the south by the EastLake Greens neighborhoods/districts and on the west by the EastLake Shores neighborhood and property owned by the Baldwin Company. Directly to the south of the project site within the EastLake Greens SPA, is the 19-acre EastLake II Village Center parcel, which is proposed to be developed with neighborhood commercial uses.

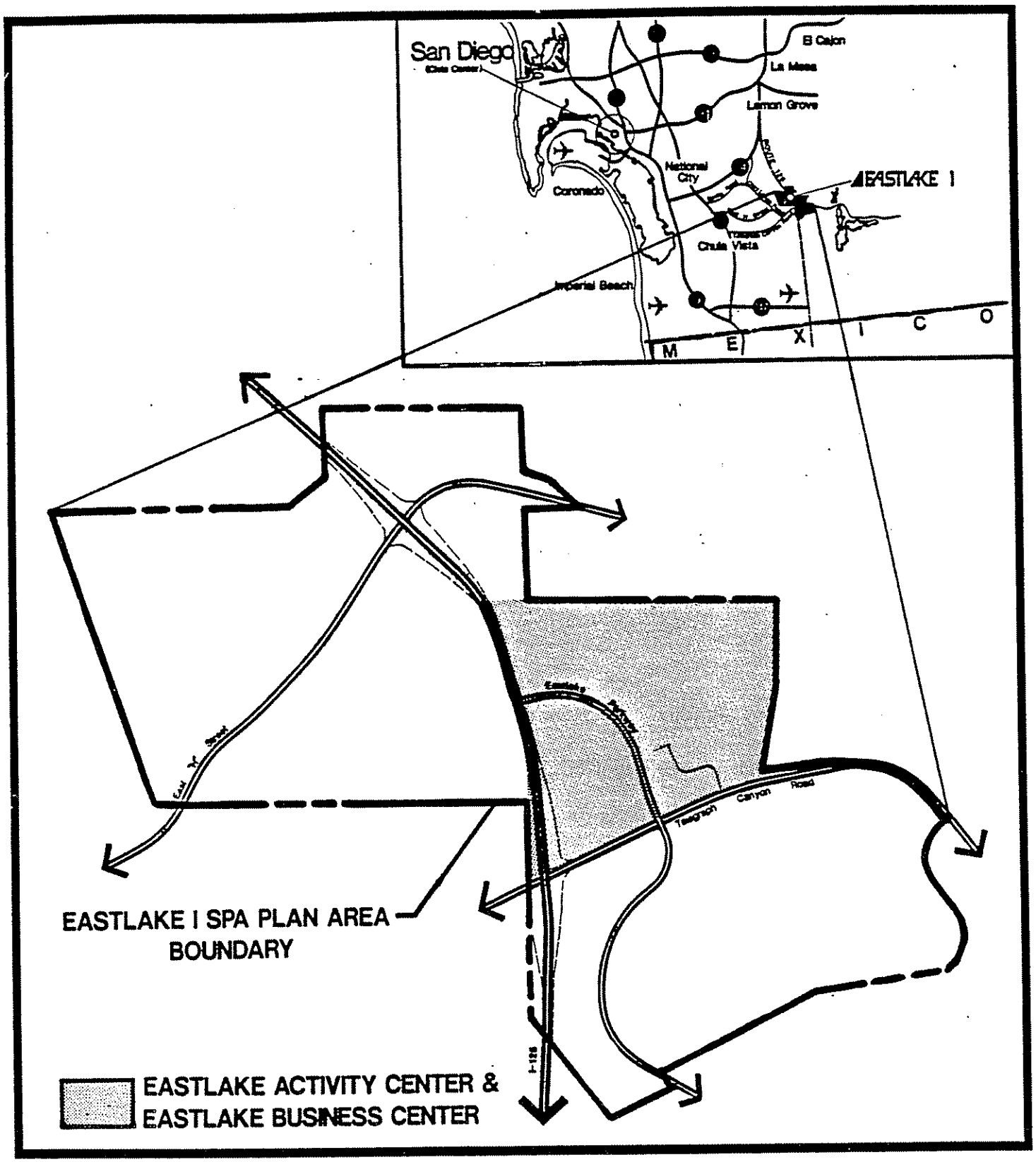
2.2 Discretionary Actions

The project would require approval of the following discretionary actions:

- EastLake I SPA Plan Amendment (City of Chula Vista)
- General Development Plan (GDP) Amendment (City of Chula Vista)
- Conditional Use Permit/Precise Plan and Development Agreement for the Kaiser Hospital and Medical Center Proposal (City of Chula Vista)
- Eastlake Activity Center Planning Guidelines and Conceptual Master Plan (City of Chula Vista)
- Revised Master Grading Plan for the Eastlake I SPA (City of Chula Vista)
- Modification of the Planned Community District Regulations for the Eastlake I SPA (City of Chula Vista)

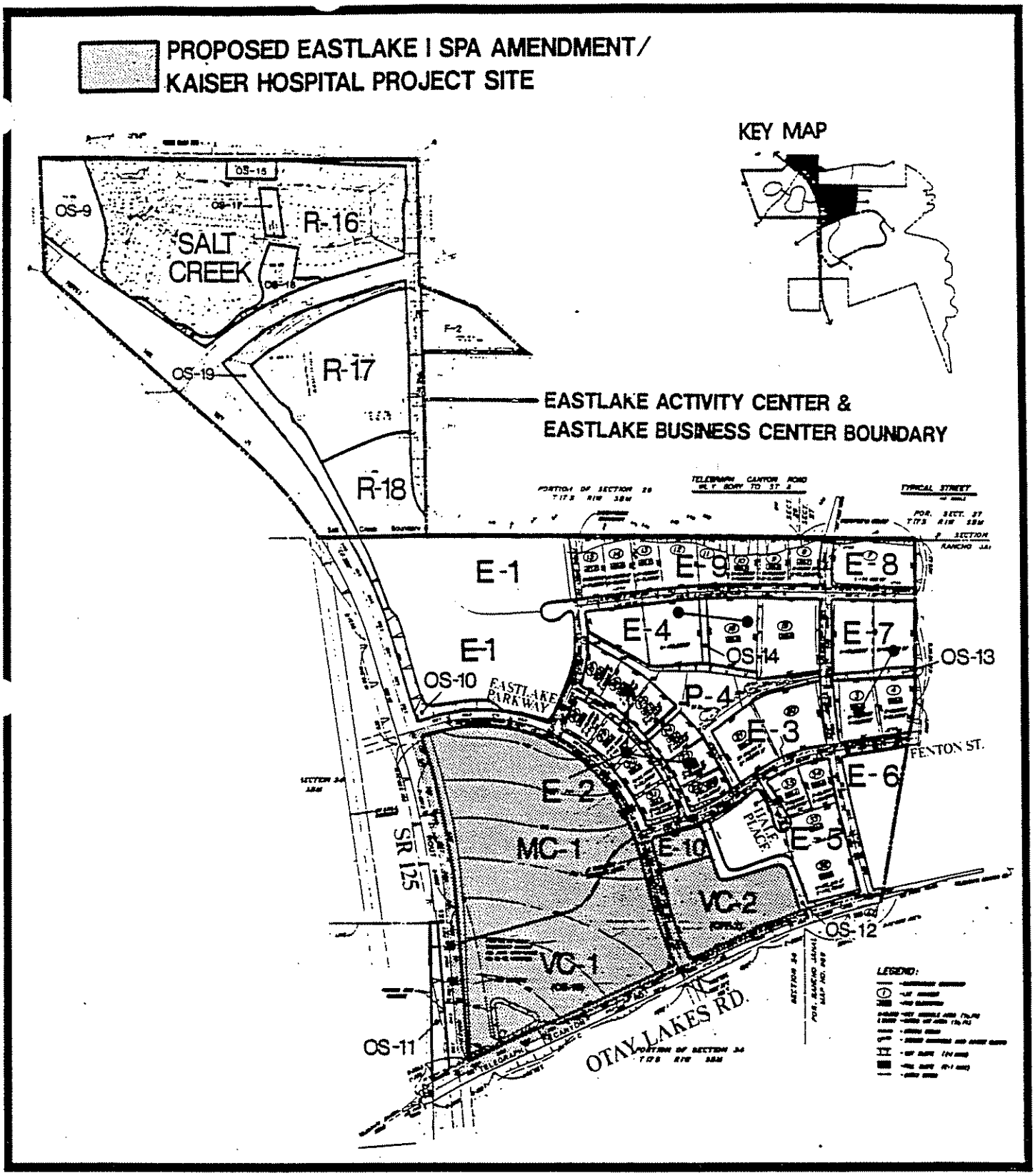
2.3 Planning and Development Objectives

The objectives of the proposed EastLake Activity Center/Kaiser Hospital proposal include the following:



REGIONAL LOCATION MAP	N NO SCALE	FIGURE 1

LETTIERI-McINTYRE AND ASSOCIATES



PROJECT SITE LOCATION

N

NO SCALE

FIGURE 2

Source: Cinti & Associates, 1/16/92

LETTIERI-McINTYRE AND ASSOCIATES

1. Meet the current and future demands for a Kaiser Permanente Hospital and Medical Center facility in the growing southern San Diego County region by designating the northern portion of the Activity Center within the EastLake I SPA for medical center use.

2. Maintain an adequate commercial component within the Activity Center by eliminating the previously-approved residential element from the Activity Center and expanding the permitted acreage of office/retail uses.

3. Provide for 2.0 acres of additional Business Industrial Park development at southeast corner of Fenton Street and EastLake Parkway.

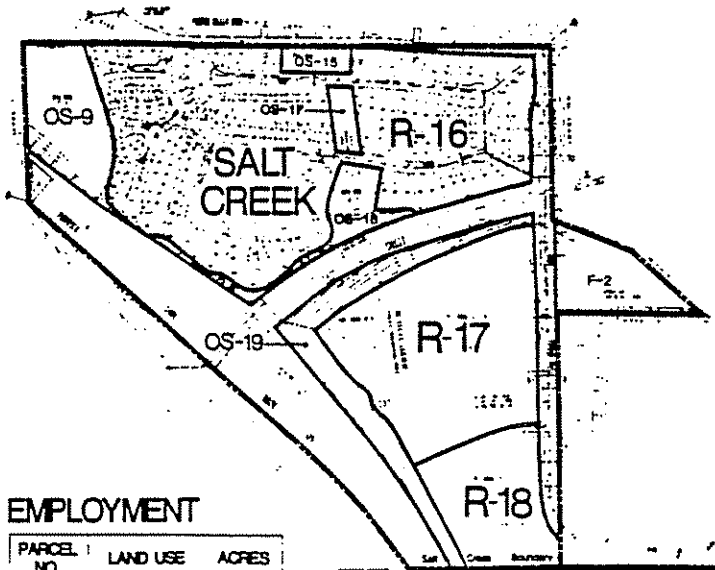
4. Replace the currently adopted requirement for a single, detailed precise plan for the entire EastLake I Activity Center with a two-stage design review process that would establish overall site planning criteria for the Activity Center and create the context for future detailed site plans for the individual planning areas within the Activity Center.

2.4 Project Characteristics

2.4.1 EastLake I SPA Plan Amendment

The proposed EastLake I SPA Amendment/Kaiser Hospital project site encompasses a 71.8 acre portion of the adopted EastLake I Sectional Planning Area. The project proposal includes the adoption of an amendment to the EastLake I SPA Plan in order to convert the adopted land uses in the northern portion of the Activity Center to medical center uses; delete the permitted residential uses within the Activity Center and expand the acreage allocated for office/retail use; and eliminate 2.0 acres from the Activity Center in order to create additional employment use within the EastLake Business Center (Figure 3).

As part of the amendment to the adopted EastLake I SPA Plan (Figure 3), the applicants are proposing to modify the types of uses permitted in the Activity Center, or Village Center, portion of the adopted SPA. The area currently designated as Village Center use (VC-1) would be divided to include 30.6 acres of Medical Center (MC-1) use, 17.3 acres of VC-1, village center use, and 11.9 acres of open space/public facility. The approved 12.0-acre VC-2 area would be reduced to 10 acres and would include 6.0 acres of office/commercial VC-2 use and 4.0 acres of community purpose facility use, such as church use. The two acres of land, located at the southeast intersection of EastLake Parkway and Fenton Street, would be eliminated from the adopted VC-2 area. This area is proposed to be redesignated to employment use and would be moved from the Activity Center to the Business Center portion of the SPA Plan. In addition to these changes, the proposal would also eliminate all residential use from the Activity Center. These land use changes are summarized in Table 1.



SALT CREEK

PARCEL NO.	ATTACHED (A) DETACHED (D)	DENSITY RANGE	ACRES	TARGET DENSITY	PERMITTED DU
R-16	D	0-5	43.8	3.9	169
R-17	A	5-15	20.0	11.8	237
R-18	A	15-25	8.5	16.9	144
TOTAL			72.1		550

OS-9	OPEN SPACE	6.5
OS-15	OPEN SPACE	1.0
OS-17	OPEN SPACE	1.0
OS-18	OPEN SPACE	3.2
OS-19	OPEN SPACE	7.2
TOTAL		18.9

PARCEL NO.	LAND USE	ACRES
F-2	FUTURE URBAN	3.5

EMPLOYMENT

PARCEL NO.	LAND USE	ACRES
E-1	EMPLOYMENT	32.1
E-2	EMPLOYMENT	16.6
E-3	EMPLOYMENT	8.0
E-4	EMPLOYMENT	17.6
E-5	EMPLOYMENT	13.4
E-6	EMPLOYMENT	6.2
E-7	EMPLOYMENT	12.5
E-8	EMPLOYMENT	4.6
E-9	EMPLOYMENT	14.8
E-10	EMPLOYMENT	2.0
TOTAL		127.8

ACTIVITY CENTER

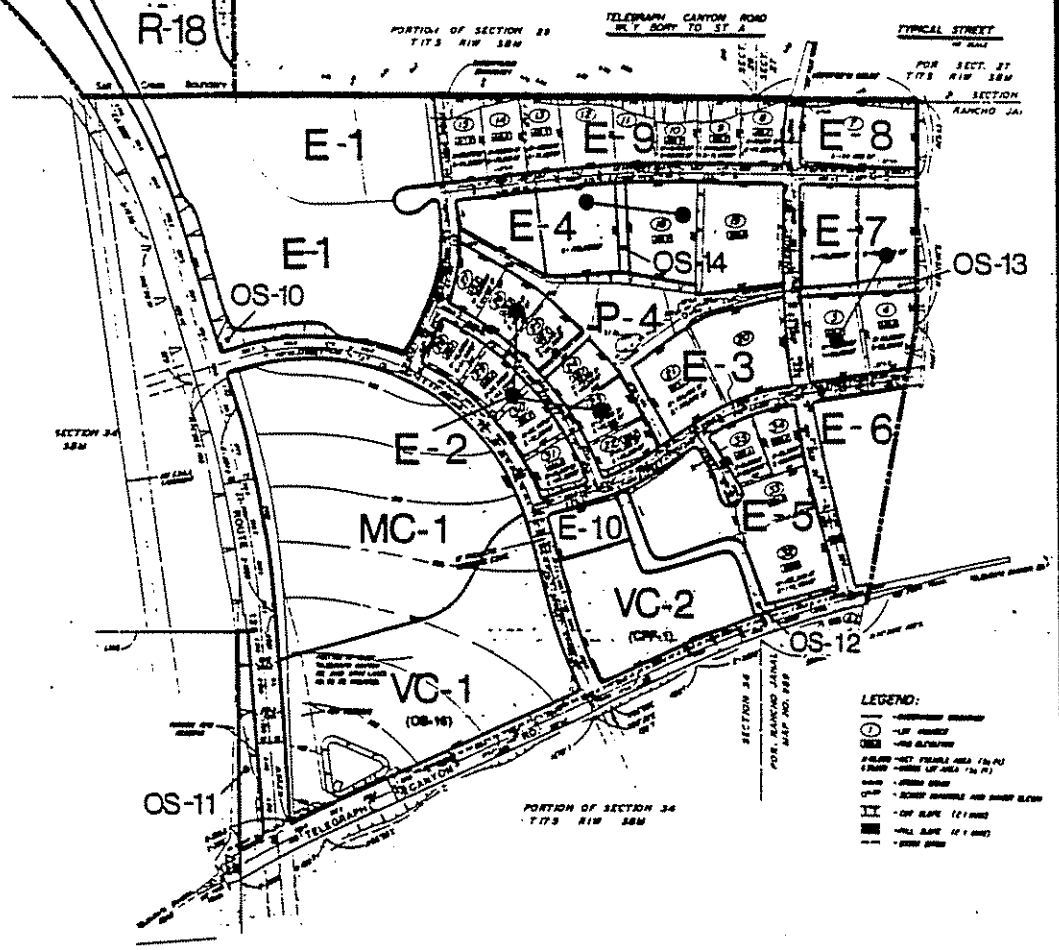
MC-1	MEDICAL CENTER	30.6
VC-1	VILLAGE CENTER	29.2
VC-2	VILLAGE CENTER	10.0
TOTAL		69.8

VILLAGE CENTER BREAKDOWN

Comm. Purpose Fact. (CPF-1)	4.0
Office/Commercial	23.3
O.S./Pub. Fac. (OS-16)	11.9
TOTAL	39.2

OPEN SPACE/PARKS

OS-10	OPEN SPACE	3.4
OS-11	OPEN SPACE	1.5
OS-12	OPEN SPACE	2.1
OS-13	OPEN SPACE	.7
OS-14	OPEN SPACE	.5
OS-16	OPEN SPACE	11.9
TOTAL		20.1
P-4	PARK	9.1



PROPOSED EASTLAKE SPA PLAN AMENDMENT

N

NO SCALE

FIGURE 3

Source: Cinti & Associates, 1/16/92

LETTIERI-McINTYRE AND ASSOCIATES

TABLE 1
EastLake Activity Center Land Use Statistics

LAND USE	CURRENTLY APPROVED ACREAGE [1]	PROPOSED ACREAGE
Office/Retail	34.2 ac.	23.3 ac. (VC-1 & VC-2)
Residential	18.0 ac. (405 units)	0.0 ac. (0 units)
Open Space/ Public Facility	19.6 ac.	11.9 ac. (OS-16)
Hospital/ Medical Center	N/A	30.6 ac. (MC-1)
Employment	N/A	2.0 ac. [2] (E-10)
Community Purpose Facility District	N/A	4.0 ac. (CPF-1)
Totals	71.8 acres	71.8 acres

[1] Source: EastLake I SPA Plan

[2] To be removed from the EastLake Activity Center

Community facilities which would be incorporated into the project include a hospital and a park-and-ride facility. Within the Village Center, the SPA amendment would include 11.9 acres of open space/public facility uses (OS-16) which may provide for a public library. In addition, the amended Village Center area may include a possible church site within the 4 acres designated for a community purpose facility use (CPF-1). The proposed project would also be subject to City of Chula Vista threshold standards in providing acceptable levels of public services associated with schools, parks, libraries, police, and fire facilities.

2.4.2 General Development Plan Amendment

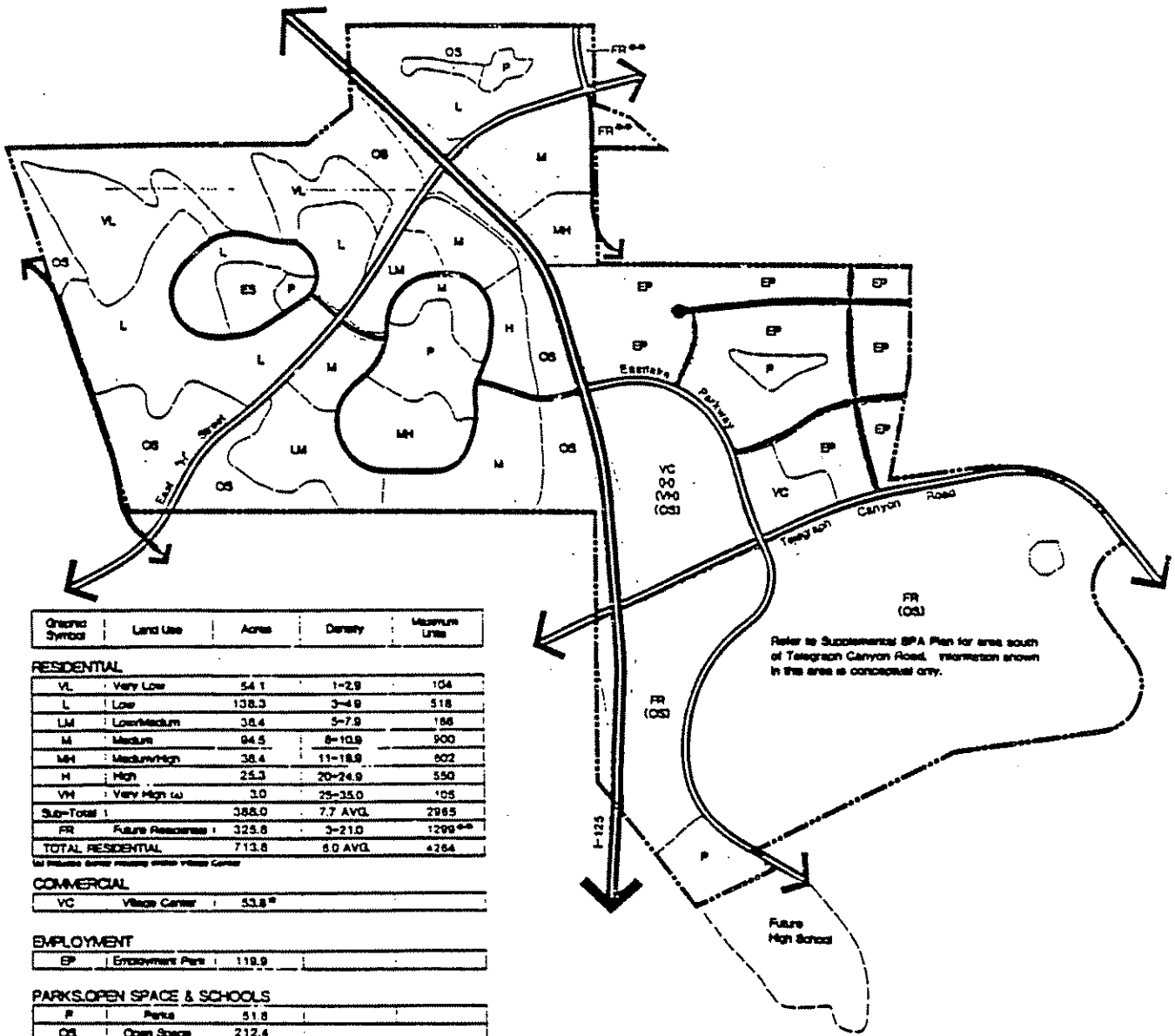
The proposed SPA Plan Amendment would also require changes to the approved General Development Plan for the SPA shown in Figure 4. The revised General Development Plan (Figure 5) would modify the village center uses shown for the project site to allow public/quasi-public uses (i.e. hospital/medical center use) on the northern 30.6 acres; 2) retail commercial use, open space and community and civic uses (possibly a library) on the 29.2 acres located south of the Kaiser site and west of EastLake Parkway; 3) professional and administrative uses and possible church use on 10 acres located east of EastLake Parkway; and 4) research and limited manufacturing on 2.0 acres located at the southeast corner of Fenton Street and EastLake Parkway.

2.4.3. Conditional Use Permit/Precise Plan and Development Agreement

The proposal also requests a Conditional Use Permit/Precise Plan and Development Agreement for the phased construction of a 439-bed Kaiser Hospital and Medical Center in the northern 30.6 acres of the EastLake Activity Center (Figure 6, Table 2). This component of the project would be constructed in three phases, with the first phase devoted to the construction of medical and administrative office space. The first phase of the hospital would be constructed as part of the second phase of the overall development plan. Construction is proposed to begin in 1993, with completion of the first phase by 1995. Phase 2 would begin approximately one year after the start of Phase 1 and is anticipated to be completed by 1997. The third phase of the project would only be constructed when demand is sufficient to warrant the provision of additional hospital beds and medical office space. The EIR will provide detailed plans for this portion of the project including site plans and elevations.

2.4.4. EastLake Activity Center Planning Guidelines and Conceptual Master Plan

The proposed project includes the adoption of the EastLake Activity Center Planning Guidelines and associated conceptual Master Plan. The Planning Guidelines and conceptual Master Plan are intended to provide the foundation for a long-term precise planning program that would insure the integration of the EastLake Activity Center into the total EastLake design framework. As such, the Planning Guidelines will serve as a bridge between the EastLake I SPA Plan and more specific individual site plans for the various parcels within the EastLake Activity Center. The conceptual Master Plan graphically shows



Graphic Symbol	Land Use	Acres	Density	Maximum Units
RESIDENTIAL				
VL	Very Low	54.1	1–2.9	104
L	Low	138.3	3–4.9	518
LM	Low/Medium	38.4	5–7.9	166
M	Medium	94.5	8–10.9	900
MH	Medium/High	38.4	11–19.9	602
H	High	25.3	20–24.9	550
VH	Very High (a)	3.0	25–35.0	105
Sub-Total		388.0	7.7 AVG.	2965
FR	Future Residential	325.8	3–21.0	1299**
TOTAL RESIDENTIAL		713.8	6.0 AVG.	4264
COMMERCIAL				
VC	Village Center	53.8*		
EMPLOYMENT				
EP	Employment Park	119.9		
PARKS,OPEN SPACE & SCHOOLS				
P	Parks	51.8		
OS	Open Space	212.4		
ES	Elementary School	10.0		
TOTAL		274.2		
CIRCULATION				
	Streets & Highways	125.8		
PROJECT TOTAL		1267.9	3.4 AVG.	4278

ADOPTED GENERAL DEVELOPMENT PLAN

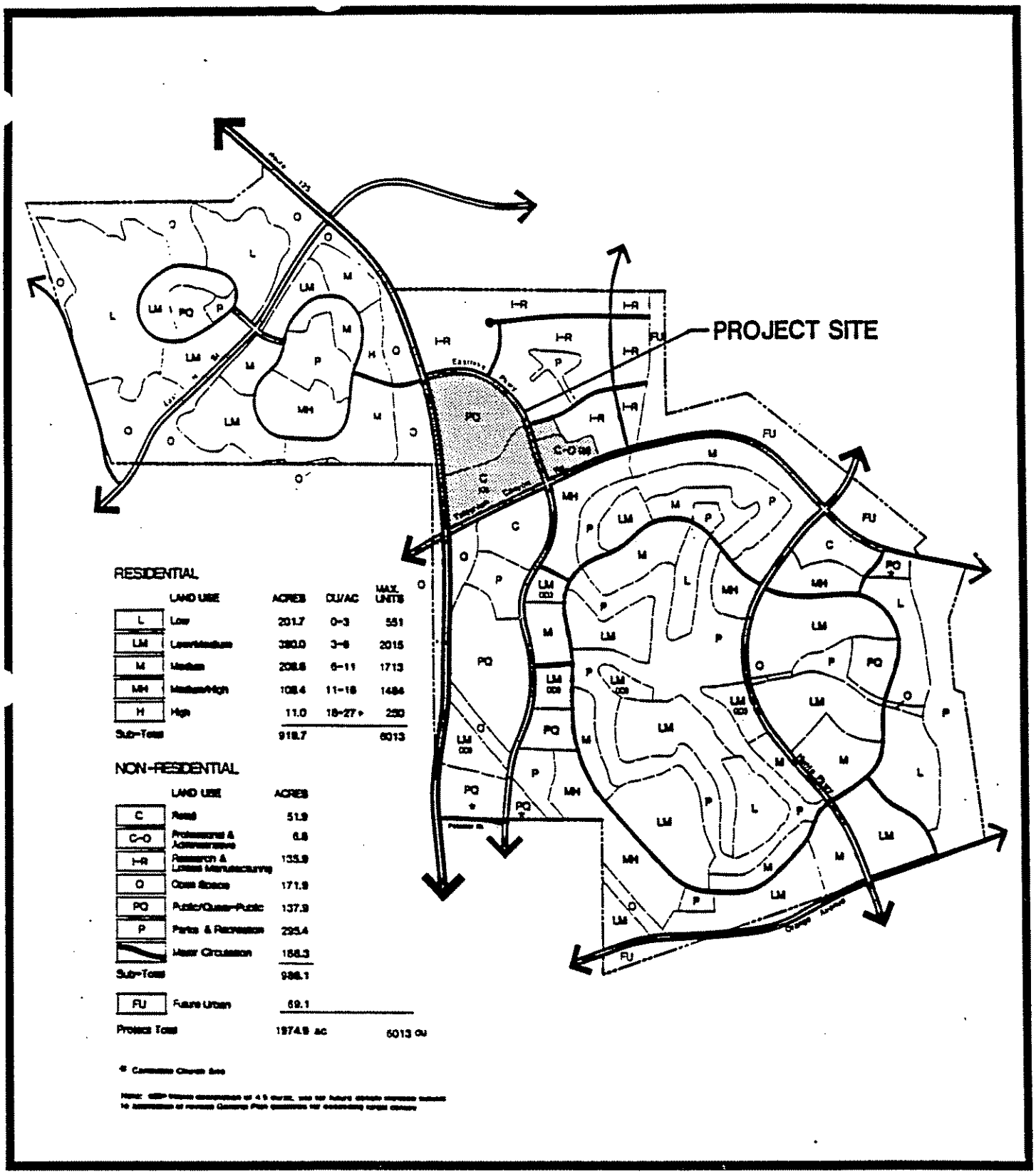
N

NO SCALE

FIGURE 4

Source: EastLake I SPA Plan, City of Chula Vista, Jl 88.

LETTIERI-McINTYRE AND ASSOCIATES



PROPOSED GENERAL DEVELOPMENT PLAN

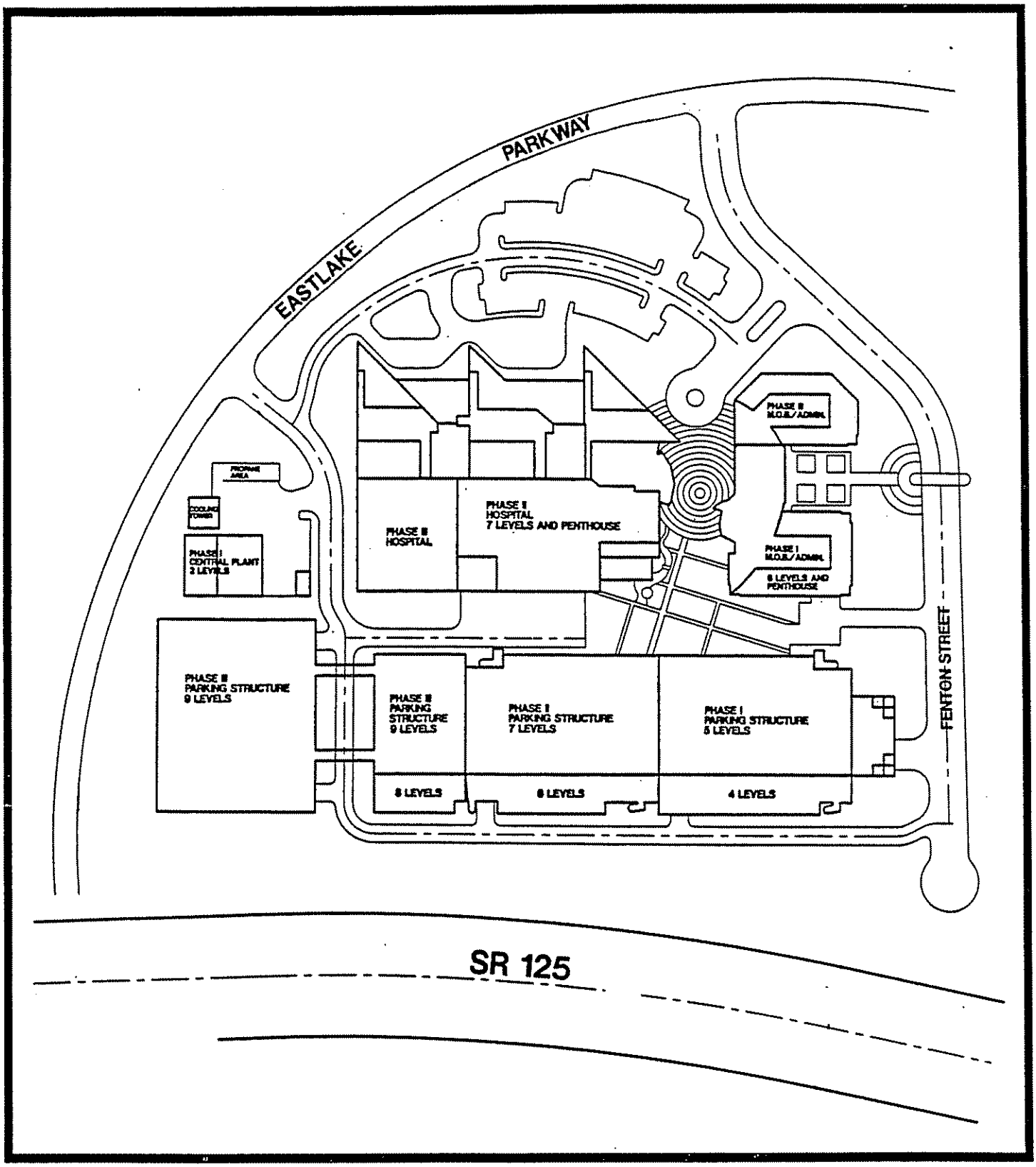
N

NO SCALE

FIGURE 5

Source: Cinti & Associates, 11/13/92

LETTIERI-McINTYRE AND ASSOCIATES



PROPOSED KAISER HOSPITAL/ MEDICAL CENTER SITE PLAN

N

NO SCALE

FIGURE 6

LETTIERI-McINTYRE AND ASSOCIATES

NOTICE OF PREPARATION AND RESPONSES

APPENDIX A

NOTICE OF PREPARATION

FROM: Planning Department
City of Chula Vista
P.O. Box 1087
Chula Vista, CA 91912

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report

CASE NO:

The City of Chula Vista will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the probable environmental effects are contained in the attached materials. A copy of the Initial Study _____ is, __X__ is not, attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to: Marilyn R.F. Ponseggi, Environmental Review Consultant, at the address shown above. We will need the name for a contact person in your agency.

PROJECT APPLICANT, IF ANY: EastLake Development Company

DATE: March 5, 1992

Signature: Marilyn RF Ponseggi mrs

Title: Environmental Review Consultant

Telephone: (619) 691-5101

Reference: California Administrative Code, Title 14, Sections 15035.7, 15054.3, 15066.

TABLE 2
Kaiser Hospital/Medical Center Statistics

PHASE	SIZE[1]	CONSTRUCTION SCHEDULE Start	Finish
PHASE 1			
Medical and Administrative Offices	270,000 sf	1993	1995
Central Plant	25,000 sf	1993	1995
Parking Structure	1,200 spaces	1993	1995
Surface Parking	200 spaces		
PHASE 2			
227 Bed Hospital Building (6 levels w/basement)	505,000 sf	1994	1997
Parking Structure	1,700 spaces	1996	1997
Surface Parking	100 spaces		
PHASE 3			
212 Bed Hospital Building	315,000 sf	To be determined based on demand	
Medical and Administrative Offices	215,000 sf		
Central Plant Addition	10,000 sf		
Parking Structure	3,000 spaces		
Surface Parking	250 spaces		
TOTAL DEVELOPMENT:	820,000 sf	439 Bed Hospital	
	485,000 sf	Medical and Administrative Offices	
	30,000 sf	Central Plant	
	5,900 spaces	Parking Structure	
	250 spaces	Surface Parking	

(1) Approximate maximum development

sf = square feet

Source: Kaiser Permanente, 2/92

one concept which responds to the criteria included in the Planning Guidelines. The conceptual Master Plan illustrates the overall site design theme for the Activity Center, while the Planning Guidelines provide more precise details regarding vehicular circulation, landscape and design themes, and architectural character.

2.4.5. Revised Master Grading Plan for the EastLake I SPA

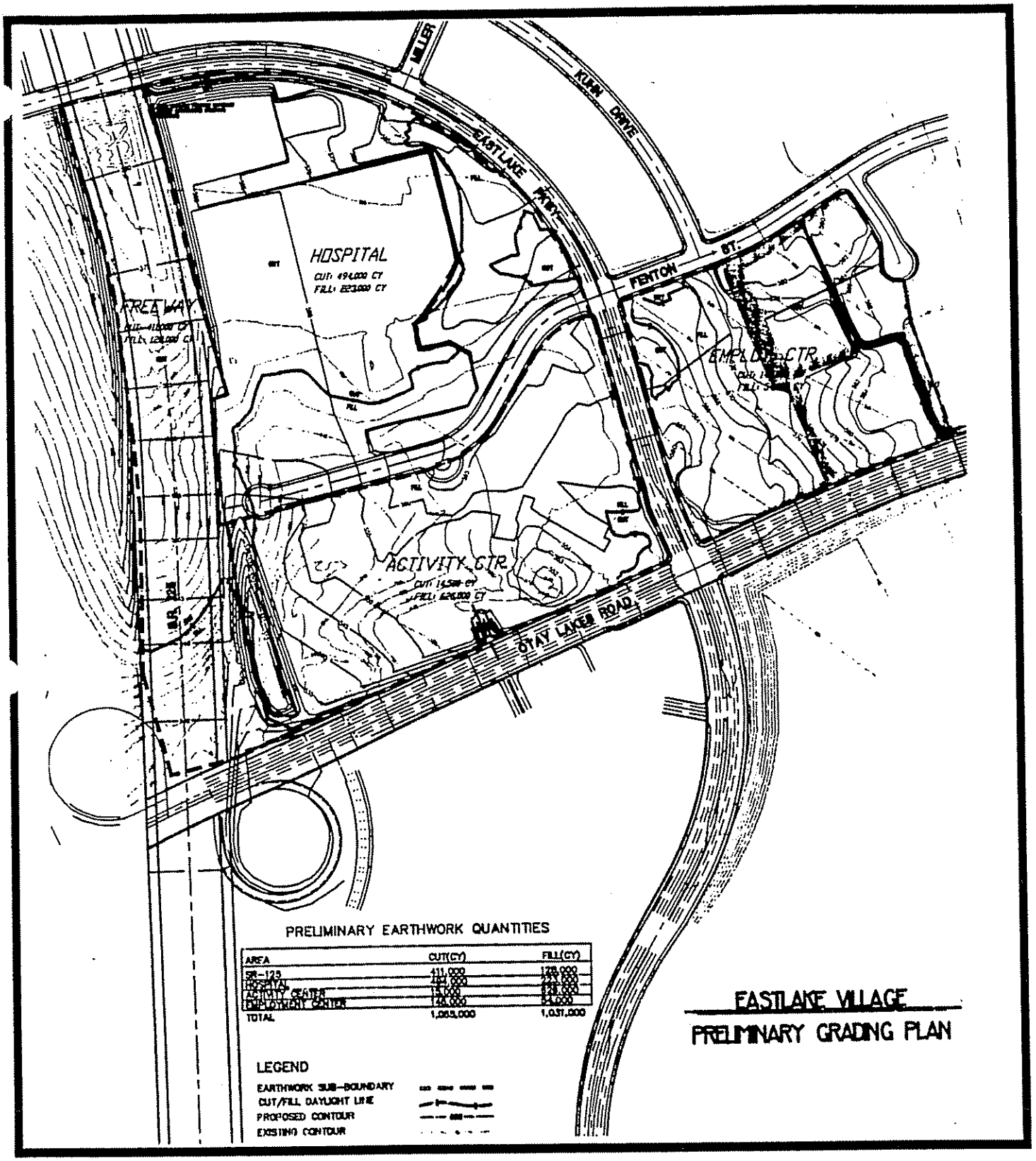
The EastLake I SPA Master Grading Plan would be revised to reflect those portions of the project site associated with the SPA Amendment (Figure 7). Although the majority of the project site has already been graded in accordance with the adopted SPA Plan, some modifications to the existing pad elevations are required to accommodate the proposed changes in land use mix and location.

2.4.6. Modification of the Planned Community District Regulations

The Planned Community (PC) District Regulations are intended to implement and integrate the Chula Vista General Plan, the General Development Plan and the SPA Plan for EastLake I. These regulations set forth the development and use standards for all property within EastLake I by establishing setbacks; building heights, parking requirements; landscape requirements; use restrictions; animal regulations; density of development; lot size, width and depth; fencing requirements; and, signing regulations. The PC District Regulations combined with the EastLake SPA Plan delineate precisely the allowable use of the property. Section III.1 of the PC District Regulations is proposed to be modified to more accurately reflect the changes in land use mix and permitted uses within the SPA Amendment area.

2.5 Growth Management

In response to the City of Chula Vista's Growth Management Program, several planning studies have been prepared to address potential growth impacts related to the proposed project. These include a Water Conservation Plan, an Air Quality Improvement Plan, and a Transportation Demand Management Plan for the medical center. The Water Conservation Plan presents conservation estimates, roles and responsibilities of public and private entities, water consumption estimates, onsite and offsite water conservation measures, and a implementation/monitoring plan. The Air Quality Improvement Plan would provide measures that could be applied at the project level which could have a positive impact on air quality.



PROPOSED ACTIVITY CENTER GRADING PLAN

N

NO SCALE

FIGURE 7

Source: Project Design Consultants

LETTIERI-McINTYRE AND ASSOCIATES

Proposed EIR Outline

1.0 INTRODUCTION AND SUMMARY

- 1.1 Purpose and Scope of the EIR
- 1.2 Summary of Impacts and Mitigation Measures

2.0 PROJECT DESCRIPTION

- 2.1 Location
- 2.2 Project Background
- 2.3 Project Objectives
- 2.4 Project Characteristics
- 2.5 Discretionary Actions

3.0 ENVIRONMENTAL SETTING

- 3.1 Onsite
- 3.2 Regional Setting

4.0 ENVIRONMENTAL ANALYSIS

- 4.1 Land Use
- 4.2 Visual Quality/Community Character
- 4.3 Traffic and Parking
- 4.4 Noise
- 4.5 Public Safety
- 4.6 Drainage
- 4.7 Geology
- 4.8 Air Quality
- 4.9 Socio-economic Factors
- 4.10 Public Facilities
- 4.11 Threshold Analysis

5.0 REQUIRED CEQA SECTIONS

- 5.1 Cumulative Impacts Assessment
- 5.2 Growth Inducement
- 5.3 The Relationship Between Local Short-term Use of the Environment and the Maintenance and Enhancement of Long-term Productivity

Proposed EIR Outline (cont.)

6.0 ALTERNATIVES TO THE PROPOSED ACTION

- 6.1 No Project Alternative
- 6.2 Reduced Intensity
- 6.3 Alternative Sites Analysis
- 6.4 Reduced Project Height

7.0 MITIGATION MONITORING AND REPORTING PROGRAM

8.0 REFERENCES

9.0 PERSONS AND ORGANIZATIONS CONTACTED

10.0 EIR PREPARATION

Agencies that were mailed NOP notice for EIR-92-01 - Registered Mail

State Clearinghouse
1400 Tenth Street Room 121
Sacramento, CA 95814

State Department of Health
714 "P" Street, Room 1253
Sacramento, CA 95814

Public Utilities Commission
1107 9th Street, Suite 710
Sacramento, CA 95814

County of San Diego
Planning Dept
5201 Ruffin Rd. #B
San Diego, CA 92123-1666

Caltrans-Planning
P.O. box 942874
Sacramento, CA 94274-0001

Otay Water District
Attn: Bart Mumford
10595 Jamacha Road
Spring Valley, CA 92078

Sweetwater Union H.S. District
Attn: Tom Silva
1130 Fifth Ave.
Chula Vista, CA 91911

C.V. Elem. School Dist
Attn: Kate Shurson
84 East "J" St
Chula Vista, CA 91910

San Diego Gas & Electric
Attn: Don Rose
P.O. Box 1831
San Diego, CA 92112

OSHPD
Office of State Wide Planning
and Development
Attn: Neil Hardman, Principal
Architect
1600 9th Street
Sacramento, CA 95814
cc: Katy Wright

Resources Agency
Fish & Game
CalTrans Dist 11
Air Resources
APCD
Cal. Waste Mgmt.
Reg. Water Qual.
State Lands

CITY OF
CHULA VISTA
PLANNING DEPARTMENT

March 5, 1992

O.S.H.P.D.
Office of State Wide Planning
and Development
Attn: Neil Hardman, Principal Architect
1600 9th Street
Sacramento, CA 95814

Dear Mr. Hardman:

We called your office and was told to direct this Notice of Preparation to you , we believe you will be a responsible agency and we are very anxious to get your comments. If you have any questions please call Marilyn Ponseggi at 444-8247 or at 476-5334.

Thank You,

Lupe Lucero

Lupe Lucero for Marilyn Ponseggi

cc: Katy Wright

276 FOURTH AVE/CHULA VISTA, CALIFORNIA 91910/(619) 691-5101

CITY OF
CHULA VISTA
PLANNING DEPARTMENT

RECEIVED
MAR 19 1992
PLANNING

NOTICE OF PREPARATION

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report

CASE NO: EIR-92-01

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Please send your response to the Planning Department, City of Chula Vista, P.O. Box 1087, Chula Vista, CA 91912.

If the City can be of assistance to you in this case or if you have any questions please call Maryann Miller in the Planning Department at (619) 476-5330.

Douglas D. Reid
Douglas D. Reid
Environmental Review Coordinator

Since Kaiser is a facility for members only & does not serve the Community at large (unless all Eastlake residents become members automatically with no pre-conditions) I am opposed to the facility and any special considerations it may seek.

Jacob & Marianne Handrus
2109B Northshore Dr
Chula Vista, CA 91913

CITY OF
CHULA VISTA
PLANNING DEPARTMENT

RECEIVED
MAR 11 1992
PLANNING

NOTICE OF PREPARATION

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Douglas D. Reid
Environmental Review Coordinator

I agree on the proposed amendement in order to accomodat. the Rainer facilities

Sweetwater Union High School District

ADMINISTRATION CENTER
1130 Fifth Avenue
Chula Vista, California 91911-2896
(619) 691-5500

RECEIVED

PLANNING

Division of Planning and Facilities

March 12, 1992

Ms. Marilyn Ponseggi
Environmental Review Consultant
City of Chula Vista
Planning Department
P.O. Box 1087
Chula Vista, CA 91912

Dear Ms. Ponseggi

Re: Notice of Preparation of a Draft Environmental Impact Report
Kaiser Hospital/EastLake Development Company

I appreciate the opportunity to respond to the above referenced issue. In the fiscal year of 1986/87, the Sweetwater Union High School District's Board of Trustees established Mello-Roos Community Facilities District No. 1. It encompasses the EastLake Planned Community, and was created to mitigate all school facility impacts relative to the build-out of EastLake.

In preparation of the Draft Environmental Impact Report, it should be noted that school impacts relative to EastLake have been mitigated via Community Facilities District No. 1. If you are in need of current enrollments, enclosed please find a copy of our latest CBEDS enrollments by school. Additionally, I have enclosed correspondence sent to Ms. Mary May of Lettieri-McIntyre and Associates which addresses Kaiser Hospital.

If you require additional information, please feel free to give me a call at 691-5553.

Sincerely,

Thomas Silva
Assistant Director of Planning

TS/ml
Enclosures

cc: Mr. Kent Aden - EastLake Development Company
Ms. Mary May - Lettieri McIntyre & Associates

Sweetwater Union High School District

ADMINISTRATION CENTER
1130 Fifth Avenue
Chula Vista, California 91911-2896
(619) 691-5500

Division of Planning and Facilities

SWEETWATER UNION HIGH SCHOOL DISTRICT
CBEDS ENROLLMENT: 88/89 TO 91/92
FEB. 4, 1992

SCHOOL	88/89 CBEDS ENROLLMENT	89/90 CBEDS ENROLLMENT	90/91 CBEDS ENROLLMENT	91/92 CBEDS ENROLLMENT
HIGH SCHOOLS				
BVH	1553	1871	1805	1992
CPH	1930	1985	2140	2189
CVH	1934	1978	1919	1959
HH	1478	1532	1519	1518
MVH ·	1842	1890	1882	1912
MoHI ·	2055	1975	2055	1957
SoHI	2146	2155	2170	2208
SuHi	2029	1871	1779	2100
SUBTOTAL	14967	15257	15269	15835
JUNIOR HIGH SCHOOLS				
BVJ	1525	1682	1703	1727
CPM	1103	1090	1218	1280
CVJHS	1338	1434	1400	1415
GJS	987	951	1077	1056
HJS	1378	1482	1554	1573
MVM ·	1224	1156	1106	1126
MOJR	1392	1395	1427	1423
NCM	1029	1017	1053	799
SOWJR ·	1181	1281	1275	1312
SUBTOTAL	11157	11488	11813	11711
SPECIAL SCHOOLS				
PALOMAR HIGH	361	374	506	331
SPECIAL ED	173	148	88	182
SAC	187	190	218	247
SUBTOTAL	721	712	812	760
TOTAL 0	26845	27457	27894	28306

GMOC92.WQ1

STATE OF CALIFORNIA - HEALTH AND WELFARE AGENCY

PETE WILSON, *Governor*

OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
DIVISION OF FACILITIES DEVELOPMENT
1600 9th, Room 420
Sacramento, CA 95814
(916) 654-3362

RECEIVED

March 18, 1992

PLANNING

Ms. Lupe Lucero
City of Chula Vista Planning Department
276 Fourth Avenue
Chula Vista, CA 91910

Subject: Notice of Preparation
Kaiser Permanente

Dear Ms. Lucero:

I am writing in response to your letter of March 5, 1992, which requested our comments regarding the Notice of Preparation for Kaiser Permanente Hospital and Medical Center.

This office enforces the Alfred E. Alquist Hospital Facilities Seismic Safety Act of 1983, and as such, functions as the Building Department for all hospital construction projects in the State of California.

The legislature has stated that the Office shall "preempt from local jurisdictions the enforcement of all building standards published in the State Building Standards Code relating to the regulation of hospital projects and the enforcement of other regulations adopted pursuant to this chapter and all other applicable state laws, including the plan checking and the inspection of the design and details of the architectural, structural, mechanical, plumbing and electrical systems and the observation of construction. The Office of Statewide Health Planning and Development shall assume these responsibilities by establishing, maintaining and operating separate but coordinated plan review and field inspection units within the office."

"It is the intent of the legislature that where local jurisdictions have more restrictive requirements for the enforcement of building standards, other building regulations and construction supervision, these requirements shall be enforced by the State."

"It shall be the responsibility of each local jurisdiction to keep the Office of Statewide Health Planning and Development advised as to the existence of any more restrictive local requirements. Where a reasonable doubt exists as to whether the requirements of the local jurisdictions are more restrictive, the effect of the requirements shall be determined by the Building Safety Board."

This office does not preempt local planning matter ie: EIR's, use permits, zoning, etc; but we do seek assurance of compliance with local planning issues and will enforce any specific requirements established.

I have enclosed a full copy of the Hospital Seismic Safety Act for your review. Should you wish to discuss any of these matters further, please do not hesitate to contact me. My telephone number is (916) 654-1600.

Sincerely,

Willi Saeli FOR

M. Neal Hardman
Principal Architect

Enclosure

cc: file
chron

DEPARTMENT OF FISH AND GAME
330 Golden Shore, Suite 50
Long Beach, California 90802
(310) 590-5113

REC
PLAN

April 1, 1992

Ms. Marilyn Ponseggi
City of Chula Vista
276 Fourth Avenue
Chula Vista, California 91910

Dear Ms. Ponseggi:

Notice of Preparation for Eastlake Spa Amendment/
Kaiser Hospital, SCH 92031049

To enable our staff to adequately review and comment on subject project, we recommend the following information be included in the Draft Environmental Impact Report:

1. A complete assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened and locally unique species and sensitive and critical habitats.

2. A discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

3. A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts. Stream buffer areas and maintenance in their natural condition through non-structural flood control methods should also be considered in order to continue their high value as wildlife corridors.

   More generally, there should be discussion of alternatives to not only minimize adverse impacts to wildlife, but to include direct benefit to wildlife and wildlife habitat. Those discussions should consider the Department of Fish and Game's policy that there should be no net loss of wetland acreage or habitat values. We oppose projects which do not provide adequate mitigation for such losses.

Diversion, obstruction of the natural flow, or changes in the bed, channel, or bank of any river, stream, or lake will require notification to the Department of Fish and Game as called for in the Fish and Game Code. Notification should be made after the project is approved by the lead agency.

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact Mr. Kris Lal at (310) 590-5137.

Sincerely,

Fred Worthley
Regional Manager
Region 5

cc: Office of Planning & Research

STATE OF CALIFORNIA - BUSINESS, TRANSPORTATION AND HOUSING AGENCY

PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION

DISTRICT 11, P.O. BOX 85406, SAN DIEGO 92186-5406

(619) 688-3161

RECEIVED
CITY OF CHULA VISTA
ENGINEERING DEPT.
1992 APR -9 AM 10: 18

ZB 292
ZG 311
HY 013
YE 057

April 6, 1992

Mr. John Lippit
Public Works Director
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 92010

Dear John:

As you are aware, CTV, through its Franchise Agreement with CalTrans, has been involved in the development of State Route 125 in the South San Diego County region. As a part of this involvement they are working closely with private property owners and developers in the corridor.

In coordinating with Eastlake Development Company, CTV was asked to develop design concepts for new ramps providing northbound access and southbound egress at Eastlake Parkway from Route 125. These ramps could be required by the city as mitigation for the Phase 3 development associated with the proposed new Kaiser Hospital and associated medical facilities.

We have reviewed the conceptual layout studies, and we are pleased to inform you that, from an engineering perspective, these ramps appear feasible within CalTrans standards.

We will be glad to meet with you and your staff, as well as with all concerned parties to review these design concepts.

Sincerely,

William H. Ojeda

WILLIAM H. OJEDA
Deputy District Director
Privatization

WHO:sf

NOISE REPORT

APPENDIX C

Giroux & Associates
Environmental Consultants

NOISE QUALITY IMPACT ANALYSIS

EASTLAKE I SPA AMENDMENT

CITY OF CHULA VISTA, CALIFORNIA

Prepared for:

Lettieri-McIntyre & Associates
Attn: Marni Borg
533 "F" Street, Suite 209
San Diego, CA 92101-6319

Date:

April 20, 1992

17744 Sky Park Circle, Suite 210, Irvine, California 92714 - Phone (714) 851-8609 - Fax (714) 851-8612

NOISE ENVIRONMENT SETTING

Noise is defined as any sound that is undesirable or interferes with the normal hearing processes. There are a variety of noise scales used to measure the impact of a noise source. The basic unit of sound measurement is the decibel (dB) which allows for comparisons of sounds differing in loudness by factors of a million or more through an easily manageable logarithmic scale. Because the human ear does not respond equally to all sound frequencies, sounds of greatest human sensitivity are typically more heavily weighted in a process called A-weighting. A-weighted sound pressure levels are the standard representation in California for planning purposes, and are reported as dB(A).

Since cumulative noise exposure is the result of a number of isolated noise events, several additional descriptors of the noise environment have been developed to describe ambient noise. Statistical descriptions can be used to indicate the noise level that is exceeded over some other percent each hour, but a more common approach for planning purposes is the energy equivalent noise level (Leq). Leq is the steady-state noise level that has the same integrated acoustical energy content as a time-varying event. Differences in the perception of noise intrusion as a function of time of day and personal activity level have been incorporated into community noise characterization by applying an artificial penalty to noise levels during evening and nighttime quiet hours. The resulting noise characterization is variously called the Community Noise Equivalent Level (CNEL) or the Day-Night-Level (DNL or Ldn) which are measures of the 24-hour cumulative noise exposure at a given location. Communities within the State of California are required by law, to use the CNEL characterization for land use planning purposes, while federal agencies participating in land use development typically use the DNL descriptor. Because CNEL or DNL are 24-hour weighted averages, they are particularly well suited for evaluating roadway noise impacts on residential or other noise-sensitive land uses such as medical facilities because both the surrounding noise sources as well as the receiver site are potentially active around the clock. For most applications, the CNEL and DNL are almost identical such that any community noise requirements described by one scale apply equally well to the other.

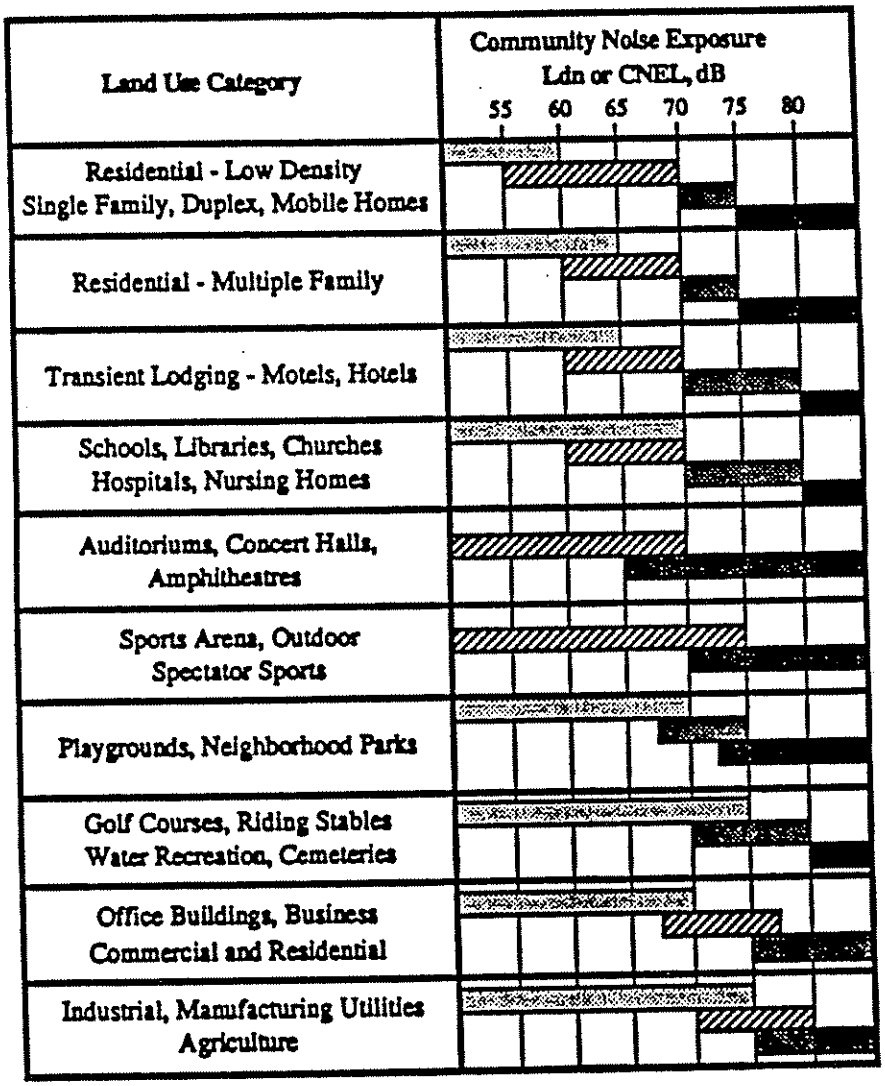
State Law (Title 24 of the Administrative Code) requires that indoor noise levels in habitable rooms of multi-family dwelling units be limited to a 45 dB(A) CNEL. Since the average attenuation factor for structures is 15-25 dB, a 65 dB(A) CNEL exterior noise exposure level is typically considered to be a desirable maximum exterior noise loading. Because commercial or industrial uses are not occupied on a 24-hour basis, a less stringent noise/land use compatibility criterion is generally specified for these less noise sensitive land uses.

These guidelines form the basis for the Noise Element of the City of Chula Vista's General Plan which suggests a desirable exterior noise exposure of 65 dB(A) for residential and other noise sensitive uses. The City's noise policy states as its first objective that every citizen has a right to live in an environment where noise is not detrimental to his or her life, health, and enjoyment of property. Within the policy's implementation provisions, there is a mandate for the City to consider the effects of noise, especially from transportation sources, in its land use decisions in order to realize the above objective.

Noise exposure standards within the City of Chula Vista are based upon a set of standards developed by the California Department of Health Science Office of Noise Control (1976). Figure 1 shows the variation in allowable noise exposure for most noise-sensitive residences, parks, hospitals, etc. to the least sensitive industrial, manufacturing or agricultural uses. These standards define both the noise criteria by which on-site suitability for a planned use is determined as well as establishing significance criteria for any off-site transportation-related impacts resulting from site development. For the proposed medical center, the 65 dB CNEL exposure goal is normally acceptable for any exterior site uses. Levels up to 70 dB CNEL or Ldn are considered "conditionally acceptable" if the project design includes sufficient noise abatement features to achieve an acceptable exposure, even if the exterior ambient noise environment is high. Such features either are in the form of barriers (walls) or other shielding, or, where propagation barriers are not practical, through structural insulation. Structural noise abatement will achieve a quiet interior noise exposure even if the exterior is noisier than what is normally acceptable for very noise-sensitive land uses. The office and commercial uses proposed for the Eastlake Village Center will be regulated by the normally acceptable 70 dB CNEL and conditionally acceptable 75 dB noise standards. The Medical Center is shown to have an exterior noise exposure standard that is considered both normally and conditionally acceptable up to 70 dB CNEL.

Existing noise levels in the Eastlake I SPA Amendment vicinity derive primarily from automobile and medium truck traffic on local arterial streets. In order to characterize current noise levels in and around the SPA Amendment area, a limited on-site noise survey was conducted on March 9-12, 1992. Noise levels on the Village Center 2 parcel were monitored using standardized noise monitoring protocols. Monitoring was conducted using LDL Model 700 Sound Level Meters operating in the A-weighted Leq monitoring mode. Because of the limited overall development density within the project vicinity, noise levels are currently relatively low even on the VC-2 site near existing development. Results of the measurements are shown in Table 1. Every day had a highly

Figure 1 - Noise/Land Use Compatibility Standards



Interpretation

Normally Acceptable

Specified Land Use is Satisfactory, Based Upon the Assumption that Any Buildings Involved are of Normal Conventional Construction, Without Any Special Noise Insulation Requirements.

Conditionally Acceptable

New Construction or Development Should be Undertaken Only After a Detailed Analysis of the Noise Reduction Requirement is Made and Needed Noise Insulation Features Included in the Design. Conventional Construction, but with Closed Windows and Fresh Air Supply Systems or Air Conditioning, Will Normally Suffice.

Normally Unacceptable

New Construction or Development Should Generally be Discouraged. If New Construction or Development Does Proceed, a Detailed Analysis of the Noise Reduction Requirements Must be Made and Needed Noise Insulation Features Included in the Design.

Clearly Unacceptable

New Construction or Development Should Generally not be Undertaken.

TABLE 1

EASTLAKE I VILLAGE CENTER ON-SITE
NOISE MONITORING SUMMARY

	Noise Levels (dBA)					
Date	CNEL	LEQ(24)*	LEQ(MAX)*	Time	LMAX*	Time
03/09-10/92	56.8	51.7	59.5	12-13	83.0	11-12
03/10-11/92	57.0	51.4	61.5	11-12	78.5	13-14 11-12
03/11-12/92	56.3	51.5	57.5	15-16 08-09	79.0	13-14

LEQ(24) = 24-hour average noise level

LEQ(MAX) = The "noisiest" hourly level of the day

LMAX = The highest 1-second noise "spike" of the day

Source: LDL Model 700B Meter (detailed hour by hour data in Appendix 1)

repetitive pattern of noise levels in the upper 50 dB range by day and the low to mid 40's at night. Most noise peaks occurred near mid-day with not much of a commute peak noticeable. The project site is currently exposed to noise levels that are far below any level of concern relative to proposed project siting. Future noise levels will obviously increase substantially, particularly in conjunction with development of SR-125. Constraints imposed by future traffic growth will be evaluated through modeling of vehicle noise using a computerized version of the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108).

NOISE IMPACTS

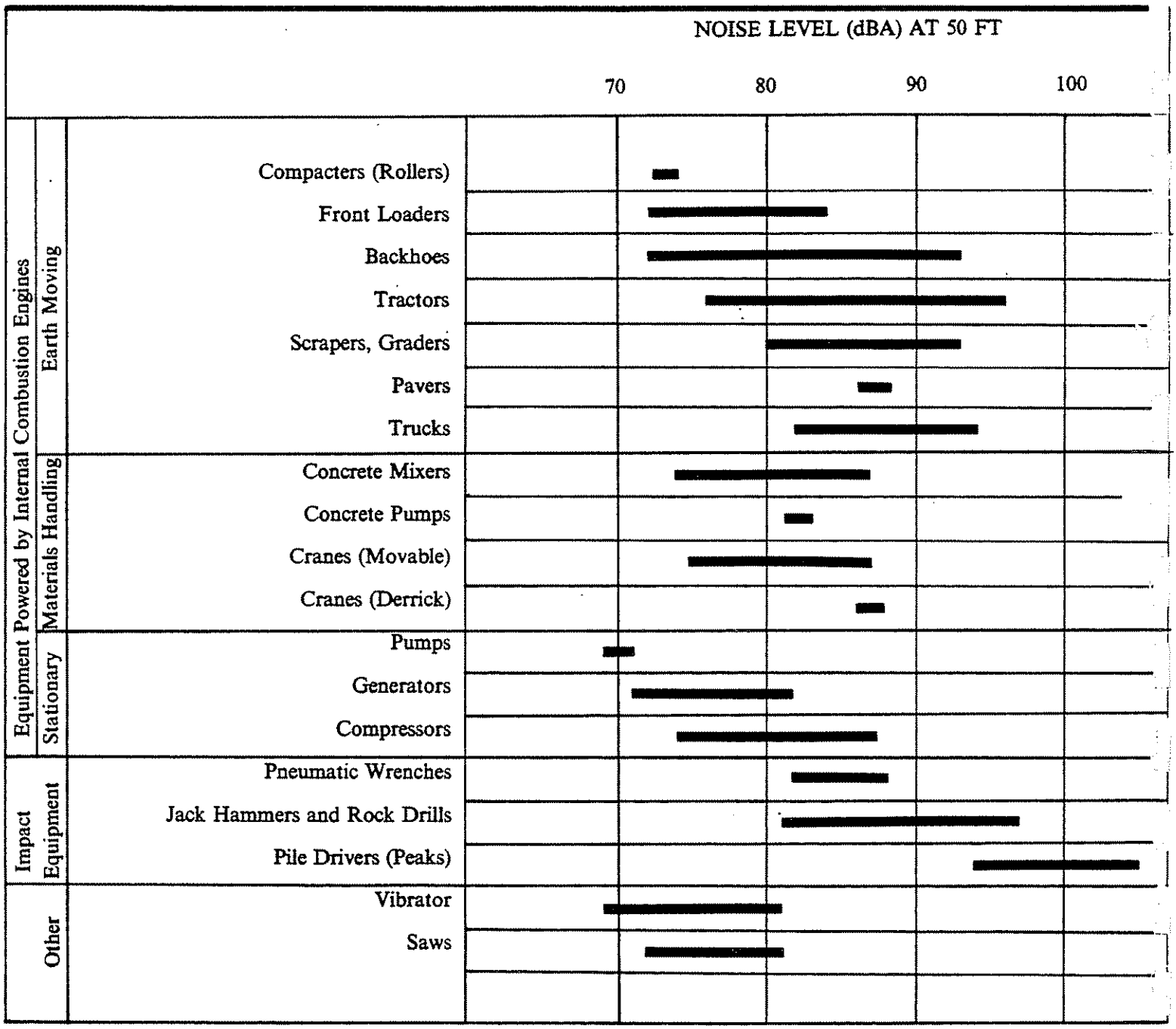
Noise impacts from a medical center, office and commercial development derive almost exclusively from the traffic generated by site activities. Medical centers are somewhat unique in that emergency vehicles use sirens to achieve roadway priority which may create sleep disturbance in an affected community. Medical emergency helicopter traffic is not expected to be a problem with the proposed medical center as no accommodations for helicoptor landings are proposed as part of the project. The proposed project may also modify the area noise environment from any on-site mechanical equipment (HVAC, emergency generators, etc.) that may be audible in any adjacent residential areas. Temporary construction noise will also result during site preparation and building assembly. Such sources are short-term and will thus not affect the long-term noise exposure in the project vicinity.

Construction Noise Impacts

Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and short-term variations are strongly influenced by structural factors that will change during the course of the project. Construction noise tends to occur in discrete phases dominated initially by earth-moving sources and later for finish construction. The heavy equipment noise typically ranges up to about 90 dB(A) at 50 feet from the source. Figure 2 summarizes the noise generation for typical construction activities. Maximum noise levels occur mainly when equipment is under load at full throttle. For most activities, equipment has alternating cycles of maximum and less than maximum operations such that noise emissions for extended exposure to nearby construction activities is generally less than shown in Figure 2. Point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. The loudest construction activities will require about 1,000 feet of distance between the source and a nearby receiver to reduce the 90+ dB(A) maximum source strength to a generally acceptable 60 dB exterior exposure level. However, variations in local lines of sight will occur during later phases of construction as completed building shells will intermittently shield adjacent receivers from direct line of sight noise propagation such that the construction equipment noise "envelope" will be smaller than 1,000 feet in many areas. In the absence of any highly noise-sensitive land uses in the project vicinity, the initial construction phase will have a very limited noise impact potential. During subsequent phases of hospital expansion, the presence of some completed medical facilities as well as daycare and church uses may bring receivers within sufficient proximity to construction as to require a greater level of noise control than during initial site development.

FIGURE 2

TYPICAL CONSTRUCTION EQUIPMENT NOISE GENERATION LEVELS



Source: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

Construction noise sources are not strictly relatable to a 24-hour community noise standard because they occur during selected times and the source strength varies sharply with time. Construction activities are also treated separately in various community noise ordinances because they do not represent a chronic, permanent noise source. To abate the potential nuisance from construction noise, Chula Vista generally imposes conditions from the county noise ordinance which limits the hours of allowable construction activities and prohibits loud, unnecessary and unusual construction noise within a reasonable distance of any residential zone. Such limits should be included as conditions on any grading/construction permits to protect surrounding land uses, particularly during later phases of hospital development.

Vehicular Noise Impacts

At full SPA Plan Amendment site buildout, there will be a noticeable change in the ambient noise environment from the widely dispersed, development-related automotive noise sources from both this project as well as from anticipated extensive areawide development. The analysis of the project noise impact was developed by combining traffic data from the project traffic study for future no-project, and future with-project traffic growth conditions with the FHWA Highway Traffic Noise Prediction computer model for a year 2010 areawide buildout. Community Noise Equivalent Level (CNEL) was the noise metric used to make the future project versus no-project comparisons. The roadway noise assessment was performed by calculating the CNEL at one fixed reference distance for observed area traffic mixes and speeds, and the actual exposure at each of the various roadway links in the project vicinity. The distance to the 65 and 70 dB CNEL contour was then calculated based on the normal noise decay with distance from traffic line sources.

Table 2 summarizes the noise exposure at 52 roadway segments analyzed at a 100-foot reference distance for the proposed hospital project site. Table 2 shows the distance to the 65 dB CNEL contour which is the noise exposure commonly accepted as acceptable for noise sensitive uses such as schools, hospitals, libraries, etc. Table 2 also shows the distance to the 70 dB CNEL contour which is the noise level that is normally acceptable for less sensitive uses. Project-related noise impacts will depend on the change in traffic volume associated with the proposed amendment and on the background traffic volumes that will mask any project-related change. If future levels of project-related traffic substantially increase the traffic volume and if predicted levels of ADT are low for the no-project (existing general plan buildout base condition) alternative, a significant noise increase may accompany project implementation. Individual project noise impact significance is generally assumed to occur if the change in the noise level is audible to the typical human observer. For most people, this is approximately a 3 dB increase. Such an increase, however, requires

Table 2 - Eastlake I Activity Center Traffic Noise Impact Assessment

(CNEL at 100' from Roadway Centerline/Distance to 65 dB CNEL/
Distance to 70 dB CNEL from Centerline - Year = 2010)

Location:	No Project	With Project	Proj. w/ Ramps
I-805			
SR-54 - Bonita	79.5/927'/430'	79.5/924'/429'	79.5/923'/428'
Bonita - East H St.	79.3/904'/420'	79.4/907'/421'	79.4/908'/421'
East H St. - Tele. Cyn	78.9/844'/392'	78.9/849'/394'	78.9/849'/394'
Tele. Cyn - Orange	78.5/791'/367'	78.5/800'/371'	78.5/799'/371'
Orange - Otay Valley	77.8/716'/333'	77.9/731'/339'	77.9/728'/338'
Bonita Road			
W of Otay Lakes	67.2/139'/ 65'	67.2/140'/ 65'	67.0/137'/ 63'
E of Otay Lakes	66.0/116'/ 54'	65.3/105'/<50'	65.1/102'/<50'
East H Street			
W of Otay Lakes	65.9/115'/ 53'	66.3/123'/ 57'	66.0/117'/ 54'
Otay Lakes - Corral Cyn	64.0/ 86'/<50'	65.7/111'/ 52'	65.1/102'/<50'
Corral Cyn - Eastlake	65.5/108'/ 50'	66.0/117'/ 54'	65.5/108'/ 50'
Eastlake - SR-125	66.0/117'/ 54'	66.0/117'/ 54'	66.3/121'/ 56'
SR-125 - San Miguel	68.0/159'/ 74'	68.0/160'/ 74'	67.8/153'/ 71'
San Miguel - Hunte	66.9/133'/ 62'	67.2/139'/ 65'	66.4/125'/ 58'
E of Hunte	63.9/ 81'/<50'	63.5/ 80'/<50'	63.5/ 80'/<50'
Orange Avenue			
W of Otay Lakes	69.3/195'/ 91'	69.4/198'/ 92'	69.5/199'/ 92'
Otay Lakes - SR-125	68.6/175'/ 81'	68.6/175'/ 81'	68.8/178'/ 83'
SR-125 - Eastlake	68.4/169'/ 78'	68.6/174'/ 81'	68.4/168'/ 78'
Eastlake - Hunte	66.1/119'/ 55'	66.5/126'/ 59'	66.3/123'/ 57'
E of Hunte	66.3/121'/ 56'	66.6/128'/ 59'	66.5/126'/ 58'
Palomar Street			
W of La Media	61.3/ 56'/<50'	61.1/ 55'/<50'	61.6/ 55'/<50'
La Media - Corral Cyn	63.0/ 73'/<50'	63.3/ 77'/<50'	63.3/ 77'/<50'
Corral Cyn - Eastlake	62.6/ 69'/<50'	63.1/ 74'/<50'	63.1/ 74'/<50'
Corral Cyn/Rutgers			
Bonita - Blacksmith	62.9/ 73'/<50'	64.7/ 95'/<50'	64.5/ 93'/<50'
Blacksmith - East H St.	62.9/ 73'/<50'	63.8/ 83'/<50'	63.8/ 83'/<50'
East H St. - Otay Lakes	61.6/ 60'/<50'	64.7/ 95'/<50'	64.8/ 98'/<50'
Otay Lakes - Palomar	62.3/ 66'/<50'	64.7/ 96'/<50'	64.7/ 96'/<50'
Palomar - Orange	61.7/ 61'/<50'	61.9/ 62'/<50'	61.8/ 61'/<50'
Future SR-125			
SR-54 - San Miguel	78.5/800'/371'	78.7/819'/380'	78.9/840'/390'
San Miguel - East H St.	78.3/770'/357'	78.4/782'/363'	78.6/808'/375'
East H St. - Otay Lakes	77.9/724'/336'	78.0/731'/339'	78.4/783'/364'
Otay Lakes - Orange	77.6/690'/320'	77.8/719'/334'	77.8/719'/334'
Orange - La Media	77.6/690'/320'	77.7/702'/326'	77.8/710'/330'
S Of La Media	77.9/722'/335'	78.0/733'/340'	78.1/744'/345'

Table 2 - continued

Eastlake Drive			
East H St. - Lakeshore	62.3/ 66'/<50'	64.3/ 90'/<50'	62.6/ 70'/<50'
Lakeshore - SR-125*	59.6/<50'/<50'	60.3/<50'/<50'	61.0/ 54'/<50'
SR-125 - Otay Lakes	64.8/ 96'/<50'	66.4/125'/ 58'	66.8/132'/ 61'
Otay Lakes - Palomar	65.1/102'/<50'	65.7/111'/ 52'	66.1/118'/ 55'
Palomar - Orange	63.9/ 84'/<50'	64.3/ 90'/<50'	64.1/ 87'/<50'
Orange - Hunte	65.6/110'/ 51'	65.6/110'/ 51'	65.6/109'/ 51'
Hunte Parkway			
W of East H. St.	58.8/<50'/<50'	59.0/<50'/<50'	59.0/<50'/<50'
East H St. - Otay Lakes	59.9/<50'/<50'	60.6/ 51'/<50'	59.5/<50'/<50'
Lane Avenue			
East H St. - Otay Lakes	61.9/ 62'/<50'	64.0/ 86'/<50'	62.6/ 70'/<50'
Otay Lakes Road			
East H St. - Tele. Cyn	67.6/149'/ 70'	67.6/148'/ 69'	67.7/151'/ 70'
Tele. Cyn - Rutgers	66.2/120'/ 55'	66.9/134'/ 62'	67.2/140'/ 65'
Rutgers - SR-125	66.2/120'/ 55'	66.8/132'/ 61'	67.3/141'/ 66'
SR-125 - Eastlake	68.2/164'/ 76'	69.2/192'/ 89'	68.7/176'/ 82'
Eastlake - Lane	66.1/119'/ 55'	66.2/120'/ 56'	66.3/122'/ 56'
Lane - Hunte	64.8/ 97'/<50'	65.2/103'/<50'	65.4/107'/<50'
E of Hunte	64.5/ 93'/<50'	65.4/106'/<50'	65.6/110'/ 51'
La Media Road			
Tele. Cyn - Palomar	65.1/102'/<50'	65.1/102'/<50'	63.8/ 83'/<50'
Palomar - Orange	67.1/138'/ 64'	67.0/135'/ 63'	67.1/139'/ 64'
Orange - SR-125	68.2/164'/ 76'	68.3/167'/ 77'	68.3/166'/ 77'

* - Traffic volume split equally between each half of loop circulation system for "With Project" scenario.

Source: FHWA-RD-77-108 (Calveno-85 mod.)

a doubling of traffic volumes because of the logarithmic relationship between the number of sources and noise levels. Few projects of themselves in an otherwise developed area ever create a doubling of traffic volumes and thus create an individually significant impact except within the project limits themselves. If any significant impacts were to occur, they would be due to a worsening of an already unacceptable noise condition in conjunction with all non-project traffic. Cumulatively significant noise impacts are common in urban and suburban environments, particularly when traffic volumes increase substantially in older areas of noise-sensitive development that were built with inadequate setbacks or noise barriers to adequately protect them from future noise increase. In more recently planned/built areas, noise exposure has generally been a part of the environmental analysis process with considerably fewer noise/land use incompatibilities.

Inspection of Table 2 shows that traffic volume increases associated with proposed Eastlake I Activity Center meet the 3 dB individual impact significance criterion at one of the 52 roadway links evaluated, i.e., on Rutgers Avenue from East "H" Street to Otay Lakes Road. However, upon review of the traffic report, it was determined that the increase in the traffic volumes on this segment is not primarily related to the proposed project; the proposed project only represents one percent of the total. According to the traffic engineer, the increase between the with and without project scenarios is due to different computer model assumptions rather than the project-generated traffic. Therefore, the increase in noise levels would not be a direct impact of the proposed project.

Miscellaneous Site Noise Impacts

In addition to site traffic generation, proposed facilities may have unique noise sources that could affect any nearby sensitive receivers. Such sources include any on-site physical plant functions such as heating or air conditioning or emergency power generation. Medical facilities will also have off-site emergency access noise generation such as ambulance sirens. Noise impacts from stationary on-site sources are normally controlled by shielding, mufflers or other attenuation methods as required by applicable noise ordinances. There are requirements that all engines such as emergency generators have proper mufflers and that on-site activities do not create any "loud, unnecessary or excessive noise". Chronic on-site sources are therefore, adequately controlled by local or County codes.

Because of the life-saving purposes of medical facilities, emergency access is normally exempt from noise codes, and, therefore, constitutes a possible noise impact within any adjacent noise-sensitive community. Siren noise from emergency vehicle access will be noticeably intrusive in any adjacent residential area. Siren noise will be a sharp "spike" in the acoustic

environment that will rapidly waken sleeping people because of the marked difference in sound levels between semi-quiet nocturnal conditions and the intrusive presence of a siren. Such emergency warning, much more than any general traffic noise increase analyzed above, could create significant land use conflicts between the proposed site use and any nearby residential use depending on the proximity of the residential areas to the medical center and ambulance travel routes.

Based on traffic distribution results from the traffic report prepared by JHK & Associates, emergency vehicles approaching the medical center would most likely travel Otay Lakes Road, Corral Canyon Road/Rutgers Avenue or EastLake Parkway/Drive; SR 125 would be a preferred route for north/south access once it is completed. Otay Lakes Road and SR 125 are major transportation routes in the community and are expected to be used by emergency vehicles, therefore, homes along these routes are going to be subjected to sirens from fire and police activities as well as ambulances. However, the presence of the medical center would increase the number of ambulance activities in the project area.

EastLake Parkway and Corral Canyon Road/Rutgers Avenue, on the other hand, are not a major transportation routes in the community. As indicated in the traffic analysis, these road's would likely be used for convenient access to the medical center from East H Street. Thus, a greater share of ambulances may travel this roadway than would otherwise occur.

Ambulance sirens are rated at 100dB at 50 feet directly along the siren horn axis. Point source attenuation is 6 dB per doubling of distance, although preferential molecular absorption of higher frequencies increases the loss rate slightly at long propagation distance. For the 6 dB doubling rate, the following maximum noise level may be expected at various distances from the ambulance:

50'	-	100 dB
100'	-	94 dB
200'	-	88 dB
400'	-	82 dB
800'	-	76 dB
1000'	-	74 dB
1600'	-	70 dB
2000'	-	68 dB

A sleeping person may be stirred from sleep if the bedroom noise

level reaches around 55 dB. If the windows are open at night, a 70 dB exterior would register around 55 dB inside the house. At 55 dB, sleep disturbance will likely occur in about one-half the affected population, although some of the disturbance may be only a shift from a deeper to a lighter stage of sleep. Although the ability to subconsciously screen out the siren noise would improve with frequency of exposure, the impact of the sirens on residential development is considered undesirable.

As indicated in the previous table, a distance of 1,600 feet from the siren source would be required to reduce the level of 70 dBA. Homes within this area which are located along ambulance routes would be subjected to disturbance from sirens. The nearest homes to the medical center would be the EastLake Shores development. The hospital and parking garage would lie between these homes and the emergency vehicle entrance which would be on the east side of the hospital.

While emergency vehicle sirens along residential streets would potentially disrupt sleep patterns of residents with 1,600 feet, the impact is not considered significant.

Site-Suitability Issue

The above impact analysis has focused on the impact of the project on the area's acoustic environment. It is equally important, however, that the ambient environment not adversely impact a noise-sensitive use such as a health-care center. Proximity of the proposed SR-125 Freeway is thus a valid issue relative to hospital siting. Because hospitals have few exterior uses except perhaps for outside dining patios or a patient sun room, the concern is more that interior noise exposure be conducive to patient welfare. The suitability of an interior noise environment can be adjusted by structural elements (thick walls, dual glazed windows, etc.) such that achieving a desirable interior exposure becomes a matter of estimating maximum exterior loading and then selecting architectural elements that achieve a desired noise level reduction (NLR). Table 2 shows that the freeway noise exposure at 100 feet will be 78 dB CNEL. At the closest point of patient occupancy relative to the proposed freeway, the exterior exposure will be below 70 dB CNEL. That exposure will be further reduced by the presence of the parking structures which will act as a barrier for lower stories of the critical care and MOB health center components. Architectural elements needed to achieve a 25 dB NLR must thus be incorporated into project designs to reach a 45 dB CNEL interior level. A 25 dB NLR is attained by standard code compliance/construction practice, provided that windows facing the freeway are not openable. An architectural package that meets the 25 dB NLR is attached as Appendix 2 to this report. Except for the constraint on fixed windows, there is nothing in this recommended package that is not part of standard building design.

MITIGATION

Noise impacts can be mitigated to below a level of significance. These impacts and suggested mitigations are as follows:

- Construction activities should be limited to the hours of 7 a.m. to 7 p.m. on weekdays during times when non-project activities throughout the area will mask any local project noise impacts.

- On-site mechanical equipment shall meet noise emissions performance standards specified in the noise ordinances and building codes.

- Medical Center employees will be included in any medical center trip reduction programs to reduce the volume of site-generated automobile traffic and any associated vehicle noise.

- An acoustic package achieving a minimum NLR as 25 dB should be included in Medical Center design to achieve an acceptable interior noise loading for all care facilities facing SR-125.

A P P E N D I X 1

On-Site Noise Monitoring Detail

Village Center 2 Site -

Eastlake I SPA Plan Amendment

March 9 - 12, 1992

INTV REPORT

LARSON-DAVIS LABS -- MODEL 700

03/13/92 07:12:58 SN 700B1123 PAGE 1

Cnt	LVL	SEL	Lmax	Lpk	Lmin	Date	Time	Dur	Ex	Pk	Ov
2	58.5	94.0	73.5	84.5	45.5	9 MAR	13:00:01	1:00 h:m	0	0	0
			L01 = 66.5		L10 = 61.0		L50 = 57.5		L90 = 52.0		
3	54.5	90.5	71.0	85.0	44.5	9 MAR	14:00:01	1:00 h:m	0	0	0
			L01 = 64.5		L10 = 58.0		L50 = 52.0		L90 = 48.5		
4	55.5	91.0	76.0	89.5	43.0	9 MAR	15:00:01	1:00 h:m	0	0	0
			L01 = 66.5		L10 = 57.0		L50 = 51.0		L90 = 47.0		
5	56.0	91.5	69.5	91.5	43.5	9 MAR	16:00:01	1:00 h:m	0	0	0
			L01 = 66.0		L10 = 60.0		L50 = 52.5		L90 = 48.0		
6	55.0	90.5	69.5	96.5	44.5	9 MAR	17:00:01	1:00 h:m	0	0	0
			L01 = 64.0		L10 = 58.0		L50 = 52.5		L90 = 48.5		
7	54.0	89.5	69.5	81.0	43.0	9 MAR	18:00:01	1:00 h:m	0	0	0
			L01 = 63.5		L10 = 56.5		L50 = 51.5		L90 = 47.0		
8	51.0	86.5	66.0	81.5	41.5	9 MAR	19:00:01	1:00 h:m	0	0	0
			L01 = 60.5		L10 = 54.5		L50 = 48.5		L90 = 44.5		
9	49.5	85.0	64.5	77.0	41.5	9 MAR	20:00:01	1:00 h:m	0	0	0
			L01 = 59.0		L10 = 52.0		L50 = 47.0		L90 = 43.0		
10	50.5	86.0	68.5	80.5	41.5	9 MAR	21:00:01	1:00 h:m	0	0	0
			L01 = 61.0		L10 = 53.0		L50 = 46.0		L90 = 43.0		
11	45.5	81.0	57.5	70.5	41.0	9 MAR	22:00:01	1:00 h:m	0	0	0
			L01 = 53.5		L10 = 48.0		L50 = 43.5		L90 = 42.0		
12	47.0	82.5	65.0	78.5	40.5	9 MAR	23:00:01	1:00 h:m	0	0	0
			L01 = 56.0		L10 = 50.0		L50 = 43.0		L90 = 41.5		
13	44.5	80.0	59.5	81.5	41.0	10 MAR	0:00:01	1:00 h:m	0	0	0
			L01 = 55.0		L10 = 46.0		L50 = 41.5		L90 = 41.0		
14	45.5	81.0	61.5	74.0	40.5	10 MAR	1:00:01	1:00 h:m	0	0	0
			L01 = 58.5		L10 = 47.5		L50 = 41.5		L90 = 41.0		
15	46.0	81.5	68.5	90.5	40.5	10 MAR	2:00:01	1:00 h:m	0	0	0
			L01 = 58.5		L10 = 45.5		L50 = 41.0		L90 = 41.0		
16	43.5	79.0	61.0	71.0	40.5	10 MAR	3:00:01	1:00 h:m	0	0	0
			L01 = 54.5		L10 = 43.0		L50 = 41.0		L90 = 41.0		
17	48.0	83.5	66.0	80.0	40.5	10 MAR	4:00:01	1:00 h:m	0	0	0
			L01 = 60.0		L10 = 50.5		L50 = 43.0		L90 = 41.0		
18	48.0	83.5	64.5	79.5	40.5	10 MAR	5:00:01	1:00 h:m	0	0	0
			L01 = 59.5		L10 = 51.0		L50 = 43.5		L90 = 41.5		
19	53.0	88.5	64.0	78.5	42.5	10 MAR	6:00:01	1:00 h:m	0	0	0
			L01 = 60.5		L10 = 56.0		L50 = 51.0		L90 = 46.5		
20	56.0	91.5	71.5	84.5	45.5	10 MAR	7:00:01	1:00 h:m	0	0	0
			L01 = 66.5		L10 = 58.5		L50 = 52.5		L90 = 48.5		
21	55.5	91.5	73.0	92.5	46.0	10 MAR	8:00:01	1:00 h:m	0	0	0
			L01 = 64.5		L10 = 58.5		L50 = 53.5		L90 = 49.0		
22	53.0	88.5	65.0	92.5	44.0	10 MAR	9:00:01	1:00 h:m	0	0	0
			L01 = 62.0		L10 = 56.0		L50 = 50.5		L90 = 47.0		
23	54.5	90.0	69.5	90.0	43.5	10 MAR	10:00:01	1:00 h:m	0	0	0
			L01 = 64.5		L10 = 58.0		L50 = 51.0		L90 = 47.0		
24	57.5	93.0	83.0	98.5	46.5	10 MAR	11:00:01	1:00 h:m	0	0	0
			L01 = 66.0		L10 = 58.0		L50 = 52.0		L90 = 49.5		
25	59.5	95.5	82.5	99.0	47.5	10 MAR	12:00:02	1:00 h:m	0	0	0
			L01 = 67.5		L10 = 63.0		L50 = 55.5		L90 = 50.5		

INTV REPORT

LARSON-DAVIS LABS -- MODEL 700

03/13/92 07:14:18 SN 700B1123 PAGE 2

Cnt	LVL	SEL	Lmax	Lpk	Lmin	Date	Time	Dur	Ex	Pk	Ov
26	58.5	94.0	78.5	92.0	47.0	10 MAR	13:00:02	1:00 h:m	0	0	0
			L01 = 70.0		L10 = 59.5		L50 = 54.0		L90 = 50.5		
27	59.0	94.5	77.0	92.5	49.0	10 MAR	14:00:02	1:00 h:m	0	0	0
			L01 = 71.5		L10 = 61.0		L50 = 55.5		L90 = 52.0		
28	56.5	92.0	75.0	88.5	45.5	10 MAR	15:00:02	1:00 h:m	0	0	0
			L01 = 68.0		L10 = 58.0		L50 = 53.5		L90 = 50.0		
29	54.5	90.0	69.5	87.0	44.5	10 MAR	16:00:02	1:00 h:m	0	0	0
			L01 = 63.0		L10 = 58.0		L50 = 52.0		L90 = 47.5		
30	54.0	90.0	66.0	80.0	43.5	10 MAR	17:00:02	1:00 h:m	0	0	0
			L01 = 63.5		L10 = 57.5		L50 = 51.5		L90 = 47.5		
31	52.5	88.0	66.0	75.0	45.0	10 MAR	18:00:02	1:00 h:m	0	0	0
			L01 = 60.0		L10 = 55.0		L50 = 51.0		L90 = 48.5		
32	51.5	87.0	66.5	96.0	44.5	10 MAR	19:00:02	1:00 h:m	0	0	0
			L01 = 63.0		L10 = 53.5		L50 = 49.5		L90 = 47.0		
33	48.5	84.0	62.0	82.5	42.0	10 MAR	20:00:02	1:00 h:m	0	0	0
			L01 = 56.5		L10 = 51.0		L50 = 46.5		L90 = 44.0		
34	49.5	85.0	65.5	94.0	42.0	10 MAR	21:00:02	1:00 h:m	0	0	0
			L01 = 60.0		L10 = 52.0		L50 = 45.5		L90 = 43.0		
35	48.5	84.0	63.5	82.5	41.5	10 MAR	22:00:02	1:00 h:m	0	0	0
			L01 = 59.0		L10 = 52.0		L50 = 44.5		L90 = 42.5		
36	46.0	81.5	63.5	79.0	41.0	10 MAR	23:00:02	1:00 h:m	0	0	0
			L01 = 56.0		L10 = 47.5		L50 = 43.0		L90 = 42.0		
37	46.0	81.5	67.0	81.0	41.0	11 MAR	0:00:02	1:00 h:m	0	0	0
			L01 = 57.5		L10 = 46.5		L50 = 42.0		L90 = 41.5		
38	45.5	81.0	64.0	74.5	40.5	11 MAR	1:00:02	1:00 h:m	0	0	0
			L01 = 58.0		L10 = 45.5		L50 = 42.0		L90 = 41.0		
39	42.5	78.5	60.5	71.0	40.5	11 MAR	2:00:02	1:00 h:m	0	0	0
			L01 = 51.5		L10 = 43.0		L50 = 41.0		L90 = 40.5		
40	44.5	80.0	60.5	72.0	40.5	11 MAR	3:00:02	1:00 h:m	0	0	0
			L01 = 57.0		L10 = 44.5		L50 = 41.5		L90 = 41.0		
41	45.5	81.0	60.0	72.0	41.0	11 MAR	4:00:02	1:00 h:m	0	0	0
			L01 = 56.0		L10 = 47.5		L50 = 42.5		L90 = 41.5		
42	49.0	84.5	62.0	74.0	41.0	11 MAR	5:00:02	1:00 h:m	0	0	0
			L01 = 59.0		L10 = 52.5		L50 = 46.0		L90 = 42.5		
43	52.5	88.0	64.5	83.0	44.0	11 MAR	6:00:02	1:00 h:m	0	0	0
			L01 = 61.0		L10 = 55.0		L50 = 51.0		L90 = 47.5		
44	55.0	90.5	70.5	82.0	47.0	11 MAR	7:00:02	1:00 h:m	0	0	0
			L01 = 64.0		L10 = 57.0		L50 = 52.5		L90 = 49.5		
45	55.0	90.5	68.5	88.5	46.0	11 MAR	8:00:02	1:00 h:m	0	0	0
			L01 = 63.0		L10 = 57.0		L50 = 53.5		L90 = 50.0		
46	57.5	93.0	69.5	87.0	47.0	11 MAR	9:00:02	1:00 h:m	0	0	0
			L01 = 65.0		L10 = 61.0		L50 = 55.5		L90 = 50.5		
47	56.0	91.5	67.5	85.0	46.5	11 MAR	10:00:02	1:00 h:m	0	0	0
			L01 = 64.5		L10 = 58.5		L50 = 54.5		L90 = 50.0		
48	61.5	97.0	78.5	95.5	46.0	11 MAR	11:00:02	1:00 h:m	0	0	0
			L01 = 70.5		L10 = 65.5		L50 = 56.0		L90 = 51.0		
49	54.0	90.0	68.5	80.0	45.0	11 MAR	12:00:03	1:00 h:m	0	0	0
			L01 = 64.0		L10 = 57.5		L50 = 51.5		L90 = 48.0		

INTV REPORT

LARSON-DAVIS LABS -- MODEL 700

03/13/92 07:16:38 SN 700B1123 PAGE 3

Cnt	LVL	SEL	Lmax	Lpk	Lmin	Date	Time	Dur	Ex	Pk	Ov
50	56.0	91.5	79.0	96.0	45.0	11 MAR	13:00:03	1:00 h:m	0	0	0
			L01 = 65.0		L10 = 58.0		L50 = 52.5		L90 = 49.0		
51	56.5	92.0	68.0	85.0	47.0	11 MAR	14:00:03	1:00 h:m	0	0	0
			L01 = 65.0		L10 = 60.0		L50 = 54.5		L90 = 51.0		
52	57.5	93.0	78.5	98.0	45.0	11 MAR	15:00:03	1:00 h:m	0	0	0
			L01 = 70.0		L10 = 58.0		L50 = 52.0		L90 = 49.5		
53	54.5	90.0	69.0	81.5	44.0	11 MAR	16:00:03	1:00 h:m	0	0	0
			L01 = 65.0		L10 = 57.5		L50 = 52.0		L90 = 49.0		
54	55.0	90.5	68.5	83.5	45.5	11 MAR	17:00:03	1:00 h:m	0	0	0
			L01 = 64.5		L10 = 58.0		L50 = 52.5		L90 = 49.0		
55	53.0	88.5	64.5	83.5	45.5	11 MAR	18:00:03	1:00 h:m	0	0	0
			L01 = 60.5		L10 = 56.0		L50 = 51.0		L90 = 48.0		
56	53.5	89.0	69.5	83.5	45.0	11 MAR	19:00:03	1:00 h:m	0	0	0
			L01 = 65.5		L10 = 55.0		L50 = 51.0		L90 = 48.5		
57	51.5	87.0	67.0	80.5	44.0	11 MAR	20:00:03	1:00 h:m	0	0	0
			L01 = 61.0		L10 = 53.5		L50 = 50.0		L90 = 46.0		
58	53.0	88.5	73.0	86.5	42.0	11 MAR	21:00:03	1:00 h:m	0	0	0
			L01 = 66.0		L10 = 52.5		L50 = 46.5		L90 = 44.0		
59	48.0	83.5	63.5	90.0	41.0	11 MAR	22:00:03	1:00 h:m	0	0	0
			L01 = 58.5		L10 = 50.0		L50 = 44.5		L90 = 42.5		
60	44.5	80.0	56.5	94.0	41.0	11 MAR	23:00:03	1:00 h:m	0	0	0
			L01 = 52.0		L10 = 46.5		L50 = 43.5		L90 = 42.0		
61	45.0	80.5	60.5	92.0	41.0	12 MAR	0:00:03	1:00 h:m	0	0	0
			L01 = 53.0		L10 = 46.5		L50 = 43.0		L90 = 42.0		
62	45.5	81.0	62.5	85.5	41.0	12 MAR	1:00:03	1:00 h:m	0	0	0
			L01 = 56.0		L10 = 47.0		L50 = 44.0		L90 = 42.0		
63	45.5	81.0	60.0	97.0	40.5	12 MAR	2:00:03	1:00 h:m	0	0	0
			L01 = 53.0		L10 = 49.0		L50 = 42.0		L90 = 41.0		
64	43.0	78.5	60.5	90.5	40.5	12 MAR	3:00:03	1:00 h:m	0	0	0
			L01 = 48.0		L10 = 43.5		L50 = 42.0		L90 = 41.0		
65	47.0	82.5	61.0	88.5	41.0	12 MAR	4:00:03	1:00 h:m	0	0	0
			L01 = 55.5		L10 = 50.5		L50 = 45.0		L90 = 42.0		
66	47.5	83.0	60.0	82.5	41.5	12 MAR	5:00:03	1:00 h:m	0	0	0
			L01 = 56.0		L10 = 51.0		L50 = 45.0		L90 = 42.5		
67	50.0	86.0	61.5	81.5	42.5	12 MAR	6:00:03	1:00 h:m	0	0	0
			L01 = 58.0		L10 = 53.5		L50 = 48.5		L90 = 45.0		
68	53.0	88.5	67.5	84.5	44.0	12 MAR	7:00:03	1:00 h:m	0	0	0
			L01 = 62.0		L10 = 56.0		L50 = 50.5		L90 = 47.0		
69	57.5	93.0	70.5	81.5	47.0	12 MAR	8:00:03	1:00 h:m	0	0	0
			L01 = 66.0		L10 = 61.0		L50 = 55.0		L90 = 50.5		
70	53.0	89.0	66.5	84.0	46.0	12 MAR	9:00:03	1:00 h:m	0	0	0
			L01 = 63.0		L10 = 56.0		L50 = 50.5		L90 = 48.0		
71	55.5	91.0	72.5	95.5	45.5	12 MAR	10:00:03	1:00 h:m	0	0	0
			L01 = 64.5		L10 = 58.5		L50 = 52.5		L90 = 48.5		
72	57.0	92.5	77.0	92.5	45.5	12 MAR	11:00:03	1:00 h:m	0	0	0
			L01 = 68.5		L10 = 58.5		L50 = 52.0		L90 = 48.5		
73	53.0	88.5	70.0	86.5	44.5	12 MAR	12:00:04	1:00 h:m	0	0	0
			L01 = 63.0		L10 = 55.5		L50 = 50.5		L90 = 47.0		

INTV REPORT

LARSON-DAVIS LABS -- MODEL 700

03/13/92 07:18:56 SN 700B1123 PAGE 4

Cnt	LVL	SEL	Lmax	Lpk	Lmin	Date	Time	Dur	Ex	Pk	Ov
74	54.5	90.0	65.0	79.0	46.5	12 MAR	13:00:04	1:00 h:m	0	0	0
			L01 = 63.0		L10 = 57.0		L50 = 53.0		L90 = 50.0		
75	54.5	90.5	75.5	91.5	44.5	12 MAR	14:00:04	1:00 h:m	0	0	0
			L01 = 66.5		L10 = 56.0		L50 = 51.0		L90 = 48.0		
76	56.5	92.0	77.5	92.5	45.5	12 MAR	15:00:04	1:00 h:m	0	0	0
			L01 = 68.5		L10 = 57.5		L50 = 52.5		L90 = 49.0		
77	54.0	89.5	66.5	85.0	45.5	12 MAR	16:00:04	1:00 h:m	0	0	0
			L01 = 63.0		L10 = 57.0		L50 = 52.0		L90 = 48.5		
78	62.0	97.5	86.5	103.0	44.5	12 MAR	17:00:04	1:00 h:m	0	0	0
			L01 = 73.5		L10 = 58.5		L50 = 53.0		L90 = 49.0		
79	56.0	91.5	68.5	85.0	46.5	12 MAR	18:00:04	1:00 h:m	0	0	0
			L01 = 65.0		L10 = 58.0		L50 = 55.0		L90 = 51.0		

A P P E N D I X 2

Architectural/Structural Components

of a Recommended 25 dB NLR Package

RECOMMENDED BUILDING REQUIREMENTS

A. SECTION 1 - RECOMMENDED BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION OF 25 db

1-1 Compliance

Compliance with the following standards shall be deemed to meet the requirements of the compatible use districts in which an NLR 25 is specified.

1-2 General

a. Brick veneer, masonry blocks or stucco exterior walls shall be constructed airtight. All joints shall be grouted or caulked airtight.

b. At the penetration of exterior walls by pipes, ducts, or conduits the space between the wall and pipes, ducts or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Through-the-wall/door mail boxes shall not be used.

1-3 Exterior Walls

a. Exterior walls other than as described in this section shall have a laboratory sound transmission class rating of at least STC-39.

b. Masonry walls having a surface wight of at least 25 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered or painted with heavy "bridging" paint.

c. Stud walls shall be at least 4" in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco, or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least 1/2" thick, installed on the studs.

(2) Continuous composition board, plywood or gypsum board sheathing at least 1/2" thick shall cover the exterior side of the wall studs behind wood, or metal siding. Asphaltic or wood shake shingles are acceptable in lieu of siding.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper. The top and bottom edges of the sheathing shall be sealed.

(4) Insulation material at least 2" thick shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

1-4 Windows

a. Windows other than as described in this section shall have a laboratory sound transmission class rating of at least STC-28.

b. Glass shall be at least 3/16" thick.

c. All operable windows shall be weather stripped and airtight when closed so as to conform to an air infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E-283-65-T.

d. Glass of fixed-sash windows shall be sealed in an airtight manner with a non-hardening sealant, or a soft elastomer gasket or glazing tape.

e. The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal Specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

f. The total area of glass in both windows and doors in sleeping spaces shall not exceed 20% of the floor area.

1-5 Doors

a. Doors, other than as described in this section shall have a laboratory sound transmission class rating of at least STC-28.

b. All exterior side-hinged doors shall be solid-core wood or insulated hollow metal at least 1-3/4" thick and shall be fully weather stripped.

c. Exterior sliding doors shall be weather stripped with an efficient airtight gasket system with performance as specified in Section 1-4C. The glass in the sliding doors shall be at least 3/16" thick.

d. Glass in doors shall be sealed in an airtight non-hardening sealant, or in a soft elastomer gasket or glazing tape.

e. The perimeter of door frames shall be sealed airtight to the exterior wall construction as described in Section 1-4E.

1-6 Roofs

a. Combined roof and ceiling construction other than described in this section and Section 1-7 shall have a laboratory sound transmission class rating of at least STC-39.

b. With an attic or rafter space at least 6" deep, and with a ceiling below, the roof shall consist of closely butted 1/2" composition board, plywood or gypsum board sheathing topped by roofing as required.

c. If the underside of the roof is exposed, or if the attic or rafter spacing is less than 6", the roof construction shall have a surface weight of at least 25 pounds per square foot. Rafters, joists or other framing may not be included in the surface weight calculation.

d. Window or dome skylights shall have a laboratory sound transmission class rating of at least STC-28.

1-7 Ceilings

a. Gypsum board or plaster ceilings at least 1/2" thick shall be provided where required by Paragraph 1-6B above. Ceilings shall be substantially airtight, with a minimum number of penetrations.

b. Glass fiber or mineral wood insulation at least 2" thick shall be provided above the ceiling between joists.

1-8 Floors

a. Openings to any crawl spaces below the floor of the lowest occupied rooms shall not exceed 2% of the floor area of the occupied rooms.

1-9 Ventilation

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors, or other openings to the exterior.

b. Gravity vent openings in attic shall not exceed code minimum in number and size.

c. If a fan is used for forced ventilation, the attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 220 gauge steel, which shall be lines with 1" thick coated glass fiber, and shall be at least 5 ft. long with one 90° bend.

d. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust ducts, shall contain at least a 5 ft. length of internal sound absorbing duct lining. Each duct shall be provided with a bend in the duct such that there is no direct line of sight through the duct from the venting cross section to the room-opening cross section.

e. Duct lining shall be coated glass fiber duct liner at least 1" thick.

f. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a baffle plate across the exterior termination which allows proper ventilation. The dimensions of the baffle plate should extend at least one diameter beyond the line of sight into the vent duct. The baffle plate shall be of the same material and thickness as the vent duct material.

g. Fireplaces shall be provided with well-fitted dampers.

PRELIMINARY SITE ASSESSMENTS

APPENDIX D

LeROY CRANDALL AND ASSOCIATES Geotechnical Consultants • One of the Law Companies

10037 Barnes Canyon Road, Suite A, San Diego, California 92121, Phone (619) 458-9379, Fax (619) 458-0541

Offices: Glendale • Anaheim • Marina del Rey • Riverside • San Diego

March 21, 1991

Ms. Bebe Wright
Kaiser Permanante
Kaiser Foundation Health Plan, Inc.
Southern California Region
Walnut Center
393 East Walnut
Pasadena, California 91188

(LCA S91020.EFO)

Dear Ms. Wright:

Limited Phase I Environmental Site Assessment
and Geologic Hazards Review
Eastlake Village Center Parcel
Eastlake Parkway and Telegraph Canyon Road
Chula Vista, California

This letter presents the results of our limited Phase I environmental and geologic hazards review of the subject property. The site is located adjacent to a property for which our firm previously performed a Phase I environmental site assessment (ESA) and a geologic hazards review in 1990 (LCA S90095.AEFO). The results of those studies were presented in a report dated December 13, 1990. The purpose of this ESA was to evaluate whether the subject site may have been significantly environmentally impaired as a result of present and past, on- or off-site activities that may not have been identified during the previous assessment. The purpose of the geologic hazards review was to determine whether there were geologic conditions which might make portions of the subject site unsuitable for the proposed development.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental and geological consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional opinions included in this letter.

SCOPE

The scope of this limited environmental assessment and geologic review included:

- Review of our previous report to evaluate environmental and geologic conditions at the adjacet site.

- Visual reconnaissance of the site and surrounding area to observe existing conditions and operations at the site and for indications of visible sources of contamination.

- Review of available aerial photographs to evaluate previous site usage and conditions.

- Review of lists published by regulatory agencies for the purpose of identifying any of the following that were not listed during the original ESA:

  - Sites within 2,000 feet of the site that have known or suspected contamination.

  - EPA Superfund sites, National Priority sites, and California State Bond Expenditure Plan sites within 1 mile of the site.

  - Hazardous materials known to have been stored or used on the site.

- Observation of field conditions, and review of aerial photographs to determine whether geologic conditions differ from those encountered during the investigation of the adjacent site.

- Preparation of a report to document our findings and present our conclusions regarding the possibility of significant environmental impairment or geologic hazards at the site.

SITE RECONNAISSANCE

The site is located northwest of the intersection of Eastlake Parkway and Telegraph Canyon Road. The site has been graded for future development.

Our visual reconnaissance of the site took place on March 12, 1991. There are no structures on the site and vegetation is sparse to non-existent. No sources of environmental concern were observed on or adjacent to the site.

AERIAL PHOTOGRAPHY REVIEW

We reviewed a series of aerial photographs for evidence of hazardous materials or other conditions that might adversely affect the environmental quality of the site or geologic hazards that might affect the development of the site. We used stereo photographs from the San Diego County Operations Center for this review.

We reviewed the following sets of stereoscopic aerial photographs for this site:

> 11/25/73, color; San Diego County, flight SDPD, line 17, #9 and #10, Scale 1"=2,000'.
>
> 11/28/78, color; San Diego County, flight SDCO, line 31D, #3 and #4, Scale 1"=1,000'.

The site is undeveloped in all of the photographs reviewed. Agricultural activities are apparent southeast of the site; otherwise, the adjacent surrounding area appears to be undeveloped.

We observed no evidence of ponds, wells, landfills, drums, above-ground storage tanks, or other visible sources of environmental concern in any of the photographs reviewed. Nor did we observe any topographic features that would suggest the presence of faulting or existing slope instability.

AGENCY LISTS SEARCH

We reviewed the following regulatory agency lists.

San Diego Department of Health Services (DHS), Hazardous Materials Management Division (HMMD), HE17 Database, dated January 8, 1991. The HE17 includes:

- Unauthorized Releases
- Underground Storage Tanks
- Hazardous Materials Inventories
- Hazardous Waste Generators
- Hazardous Materials Violations

HE17 contains no listings of unauthorized releases within 2,000 feet of the site or on-site violations, waste generators, underground tanks, or hazardous materials inventories.

San Diego Regional Water Control Board (RWQCB) Leaking Underground Fuel Tanks List (LUFT) dated February 25, 1991. The LUFT List contains no incidents within 2,000 feet of the site.

Resource Conservation and Recovery Act Notifiers List (RCRA) dated January 22, 1991. The RCRA List contains no on-site hazardous materials generators at the site.

Solid Waste Information System (SWIS), Active and Inactive Sanitary Landfills and Disposal Facilities dated October 30, 1990. The SWIS shows no landfill facilities within 2,000 feet of the site.

The information from the other lists reviewed in our December 13, 1990 report remains unchanged. No on-site or nearby incidents were discovered during either this or the previous review.

GEOLOGIC HAZARDS REVIEW

We reviewed our previous report and observed the site during our site reconnaissance. Geologic conditions and associated hazards at this site do not appear to be substantially different from those encountered during the investigation of the adjacent property. There are no mapped faults within the site boundaries. The nearest faults were described in our December 13, 1990 report.

CONCLUSIONS

During our review of the information gathered during our previous assessment of the adjacent property and our current site reconnaissance, agency lists search, and aerial photograph review for the subject site, we found no indications that the subject property has suffered significant environmental impairment as a result of present or past, on- or off-site activities. In addition, we found no indications of existing geologic conditions on the site that would restrict development of the site.

-o0o-

If you have any questions regarding this report, or if we can be of further service to you, please do not hesitate to contact us.

Sincerely,

LeROY CRANDALL AND ASSOCIATES

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Manager, Environmental Services

James M. Kozakowski, CEG 1522
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STATE OF CALIFORNIA

KAISER PERMANENTE MEDICAL AND HAZARDOUS WASTE POLICIES

APPENDIX E

DISPOSAL, STORAGE AND TRANSPORTATION OF INFECTIOUS AND RADIOACTIVE WASTES

All hospital and medical facility practices in connection with the disposal, storage and transportation of infectious and radioactive wastes are governed by statute and regulations promulgated thereunder. Kaiser Permanente rigorously complies with these statutes and regulations as does and every other hospital and medical facility in the State of California.

I. INFECTIOUS WASTES.

A. Prior to January 1, 1991

(i) Statutory Authorization.

1. Health & Safety Code Section 22150(a).
This section authorizes the Department of Health and Safety to adopt, and revise, when appropriate, standards of regulations for the management of hazardous wastes to protect the public health and environment.

2. Health & Safety Code Section 25157.3.
This section authorizes the State to adopt and develop emergency regulations for the management of infectious wastes as hazardous wastes. Such regulations were deemed to be necessary for the immediate preservation of public health, safety and welfare.

(ii) Statutory Definition.

1. Health & Safety Code Section 25117.5.
This section sets out the general categories of infectious wastes.

(iii) Regulations.

1. California Code of Regulations, Title 22, Section 66835. This regulation sets forth which producers of infectious wastes are subject to the Code's provisions regarding the disposal, storage and transportation of infectious wastes.

2. California Code of Regulations, Title 22, Section 66840. This section prescribes the procedures for the storage and containment of infectious wastes on-site.

3. California Code of Regulations, Title 22, Section 66845. This section concerns the treatment and disposal of infectious wastes on- or off-site.

4. California Code of Regulations, Title 22, Section 66850. This section sets forth the requirements for the transfer of infectious wastes to off-site treatment and disposal facilities.

5. California Code of Regulations, Title 22, Section 66855. This section concerns requirements for infectious wastes treatment and storage, on and off-site and requirements to operate a disposal facility.

6. California Code of Regulations, Title 22, Section 66860. This section prescribes requirements for maintaining a manifest and record for infectious wastes disposal and transport.

B. After January 1, 1991

(i) Statutory Authorization.

1. Health & Safety Code Sections 25015 et. seq. These sections contain the provisions of the Medical Waste Management Act, a statutory scheme enacted in September 1990, to take effect on January 1, 1991, to provide for the effective regulation of the disposal, storage and transportation of medical wastes.

(ii) Statutory Definition.

1. Health & Safety Code Section 25020.5. This section defines "Biohazardous Wastes." These wastes generally include those defined as infectious wastes by former Health & Safety Code Section 25117.5.

2. Health & Safety Code Sections 25023.2 and 25023.8. These sections define "Medical Wastes." Medical wastes include biohazardous wastes, sharps wastes, and waste generated or produced as a result of the diagnosis, treatment or immunization of human beings or animals. Medical wastes do not include non-biohazardous waste, articles containing non-fluid blood, and other solid waste commonly found in medical waste generator facilities. Medical wastes also do not include hazardous wastes, radioactive wastes or household wastes.

3. Health & Safety Code Section 25022.5. This section defines a "large quantity generator." A large quantity generator is a generator of medical wastes producing 200 pounds, or more, of medical wastes per month.

(iii) Regulations.

1. Health & Safety Code Sections 25050 and 25051. These sections set forth the registration and permit requirements for large quantity producers.

2. Health & Safety Code Sections 25070 - 25079.3. These sections set forth the requirements for obtaining a medical waste treatment facility permit.

3. Health & Safety Code Sections 25080 and 25081. These sections set forth the requirements for the containment and storage of medical and biohazardous wastes. These requirements are essentially the same as those set forth in California Code of Regulations, Title 22, Section 66840.

4. Health & Safety Code Sections 25082. This section provides for the containment and storage of sharps. These requirements are essentially the same as those contained in California Code of Regulations, Title 22, Section 66840(g).

5. Health & Safety Code Sections 25086. This section concerns maintaining medical and biohazardous waste storage areas. The requirements therein are essentially the same as found in California Code of Regulations, Title 22, Section 66840(e).

4. Health & Safety Code Sections 25090. This section provides for the treatment of medical and biohazardous wastes, in essentially the same manner as California Code of Regulations, Title 22, Section 66845, except that such wastes can no longer be disposed of at Class I or Class II landfills.

Kaiser Permanente has promulgated a policy manual and in-house procedures which comply with the requirements of the Health and Safety Code and the California Code of Regulations for disposing of, storing and transporting infectious wastes. The manual and the procedures thereunder strictly comply with these statutory schemes.

II. RADIOACTIVE WASTES.

A. Statutory Authorization.

1. Health & Safety Code Section 25811.5.
   This section authorizes the Department of Health & Safety to develop an overall plan for the management, treatment, and disposal of low-level radioactive wastes generated in California.

B. Statutory Definition.

1. Health & Safety Code Section 25600.5(g). -
   Radioactive wastes are broadly defined in this section.

C. Regulations.

1. Health & Safety Code Section 26501.
   This section restricts the disposal of radioactive wastes within the state. Disposal of all such wastes must comply with the provisions of the Health & Safety Code and regulations promulgated thereunder.

2. California Code of Regulations, Title 17, Section 30285.
   This section contains the general requirements regarding disposal of radioactive wastes, and generally restricts the disposal of radioactive wastes except by transfer to a person holding a specific license to receive radioactive wastes.

3. California Code of Regulations, Title 17, Section 30287.
   This section provides procedures for disposal of radioactive wastes by release into the sanitary sewage system.

4. California Code of Regulations, Title 17, Section 30289.
   This section prohibits the treatment or disposal of radioactive wastes by incineration.

Kaiser Permanente has also formulated a policy manual and internal procedures thereunder regarding the disposal, storage and treatment of radioactive wastes. These policies and procedures strictly comply with the requirements of the Health & Safety Code and the California Code of Regulations.

DESCRIPTION	MANUFACTURER	METHOD OF DISPOSAL	METHOD OF CLEANUP
Ammonia Aqueous	Spectrum	Place into container	Dilute to Neutrz
Adhesive Tape Remover	Nice-Pak	Dispose of Outdoors	Mop or Wipe
All Pro Bleach	All Pure Chm	Flush into Sewer	Dilute w/water
Aerocell	Health & Med.	Dispose by FDA Law	
Acetone-Alcohol Swabs	Acme	Place into container	Absorb Material
Ant and Roach Killer	MBL	Flush w/ water	Absorb Material
Alphadine	Huntington	Flush down drain	Sanitary Landfil
Carmustine	Bristol-Myers	Treat as Hazardous	Absorb Material
Cheanoxane	Bristol-Myers	Treat as Hazardous	Absorb Material
Batadine Solution	Purdue	Neutrlz. w/sodium thiosulfate	Clean w/ Dilute Ammonia & Water
Betadine Whirlpool	Purdue	Neutrilz. w/sodium thiosulfate	Clean w/ Dilute Ammonia & Water
Barium Sulfate	E-Z-Em	Dispose by FDA Law	Clean Up w/water
Baseboard Cleaner & Wax Stripper	MBL	Dispose by FDA Law	Absorb Material
Baza Cream	Sween	Flush into Sewer	Mop or Wipe
Bedside-Care	Sween	Flush into Sewer	Mop or Wipe
Bero-CAT	Malinchradt	Flush into Sewer	Absorb in Sand
Barosperse	Malinchradt	Send to approved Waste Disposal Facil.	Wet Sweeping
Bicon	Malinchradt	Send to approved Waste Disposal Facil.	Wet Sweeping
Bone Cement Liquid	Zimmer	Incinerate	Absorb Material
Buffer Solution	Miles	Dispose by FDA Law	Absorb Material
Borax	Spectrum	Use Dry Container	Sweep Up
Benzenediol	Spectrum	Dispose by FDA Law	Absorb Material
Benzendol	Spectrum	Treat as Hazardous	Neutrilz. w/ Slaked Lime, Sodium Bicarbo
Barrier & Adhesive Remover	Bard	Normal Procedure	Normal Procedure
BICNU	Bristol-Myers	Dispose by FDA Law	Absorb w/Sand
Blenoxane	Bristol-Myers	Incineration	Absorb Material
Carbon Dioxide(Gaseous)	Puritan	Slowly vent to atmosphere in an open area	Provide Adequate Ventilation
Caustic Soda Solution	Spectrum	Use Dry Container	Sand or Absorb Material
Colloidal Murcury	Spectrum	Place into Containers	Absorb Material
Chlorohydric Acid	Spectrum	Dispose by FDA Law	Absorb Material
Cidex	Spectrum	Place in Container	Water/spray
Calsol	Spectrum	Dry container	Sweep-up
Camphor	Spectrum	Normal Procedure	Normal Procedure
Cycle Tec Rinse	MDT	Dispose in Container	Mop-up w/water
Cytarabin	Up-John	Dispose by FDA Law	Vacuum up

Critic-Aid	Sween	Flush into sewer	Flush into sewer
Chewing Gum Remover	MBL	Puncture before Disposal	Dispose of Can
Carmaseal	Carmaseal	Landfill	Absorsant
Cida-Stat	Huntington	FDA Law	Contain Spill
Control	Dubois	Container	Flush To Drain
Clear Ammonia (Waxie)	Kleen-Line	FDA Law	Flush w/water
Cold/Hot Pack, II	3M General	Landfilled	Flushed
Calcium Chloride(Mini)	Dow	Dispose by FDA Law	Flush w/water
Diazinon 2D	Exterminetics	Dispose by FDA Law	Sweep Up
Dri-It	Dubois	Dispose by Container	Rinse w/Water
Dufome	Dubois	Dispose by Container	Rinse w/Water
De-Solv-It	Orange-Sol	Dispose by Container	Absorb w/Dry Sand
Dry Silver Paper (3M)	3M Center	Dispose by FDA Law	Use FDA Law
Dilu-Pack	Coulter	Dispose by FDA Law	Flush w/ Water
Diiron Trisulfate	Spectrum	Use Dry Container	Absorb Material
E-Z- Cat	E-Z-EM	Clean up w/water	Excessive Water
Esopho-CAT/EZ-Paste	E-Z-EM	Clean up w/water	Excessive Water
E-Z Gas II	E-Z-EM	Dispose Dry	Broom and Dust Pan
Ethylene Oxide & Fluorocarbon-12	Liqd. Carbonic	Landfill	Dilute w/Large amount of water
E-Z Gel	E-Z-EM	Normal Disposal	Normal Disposal
Epi-C	Malinckrodt	Dispose by Container	Absorb in Sand
Easy Touch Restorer	Huntington	Dispose by FDA Law	Contain Spill
Evans Tacky Finger	Evans	Normal Disposal	Normal Disposal
Eclipse	Dubois	Dispose by Container	Triple Rinse
Easy Glow Daily Floor Maintainer	Huntington	Dispose by FDA Law	Contain Spill
Easy 20 Floor Finish	Huntington	Dispose by FDA Law	Contain Spill
Ethinyl Estradiol	Upjohn	Incinerate with Fuel	Sweep up & place in Drum
Ethrane	Anaquest	Dispose as Hazardous Waste	Call Fire Dept. For Large Spill
Ethanol	Spectrum	Dispose by FDA Law	Absorb Material
Freon 22	Du Pont	Dispose by FDA Law	Use Personal Protective Equipment
Formalin	Breen	Landfill	Dilute w/ Water
Freon 12 Fluorocarbon	DU Pont	Dispose by FDA Law	Use SCBA for Large Spills
Floor Corps	Walton-March	Dispose by FDA Law	Sweep w/ Water
Ficam	Nor-AM	Dispose by FDA Law	Absorb in Sand
Formula NP	Ball	Dispose by FDA Law	Absorb Material
Fordustin	Sween	Dispose in Waste Receptacle	Sweep up
Formalin	Medical Chem	Flush Down Drain	Absorb w/Sodium

			Bisulfite
ormalin	Spectrum	Dispose by FDA Law	Absorb Material
Ferrocene	Spectrum	Waste Disposal	Sweep Up
erric Alum	Spectrum	Dry Container	Sweep Up
erric Chloride	Spectrum	Dispose by FDA Law	Neutralize Spill
Ferric Trichloride	Spectrum	Hazardous Waste Procd	Absorb Material
Glutarex	3M Center	Use Metal Container	Absorb Material
entle Rain Shampoo	Sween	Normal Procedure	Normal Procedure
Grease Beast	Dubois	Use Container	Triple rinse w/ Water
elled Graffiti Remover	MBL	Flush w/Water	Absorb Material
Gastrocult Devel Sol.	Smith/Kline	Conventional Dispos	Dilute w/water
Gold Label Mist	Airwick	Flush w/Water	Absorb Material
Hospital Disinfectant	Waxie	Dispose by FDA Law	Absorb Material
Hytran 41	Wright	Dispose by FDA Law	Sweep Up
Hytran 132C-X	Drew	Dispose by FDA Law	Absorb Material
Boiler Water Treatment			
Halocarbon 12	Liq. Carbonic	Dispose by FDA Law	Protective Equip
Heavy Duty Degreaser	General Chem.	Dispose by FDA Law	Absorb Material
Hawk No-Rinse Stripper	Huntington	Flush down drain	Mop Up w/water
H -Tor	Huntington	Sanitory Landfill	Mop up w/water
H -Tor Plus	Huntington	Dispose by FDA Law	Contain spill
Hibiclens	ICI Americas	Discard Product	Absorb Material
H bs	Lab Safety	Licensed Landfill	Sweep up
H ma-Tek Stain Pak	Miles	Dispose by FDA Law	Absorb Material
Halothane	Halocarbon	Allow to Evaporate	Ventilation
H droxylated Silicon	Spectrum	Use Dry Container	Sweep up
H drated Lime	Spectrum	Use Dry Container	Sweep up
Hyrogen Peroxide 3%	Swan	Dispose by FDA Law	Dilute w/water
Isopropyl Alcohol	Nice-Pak	Discharged/Sewerage	Flushed w/water
I propyl Alcohol 70%	Whiteworth	Dispose by FDA Law	Absorb Material
Iodine	Spectrum	Chemical Landfill	Landfill
Iodoform	Spectrum	Dispose by FDA Law	Sweep/Wash
I agel	Sween	Incinerate Safely	Sewer Water
I tensive Cleaner	HMK	Confine the Spill	Mop up
Iron Dichloride	Spectrum	Dispose by FDA Law	Absorb Material
I on II	Spectrum	Normal Procedures	Normal Procedure
I on III	Spectrum	Dispose by FDA Law	Hazardous Proced
Iron Oxide	Spectrum	Dry Containers	Sweep up
Isoton III Diluent	Coulter Dia.	Dispose by FDA Law	Mop up
I opropanol	Spectrum	Dispose by FDA Law	Absorb Material
Klenzyme	Calgon	Dispose by FDA Law	Absorb Material
Kleen Brite	Waxie	Dispose by FDA Law	Dike w/Innert Material
K eenaseptic	Air-Shields	Aerosol Cans	Flush w/Water
Kleen-A-Septic	AMREP	Dispose by FDA Law	
K dak Ektaprint Toner	Eastman Kodak	Use Fiber Carton	Sweep onto paper
N utrawash	MDT	Dispose by FDA Law	Mop Up w/water
I inse Shampoo	N/R Lab.	Normal Procedures	Normal Procedure

Permanent Threadlocker	Loctite	Incinerate	Soak w/absorbent
Polibar, E-Z Paque	E-Z-EM	Normal Disposable	Cleanup/w/water
Polibar Liq.	E-Z-EM	Normal Disposable	Cleanup/w/water
Peri-Wash	Sween	Flush in Sewer	Flush w/water
Peri-Wash II	Sween	Flush in Sewer	Flush w/water
Peri-Care	Sween	Landfill	Absorb w/sand
Platinol	Bristol-Myers	Incineration	Absorb w/gauze
Phor (1000)	Ballard	Sanitary Landfill	Dike/Recover with liquid
Preserve	Surgikos	Flush w/Plenty Water	Wipe up
Pink Handsoap	General Chem.	Dispose by FDA Law	Flush w/ water
Porcelain Tile Cleaner	General Chem.	Dispose by FDA Law	Scoop up
Polish Preserver	HMK	Normal Procedure	Normal Procedure
Photoreceptors	Xerox	Chem. Waste Landfill	
Potassium Hydrate	Spectrum	Dispose by Container	Absorb w/Sand
Peroxide	Spectrum	Dispose by FDA Law	Inert/Damp Matrl
Rug Shampoo	General Chem.	Dispose by FDA Law	Flush w/water
Rinse Solution	Miles	Dispose by FDA Law	Absorb Material
Royal Developer	Konica	Normal Procedure	Sweep Up
Royal Toner	Konica	Normal Procedure	Sweep Up
Skin-Bond(Flammable)	Smith/Nephew	Dispose in Container	Mop or wipe up
Sulfuric Acid	Spectrum	Dry Container	Absorb Material
Stain Solution	Miles	Dispose by FDA Law	Absorb Material
[illegible]ore Sealer	HMK	Dispose in Container	Flush w/water
Skin-Bond Cement (Non-Flammable)	Smith/Nephew	Dispose by Container	Mop or Wipe
Sween Cream	Sween	Waste Receptacle	Wipe up w/water
Sheen-N-Shield	Dubois	Dispose by Container	Wipe up
Sparkle Glass Cleaner	General Chem.	Drum Container	Flush w/Water
Solidaire- Gold Lable	Airwick	Local/Dispose Methods	Absorb Material
Scrub-Stat IV	Huntington	Landfill	Flush w/Water
Streptozocin	Upjohn	Incinerate	Flush w/Water
Steri-Strip	3M General	Dispose by FDA Law	Absorb Material
Schedule 7 Chamber Clnr	MDT	Dispose by FDA Law	Flush w/Water
Talcum	Spectrum	Dry Container	High-Efficiency Filter Vacuum
Triiodomethane	Spectrum	Normal Procedure	Normal Procedure
Tetrachloromethane	Spectrum	Dispose by Container	Absorb Material
Tack Adhesive (ECO)	Mon-Eco	Dispose by FDA Law	Absorb Material
Uracil Mustard	Upjohn	Dispose by Container	Vacuum up
VePesid Injection	Bristol-Myers	Incineration	Absorb Material
Vacutainer(Blood Tube)	Becton/Dickson	Dispose by FDA Law	Flush w/water
Vacutaner	Becton/Dickson	Dispose by FDA Law	Flush w/water
Vacutainer(Collection)	Becton/Dickson	Dispose by FDA Law	Flush w/water
WRICO D 4503	Drew	Dispose by FDA Law	Mop up
WRICO E 1114	Wright Chem.	Incinerate	Absorb Material
Whirl-Sol	Sween	Landfill	Absorb Material
Wex-Cide	Wexford	Conventional/Sewage	Wet Vacuum
[illegible]ck Instrument Cleaner	E. Weck	Dispose by FDA Law	Sweep up

WD 40 (Organic Mixture)	WD-40 Co.	Incinerate	Absorb w/sand
WD-40 (Spray Can)	WD-40 Co.	Bury in Landfill Bags	Place in Plastic (Bags)
Wash	Huntington	Dispose by FDA Law	Contain Spill
Virvicide-01 2%	Medical Chem.	Normal Procedure	Flush w/water
X-Ray Wipes	E-Z-EM	Sanitary Sewer	Flush w/water
X-Ray Toner/Developer	Xerox	Dispose by FDA Law	Sweep/Vacuum up
XMS (Xerox Paper)	Xerox	Dispose by FDA Law	N/A
Zap Insect Killer	Waxie	Place in Container	Absorb Material

DESCRIPT.....	MANUFACT.....	DISPOSAL.....	CLEANUP.....
Magnanese (II) Chlor	Spectrum	FDA Standard	Absorbant mate
M-113;M-118	Spectrum	FDA Standards	Clean, Dry Co-
M cury II Bromide	Spectrum	FDA Standards	Absorbant Mat
Manganese Carbonate,	Spectrum	FDA Regulations	Absorbant Mate
Mercury (II) Acetate	Spectrum	FDA Standards	Absorbant Mate
Mercury Bichloride	Spectrum	FDA Standard	Absorbant Mate
Mercury (II) Oxide	Spectrum	FDA Standards	Absorbant Mate
Lyse S III Lytic Rea	Coulter Diagnostics	FDA Standard	Absorbant Mate
Lapis Infernalis	Spectrum	FDA Regulations	Protective Cov
Liquid Paper	Gillette Medical Eva	FDA Regulations	Towels, Tissue
Liquid Paper(Copies)	Gillette Medical	FDA Regulations	Towels, Tissue
Liquid Paper Thinner	Gillette Medical	FDA Regulations	Towels, Tissue
Liquid Paper Correct	Gillette	FDA Regulations	Towels, Tissue
Liquid Paper	Wirth International	FDA Standards	Towels, Tissue
Lubricant, Waxie	Waxie	Place into container	Absorbent/swee
Detergent(Powder)	Chem-Tab Chemical	Sweep-up & Dispose i	Sweep-up
Lime Away	General Chemical Cor	Plastic Bottles(Rins	Absorbant Mate
Limelight, Waxie	Waxie	FDA Regulations	Absorbant Mate
Liquid Acidic Descal	DuBoise Chemical	Container	Bicarbonate So
LpH Germicidal Deter	Calgon Vestal Labs	Sewered	Flowing Water
Micro-View Optical K	Microscope Repair Se	Product container	Absorbant mate
Mehylcellulos soluti	Methylcellulos Solut	Cold Water	Contain
Matar Germicidal Det	Huntington Laborator	FDA Regulations	Contain Speill
Muriatic Acid	General Chemical Cor	FDA Regulations	Absorbant Mate
Misty Ant & Roach Sp	Amrep, Inc.	Landfill	Absorbant Mate
Misty Textile Grade	Amrep	Vent Cans	Aborsant Mater
Misty Stainless Stee	Amrep Inc.	Puncture Cans	Absorbant Mat
M ty Furniture Poli	Amrep	Landfill/Incerate	Absorbant Mat
M ty Wax-Off	Amrep, Inc	Landfill	Absorbant Mate
Magnesium Citrate	Messrs. Dr. Paul Loh	FDA Regulations	Flushed with W
Nitratine	Spectrum	FDA Standards	Move into cont
Nitric Acid	Spectrum	FDA Standards	Absorbant Mate
Nitrous Oxide	Liquid Carbonic	FDA Regulations	
Nail Polish Remover	Nice-Pak Products	FDA Standards	Flush with wat
Oven Cleaner	DuBois Chemical	Container	Container
Or/Scrub	Huntington Laborator	Sewer	Mop up, Flush
Manganese Acetate Te	Spectrum	FDA Standards	Absorbant Mate
Oxygen	Union Carbide	FDA Standards	FDA Standards

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2800
TITLE	CHEMOTHERAPEUTIC AGENT SPILL CLEAN-UP	EFFECTIVE DATE	9-01-88
		REVISION DATE	10-05-90
		PAGE NUMBER	1 OF 3

PURPOSE

To establish procedures for the safe clean-up of spills of chemotherapeutic agents.

REFERENCES

JCAHO; AMH 1989, Pharmaceutical Services

GENERAL INFORMATION

1. All staff handling chemotherapy spills should be thoroughly trained and advised of all associated risks. It is recommended that a second person be present to assist in following the proper steps in the clean-up procedure.

2. Staff members who are pregnant, trying to become pregnant or breast feeding, may request to be excused from spill clean-up.

3. In case of direct skin contact with a chemotherapeutic agent:

   A. Wash the area thoroughly with copious amounts of soap and water.

   B. Obtain a referral slip to see a physician.

SUPPLIES NEEDED

Spill kit

POLICY

Environmental Services will clean-up large spills (>5ml) of chemotherapeutic agents outside of the Laminar Flow Hoods.

PROCEDURE

1. In the event of a spill, the area will be posted with appropriate signs to alert other personnel.

2. Environmental Services will be notified.

3. An Environmental Services Attendant will pick up a "Spill Kit" from the supply room. The kit will contain the following disposable items:

   a. Cover gown

   b. Face mask

   c. Goggles

   d. Shoe covers

   e. Gloves

   f. Chemo-sorb absorbent powder

   g. Absorbent towels

   h. Plastic bag

   i. Scoop

   j. Alcohol toweletts

   k. "Warning", free-standing signs

4. Put on gown, face mask, eyewear and both pairs of gloves before initiating clean-up. Make sure elastic cuffs of gowns fit over gloves.

5. Place the free-standing signs adjacent to the area in such a way to prevent people from accidently walking through spill.

6. Empty Chemo-sorb absorbent powder into Chemo-tainer.

7. Six absorbent towels, 13 1/2 X 18", are provided to absorb liquid spills. One at a time, unfold each towel and allow saturated, carefully remove the towel from the spill and place inside a Winfield leak-proof Chemo-tainer. Repeat this procedure, one towel at a time, until spill is completely removed.

8. After liquid is removed, use disposable scoop to pick up shattered glass. Deposit glass into rigid Chemo-tainer.

9. Any other sharp or breakable items from the spill should be placed in the Chemo-tainer.

10. When all of the debris and liquid have been picked up, wipe spill area off with alcohol towelette. Place used towelette in Chemo-tainer.

11. Next, remove protective eyewear, face mask, gown and outer pair of gloves (only). Place disposable clothing in printed ziplock bag, seal ziplock and place in large bag to complete double bag technique.

12. Seal filled Chemo-tainer and place in large bag.

13. Remove remaining gloves and place in large bag.

14. Tie off large bag by carefully gathering top portion of bag. Hold top portion of bag until internal air in bag resists further pulling. The top portion of the bag can now be tied off by simply using a single loop knot. This procedure minimizes aerosolization from the contents.

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2900
TITLE	TRASH AND LINEN DISPOSAL	EFFECTIVE DATE	1-09-88
		REVISION DATE	2-25-91
		PAGE NUMBER	1 OF 3

PURPOSE

To establish the proper procedure for the disposal of non-infectious trash or linen.

REFERENCE

California Code of Regulations, Title 22, Section 70843 Medical Center Infection Control Policies 2006, 2007 and 2008.

GENERAL INFORMATION

1. Clear plastic liners are used for all non-infectious waste.

2. Whit plastic liners are used for all soiled linen.

3. All plastic liners for trash and soiled linen should be securely tied before being transported.

4. The trash disposal area is located outside on the lower level of the Medical Center.

5. The soiled linen disposal site is located next to the trash compactor.

6. The following items may not be placed in the trash/linen:

   A. Infectious waste.
   B. Chemotherapeutic waste.
   C. Glass trash/sharps containers
   D. Boxes.
   E. *Bulky or large items such as heavily stuffed trash or linen bags, moisture laden linen bags, telephone books, loose papers, etc.

   *Contact your supervisor to have these items removed.

SUPPLIES NEEDED

Plastic liners
Germicidal detergent
sponge or cleaning cloths

EQUIPMENT NEEDED

Mobile cart lined with clear liner

GENERAL INSTRUCTIONS

1. Never handle loose trash. All trash should be contained in plastic liners.

2. Always hold trash bags away from the body to avoid injury from protruding objects.

3. Always wear rubber gloves when handling trash and soiled linen and use other barrier precautions as prescribed by the principles of Universal Precautions.

POLICY

1. Trash and soiled linen will be collected from all areas at least once each working day and more often, as necessary.

2. Trash and soiled linen sill be collected in such a manner as to minimize microbial dissemination into the environment.

3. All trash and soiled linen removed from the Medical Center will be monitored for radioactivity.

PROCEDURE

1. Trash Disposal

   A. Collect trash from individual receptacles.

   B. Tie-off trash bags and put them into the mobile cart for transportation to compactor.

   C. Wash the mobile trash cart and wipe dry.

2. Soiled Linen Handling

   A. Collect soiled linen from linen hampers, replacing the linen bag and damp-wiping the hamper as needed.

   B. Collect linen bags in the mobile cart and transfer it to soiled linen collection area.

   C. When all soiled linen has been collected, clean mobile cart as needed.

   D. Remove rubber gloves and wash hands.

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2901
TITLE	BIOHAZARDOUS WASTE HANDLING	EFFECTIVE DATE	9-01-89
		REVISION DATE	1-28-91
		PAGE NUMBER	1 OF 5

PURPOSE

To establish the manner in which BioHazardous waste is to be handled from the point of origin until disposal-on-site or removal.

REFERENCES

California Code of Regulations, Title 22, Sections 66840, 66845 and 66850.

GENERAL INFORMATION

1. BioHazardous waste includes, but is not limited to:

   A. Laboratory Waste

   B. Human and animal specimen cultures from medical and pathological laboratories.

   C. Cultures and stocks of infectious agents from research and industrial laboratories.

   D. Waste from the production of bacteria, viruses or the use of spores.

   E. Discarded live and attenuated vaccines.

   F. Waste containing any microbiologic specimens sent to laboratories for analysis.

   H. Human surgery specimens or tissues removed at surgery or autopsy which are "suspected" by the attending physician or surgeon or dentist to be contaminated with infectious agents known to be contagious to humans.

   I. Animal parts, tissues, fluids or carcasses "suspected" to be contaminated with infectious agents.

   J. Waste which contains recognizable fluid blood or fluid blood products.

K. Equipment or containers containing blood that is fluid or blood from animals known to be infected with diseases which are "highly" communicable to humans.

L. Waste containing discarded materials contaminated with excretion, exudate, or secretions from human which are required to be isolated by the infection control staff to protect others from highly communicable diseased or isolated animals known to be infected with diseased which are highly communicable to humans.

2. Each department is responsible for segregating infectious waste at the point of origin and placing it in container conspicuously labeled with the international biohazard symbol and the work "Biohazard", on the lid and on the sides so as to be readily visible from any lateral direction when the container is upright.

3. Biohazardous waste, except for sharps capable of puncturing or cutting, shall be contained in red disposable plastic bags which are impervious to moisture and have a strength sufficient to preclude ripping, tearing or bursting under normal conditions of usage and of handling the waste-filled bags.
Bags shall be constructed of material of sufficient single thickness strength to pass the 165-gram dropped dart impact resistance test as prescribed by Standard D 1709-75 of the American Society for Testing and Materials and certified by the bag manufacturer. The bags shall be securely tied so as to prevent leakage or expulsion of solid or liquid during storage, handling or transport.

4. Infectious sharps shall be contained for disposal in leak-proof, rigid, puncture-resistant containers such as cartons or metal cans which are taped closed or tightly lidded to preclude loss of the contents. Wall mounted sharps containers will be monitored daily by Environmental Services and emptied when they are three-fourths full.

5. All bags used for containment and disposal of infectious waste shall be red in color and conspicuously labeled with the words "Biohazardous Waste". Rigid containers or infectious sharps waste shall be labeled in the same way or placed and secured in the disposable bags used for other infectious waste.

6. Registered waste hauler: Browning Ferris Industries (BFI)
   2699 White Road, Suite 100
   Irvine, CA 92714
   (714) 474-0220

   NOTE: BFI is responsible for obtaining services of an alternate registered waste hauler in the event that they are not able to provide service for any reason.

7. The interim storage area for biohazardous waste is the designated area outside the hospital.

8. Biohazardous waste may not be stored on the hospital premises for more than 96 hours without specific written approval of the State Department of Health (Title 22, Section 66840).

POLICY

1. Biohazardous waste will be picked up at least twice each day.

2. Biohazardous waste will be transported directly from the point of origin to a collection point. It will then be transported in a covered cart to the interim storage area. Unnecessary movement of biohazardous waste through hospital corridors, etc. will not be permitted. Non-infectious waste will not be transported or stored with biohazardous waste.

3. Biohazardous waste will not be stored in the interim storage area for more than 96 hours.

4. Re-usable containers used for the transport of biohazardous waste will not be used for the transfer of non-infectious waste unless they are first washed by an agitation method designed to remove visible soil and then decontaminated either by:

   A. Exposure to hot water of at least 82 C (180"F) for a minimum of 15 seconds, or;

   B. Exposure to the approved Phenolic solution by rinsing for a minimum of 3 minutes.

5. Re-usable containers used for the transport of infectious waste will be washed and decontaminated per the schedule in policy 2901.

6. Trash compactors will not be used to process or store infectious waste unless it is first rendered non-infectious by sterilization.

7. The Director of Environmental Services or designee will conduct an on-site survey of the operations of the registered waste hauler at least annually to verify that the hospital's biohazardous waste are being transported and disposed of in a manner consistent with all applicable local, state and federal regulations. This survey will include at least:

   A. Review of the facility's operating plan for handling and disposal of biohazardous waste.

   B. Review of the Health Department's written approval of the facility's operating plan.

   C. Review of the hazardous waste manifest used for the off-site transport and disposal of infectious waste.

   D. Observation of handling, treatment and disposable practices.

   Non-compliance with any of the aforementioned regulations will be documented and communicated to the registered waste hauler within 72 hours and to the Hospital Administrator for follow up action as necessary.

8. The Director of Environmental Services or designee will be responsible for securing and maintaining a copy of a current "Hazardous Waste Haulers Permit" from the registered waste hauler(s) at least annually.

9. Gloves will be worn whenever biohazardous waste is being handled. Other barrier precautions will be utilized as dictated by the principles of Universal Precautions.

PROCEDURE

1. Put on gloves before handling infectious waste and use other barrier precautions as prescribed by the principles of Universal Precautions.

2. Pick-up biohazardous waste at designated collection points and load it into an enclosed cart marked with the universal Biohazard symbol or the word "Biohazard".

3. Transport the biohazardous waste to the interim storage.

4. Unlock the door and place infectious waste in the barrels and put on the lids. Relock the door.

NOTE: Placentas from the Labor and Delivery rooms should be placed in the walk-in refrigerator in the morgue. (Chemotherapy waste goes into red barrels for incineration). All other infectious waste should be placed in the white or grey barrels.

DISTRIBUTION

All clinical and Patient Care Areas

MAY 28 1986

BINGHAM

Facility: Bingham, Division of BFI Hospital Waste Systems 2775 East 26th Street Vernon, California 90058 Operator: Bingham 2699 White Road, Suite 100 Irvine, California 92714	**INFECTIOUS WASTE FACILITY PERMIT** EPA ID Number: CAD 980891352 Effective Date: May 13, 1986 Expiration Date: May 13, 1991

Pursuant to Section 25200 of the California Health and Safety Code, this Infectious Waste Facility Permit is hereby issued to Bingham, Division of BFI Hospital Waste Systems. The issuance of this permit is subject to the conditions set forth in Attachment A which consists of 23 pages.

Kenneth W. Kizer, M.D., M.P.H.
Director

5/13/86
Date

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
P.O. BOX 942732
SACRAMENTO, CA 94234-7320

(916) 324-2430

*** HAZARDOUS WASTE HAULER REGISTRATION ***

NAME AND ADDRESS OF REGISTERED HAULER:

BFI Medical Waste Systems of California, Inc.
215 North Marengo Avenue, Suite 185
Pasadena, CA 91101

HAULER REGISTRATION NO: 2113

EXPIRATION DATE: May 31, 1991

THIS IS TO CERTIFY THAT THE FIRM NAMED ABOVE IS DULY REGISTERED TO HAUL HAZARDOUS WASTE IN THE STATE OF CALIFORNIA IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 6.5, DIVISION 20 OF THE HEALTH AND SAFETY CODE AND CHAPTER 30, DIVISION 4, TITLE 22 OF THE CALIFORNIA CODE OF REGULATIONS.

THIS REGISTRATION MUST BE CARRIED IN THE VEHICLE USED TO TRANSPORT HAZARDOUS WASTE.

Lloyd A. Bettin
(AUTHORIZED SIGNATURE)

MAY 24 1990
(Date)

Medical Waste Systems™
BROWNING-FERRIS INDUSTRIES

Vernon District

Recycled paper

July 25, 1990

Mr. Bruce Hyne
Environmental Services
Kaiser Permanente - Anaheim
441 North Lakeview
Anaheim, California 92807

Dear Mr. Hyne:

In response to your request for information regarding our treatment of infectious waste, I have enclosed a copy of our Master Plan. This explains all procedures in our storage, pick-up and transportation, and destruction of all forms of infectious waste.

If you have any other needs or concerns, please don't hesitate to call me.

Sincerely,

BFI MEDICAL WASTE SYSTEMS, INC.

Merry Lee Nickerson

Merry Lee Nickerson
Administrative Assistant

MN:

2775 EAST 26TH STREET • VERNON, CALIFORNIA 90023 • (213) 263-6400

MASTER PLAN FOR OFF-SITE INFECTIOUS WASTE DISPOSAL

The following plan is submitted for the purpose of explaining the infectious waste disposal service provided by BFI Medical Waste Systems, Inc.

Collectively, the procedures and methods used to separate and handle infectious waste are those required by Title 22 of the California Administrative Code, and the California Health and Safety Code.

A. PRODUCERS OF INFECTIOUS WASTE

The State of California has determined that infectious waste poses a health hazard based either upon the potential virulence of the waste item, or the sheer volume of material present. As a result, the regulations apply to any health care facility which is licensed under one of the following categories:

- **General acute care hospital**
- **Acute psychiatric hospital**
- **Skilled nursing facility**
- **Intermediate care facility**
- **Intermediate care facility for developmentally disabled**

It also encompasses any of the following primary care clinics defined and licensed under Chapter 1, Division 2 of the Health and Safety Code:

- **Community clinics**
- **Free clinics**
- **Employee clinics**
- **Surgical clinics**
- **Chronic dialysis clinics**
- **Rehabilitation clinics**

These facilities have been included in the regulations due to the concentration of potentially harmful organisms in the waste products. Like the five categories above, these facilities are regulated regardless of the volume of material generated.

Sheer volume of material poses a threat as well. It is estimated that California generates upwards of 90 million pounds of infectious waste each year. Therefore, **ANY producer of more than 100 kilograms (220 pounds) per month of infectious waste must comply with regulations.** For example, although not specifically listed above, the 100 kilogram clause could include many physician's offices, veterinarians, research centers, laboratories, or urgent care centers.

B. WASTE SEPARATION

Infectious wastes and non-infectious wastes are separated by designated institutional personnel per the definition of infectious waste in Section 25117.5 of the Health and Safety Code, Title 22 of the California Administrative Code, and the requirements of the Local Health Officer.

"Infectious Waste" means:

(1) Laboratory wastes, including cultures of etiologic agents, which pose a substantial threat to health due to their volume and virulence.
(2) Pathological specimens, including human or animal tissues, blood elements, excreta, and secretions which contain etiologic agents, and attendant disposable fomites.
(3) Surgical specimens, including human or animal parts and tissues removed surgically or at autopsy which in the opinion of the attending physician or veterinarian contain etiologic agents, and attendant disposable fomites.
(4) Equipment, instruments, utensils and other disposable materials which are likely to transmit etiologic agents from the rooms of humans, or the enclosures of animals, which have been isolated because of suspected or diagnosed communicable disease.
(5) Human dialysis waste materials including arterial lines and dialyzate membranes.
(6) Carcasses of animals which, in the determination of the facility infection control staff, presents a significant danger of infection because it is contaminated with, or may reasonably be expected to be contaminated with, etiologic agents.

As used in this section, "etiologic agent" means a type of microorganism, helminth, or virus which causes, or significantly contributes to the cause of, increased morbidity or mortality of human beings.

C. INFECTIOUS WASTE DESIGNATION

Infectious waste, except for sharps capable of puncturing or cutting, shall be contained for storage and disposal in double disposable plastic bags which are impervious to moisture and have a strength sufficient to preclude ripping, tearing or bursting under normal conditions of usage and of handling the waste-filled bags. Each bag shall be red in color and constructed of material of sufficient single thickness strength to pass the 165-gram dropped dart impact resistance test as prescribed by Standard D 1709--75 of the American Society for Testing and Materials.

Verification of strength is to be certified by the bag manufacturer. The bags shall be securely tied so as to prevent leakage or expulsion of solid or liquid wastes during storage, handling or transport. Each bag will be labeled with the words "Infectious Waste" or with the international biohazard symbol and the word "Biohazard". Sharps which have been crushed or otherwise processed so as to make them incapable of puncturing or cutting and which have not been rendered non-infectious shall be contained in disposable rigid, puncture-proof containers which are taped closed or tightly lidded to preclude loss of the contents. The rigid containers shall be double-bagged as for all infectious waste unless the containers are labeled with either the words "INFECTIOUS WASTE", or the international biohazard symbol and the word "BIOHAZARD".

D. INFECTIOUS WASTE STORAGE

The infectious waste that was first placed in a red plastic bag and then in a second red plastic bag, is stored in either a movable, leakproof, rodent-proof plastic container that has a tight-fitting lid or a disposable fiberboard container. The container is provided and maintained by BFI Medical Waste Systems. Each container will be identified with the words "Infectious Waste" or "Biohazardous" and will be further identified by a numerical bar coding or name corresponding to the facility from which the waste was generated. All containers receiving infectious waste shall be picked up as often as required and replaced with clean disinfected containers. Infectious waste, as defined previously, will be stored separately from other waste unless combined storage is approved by the local health department.

E. INFECTIOUS WASTE PICK-UP AND TRANSPORTATION

Employees of BFI Medical Waste Systems will pick up and transport the infectious waste of the participating institution to its regional processing facility located at 2775 E. 26th Street, Vernon, California. The vehicle driver and/or handler, upon arriving at the institution, will move the sealed storage containers of infectious waste from the storage area to the closed, secured vehicle. The vehicle driver and/or handler will be:

1. Provided with a disinfectant solution for self-use in disinfection, if infectious waste accidentally comes into contact with the body.

2. Instructed in the proper use of disinfectant application.

3. Required to wear protective clothing including gloves while handling and transporting infectious waste.

The transport vehicle will be:

1. Cleaned and decontaminated as often as required, using an approved disinfectant solution.

2. So constructed as to provide damage resistant access and a driver's compartment that is a sealed, separate enclosure.

3. Completely enclosed.

4. Posted with instructions inside the driver's compartment of the transport vehicle indicating who is to be contacted by telephone in case of accident, spillage, or leakage of infectious waste.

5. Transporting the infectious waste only to a facility which has all appropriate and necessary permits and approvals.

6. Labeled with the Company name or trademark in a color contrasting with the background so as to be readily legible during daylight hours from a distance of fifty feet, along with the international biohazard symbol and the word "BIOHAZARD".

F. INFECTIOUS WASTE DESTRUCTION

Upon arrival, waste will be segregated and rendered non-infectious by either incineration or steam sterilization.

The material will be placed in a 50-cubic yard open-top bin. The bin will be equipped with double gaskets around the doors, a sealed water-tight floor and flange to prevent the escape of any liquid from the bin. During transport, the top of the bin will be completely covered. The bin will be transported by BFI to the landfill they own and/or operate, where the material will be buried immediately with adequate cover material of soil or other solid waste prior to compaction.

In neither case will the waste remain at the facility for more than 96 hours, until a valid and appropriate hazardous waste facility permit is received.

G. CONTAINER SANITATION

All contaminated infectious waste containers are sanitized after each use using one or more of the following methods:

1. Exposure to hot water of at least 82 C (180 degrees F) for a minimum of 15 seconds.

2. Exposure to chemical sanitizer by rinsing with or immersion in one of the following for a minimum of three (3) minutes:

   a. Hypochlorite solution (500 ppm available chlorine).

   b. Phenolic solution (500 ppm active agent).

   c. Iodoform solution (100 ppm available iodine).

   d. Quaternary ammonium solution (400 ppm active agent approved by the Department).

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2902
TITLE	RADIOACTIVE WASTE HANDLING	EFFECTIVE DATE	7-05-90
		REVISION DATE	1-28-91
		PAGE NUMBER	1 OF 2

PURPOSE

To establish the proper procedure for the handling of radioactive waste.

REFERENCES

Regional Radiation Safety Policy 13-01, "Waste Monitoring Procedures: Housekeeping".

GENERAL INFORMATION

1. Radioactive waste originating from the Nuclear Medicine Department or from any patient's room where radioactive material was used, will not be handled by Environmental Services until such time as the Nuclear Medicine Department determines such waste is not radioactive. Nuclear Medicine will then contact Environmental Services to pick the waste up.

2. Radioactive Waste Monitoring Area is located just inside the South-east door to the loading dock adjacent to the morgue.

3. Radioactive Waste Secured Areas are located in the Nuclear Medicine Department on the First Floor of the Medical Center in the "Hot Lab" or "Nuclear Medicine Room."

POLICY

1. All trash and soiled linen, whether or not identified as containing radioactive waste will be monitored for same.

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2902
TITLE	RADIOACTIVE WASTE HANDLING	EFFECTIVE DATE	7-05-90
		REVISION DATE	1-28-91
		PAGE NUMBER	2 OF 2

PROCEDURE

1. Trash/radioactive waste/soiled linen will automatically be monitored as it passes through exit doors.

2. If the monitoring alarm is not heard or seen, dispose of the trash/radioactive waste/soiled linen in the usual manner.

3. If the monitoring alarm goes off, place the cart in a secured area or room and notify your Supervisor. The housekeeping Supervisor will then notify Nuclear Medicine personnel and arrange to meet them at the secured area or room. If Nuclear Medicine personnel are not available, security will be called to unlock a secured area or room.

4. After Nuclear Medicine personnel remove the contaminated material, dispose of the remaining trash or linen in the usual manner.

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2903
TITLE	CHEMOTHERAPY WASTE HANDLING	EFFECTIVE DATE	9-01-89
		REVISION DATE	1-28-91
		PAGE NUMBER	1 OF 2

PURPOSE

To establish procedures for the safe handling of chemotherapy waste from the point of origin to the on-site area.

REFERENCE

JCAHO; AMH 1989, Pharmaceutical Services

GENERAL INFORMATION

1. All Staff handling chemotherapy waste should be thoroughly trained and advised of all associated risks.

2. Staff members who are pregnant, trying to become pregnant or breast feeding, may request to be transferred to comparable duties elsewhere.

3. In case of direct skin contact with chemotherapeutic agent:

   A. Wash the area thoroughly with copious amounts of soap and water.

   B. Obtain a referral slip to see a physician.

4. Chemotherapy Waste will be removed from the facility by the following registered waste hauler:

   Browning Ferris Industries (BFI)
   2699 White Road, Suite 100
   Irvine, CA 92714
   (714) 474-0220

SUPPLIES NEEDED

Chemotherapy waste liners
Surgical latex gloves
Gown

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2903
TITLE	CHEMOTHERAPY WASTE HANDLING	EFFECTIVE DATE	9-01-89
		REVISION DATE	1-28-91
		PAGE NUMBER	2 OF 2

POLICY

1. All chemotherapy waste containers and plastic liners will be labeled as follows:

   "CAUTION - CHEMOTHERAPY WASTE - HANDLE WITH CARE - DISPOSE OF PROPERLY"

2. Gowns and surgical latex gloves will be worn during trash collection process.

3. The waste will be transported to the on-site storage area in a closed container and placed in the red Hazardous Waste Containers. Chemotherapeutic waste will be handled separately from other hospital waste.

4. At the completion of this procedure, employees will wash their hands thoroughly.

5. Chemotherapeutic waste will be picked-up daily or more often as needed.

PROCEDURE

1. Put on gown and gloves.

2. Transport waste in a closed container to the Infectious Waste holding area and place it in a red Hazardous Waste barrel.

3. Remove gown and gloves, and wash hands thoroughly.

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2904
TITLE	CHEMOTHERAPY LINEN HANDLING	EFFECTIVE DATE	9-01-89
		REVISION DATE	1-28-91
		PAGE NUMBER	1 OF 2

PURPOSE

To establish procedures for the safe handling of chemotherapy linen.

REFERENCE

JCAHO; AMH 1989, Pharmaceutical Services
California Code of Regulations, Title 22, Section 70825 (b)(2)

GENERAL INFORMATION

1. Definition - "Chemotherapy Linen" is any linen item used in the care or treatment of a patient receiving chemotherapy.

SUPPLIES NEEDED

White linen bags
Rubber gloves

EQUIPMENT NEEDED

Mobile cart

POLICY

1. Chemotherapy linen will be handled the same as other soiled linen. (See Policy and Procedure #2900 "Trash and Linen Disposal")

2. Chemotherapy linen will be collected from all areas at least once each working day and more often as necessary.

3. All chemotherapy linen removed from the Medical Center will be monitored for radioactivity.

4. The principles of Universal Precautions will be adhered to while handling chemotherapy linen.

PROCEDURE

1. Put on gloves and use other barrier precautions as prescribed.

2. Collect linen from linen hampers, replacing the linen bag and damp wiping the hampers as needed.

3. Collect linen bags in the mobile cart and transfer them to the soiled linen holding area.

4. When all linen has been collected, clean mobile cart as needed.

5. Remove rubber gloves and wash hands.

MONITORING FOR RADIOACTIVITY

1. If the monitoring alarm is not heard or seen, dispose of the soiled linen in the usual manner.

2. If the monitoring alarm goes off, place cart in a secured area or room and notify your supervisor. The housekeeping supervisor will then notify Nuclear Medicine personnel and arrange to meet them at the secured area or room. If Nuclear Medicine personnel are not available, Security will be called to unlock the "Nuclear Medicine Room" where it should be secured until Nuclear Medicine personnel can check it.

3. After Nuclear Medicine personnel remove the contaminated material, dispose of the linen in the usual manner.

KAISER PERMANENTE
Medical Care Program
Southern California Region

KAISER FOUNDATION HOSPITAL
SOUTHERN CALIFORNIA PERMANENTE
MEDICAL GROUP
POLICY AND PROCEDURE

SECTION	NUMBER	
ENVIRONMENTAL SERVICES		2905
TITLE	EFFECTIVE DATE	9-18-89
RADIOACTIVE LINEN HANDLING	REVISION DATE	9-26-90
REVIEW DATES	PAGE NUMBER	1 OF 1

PURPOSE

To establish the proper procedure for the safe handling of radioactive linen.

REFERENCES

California Code of Regulations, Title 22, Section 70825 (b) (2).
Regional Radiation Safety Policy and Procedure 42-02.

POLICY

1. Linen contaminated with I-131 will not be handled by Environmental Services personnel until it has been monitored for radioactivity and declared safe by Nuclear Medicine.

2. Once Nuclear Medicine personnel have declared linen contaminated with I-131 to be safe for handling, it will be handled the same as regular soiled linen (See Policy and Procedure Number 2900)

APPROVALS

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2906
TITLE	PROCESSING AND DISPOSAL OF LIMBS	EFFECTIVE DATE	9-01-89
		REVISION DATE	
		PAGE NUMBER	1 OF 2

SURGERY DEPARTMENT RESPONSIBILITIES:

1. Authorization for disposal must be completed and attached to limb.

2. Limb must be wrapped in a blue bag (not a red one).

3. Several "NOT FOR DISPOSAL" labels must be attached securely to the bag, covering all sides.

4. Limb should be taken to the morgue and stored in the upper chiller with identification attached.

5. A Surgical - Pathology Requisition must be placed on the workshelf in the Pathology Tissue Lab to alert staff of the limb to be examined.

Pathology Department Responsibilities

1. Go to morgue and identify limb.

2. Immediately notify EVS at X4260.

3. Check for consent (If there is none, a copy must be made from chart copy).

4. Check for labeling with NOT FOR DISPOSAL (apply if not so done).

5. Check to see that limb is in blue bag in top chiller.

6. After dissection, wrap limb in two red plastic bags and seal separately.

7. Attach the consent for disposal securely to the package.

8. Place limb in lower chiller for disposal.

9. Notify EVS of the need for special pickup for disposal of limb and its location.

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2906
TITLE	PROCESSING AND DISPOSAL OF LIMBS	EFFECTIVE DATE	9-01-89
		REVISION DATE	
		PAGE NUMBER	1 OF 2

SURGERY DEPARTMENT RESPONSIBILITIES:

1. Authorization for disposal must be completed and attached to limb.

2. Limb must be wrapped in a blue bag (not a red one).

3. Several "NOT FOR DISPOSAL" labels must be attached securely to the bag, covering all sides.

4. Limb should be taken to the morgue and stored in the upper chiller with identification attached.

5. A Surgical - Pathology Requisition must be placed on the workshelf in the Pathology Tissue Lab to alert staff of the limb to be examined.

Pathology Department Responsibilities

1. Go to morgue and identify limb.

2. Immediately notify EVS at X4260.

3. Check for consent (If there is none, a copy must be made from chart copy).

4. Check for labeling with NOT FOR DISPOSAL (apply if not so done).

5. Check to see that limb is in blue bag in top chiller.

6. After dissection, wrap limb in two red plastic bags and seal separately.

7. Attach the consent for disposal securely to the package.

8. Place limb in lower chiller for disposal.

9. Notify EVS of the need for special pickup for disposal of limb and its location.

SECTION	NUMBER	
ENVIRONMENTAL SERVICES		2906
TITLE	EFFECTIVE DATE	9-01-89
PROCESSING AND DISPOSAL OF LIMBS	REVISION DATE	
	PAGE NUMBER	2 OF 2

EVS Responsibilities

1. Notify agency for disposal that nothing is be removed from the chiller without someone from EVS giving approval.

2. Establish a system whereby you do not sign for removal of items for disposal without observing them.

3. Acknowledge phone call identifying that a limb is in the upper chiller - NOT FOR DISPOSAL.

4. Acknowledge phone call that a limb is in the lower chiller, ready for disposal.

SECTION	ENVIRONMENTAL SERVICES	NUMBER	2907
TITLE	PLACENTA COLLECTION AND STORAGE	EFFECTIVE DATE	9-01-89
		REVISION DATE	
		PAGE NUMBER	1 OF 1

POLICY

All placentas shall be considered Bio-Hazardous Waste and be disposed of per the Environmental Services procedure.

PURPOSE

1. To assure the appropriate and timely disposal of these items.

2. To prevent infections due to the mishandling of the placentas.

EQUIPMENT

1. Trash cart with top.

2. Red bags labeled Bio-hazardous Waste.

COLLECTION POINT:

1. Labor & Delivery

STEPS OF PROCEDURE:

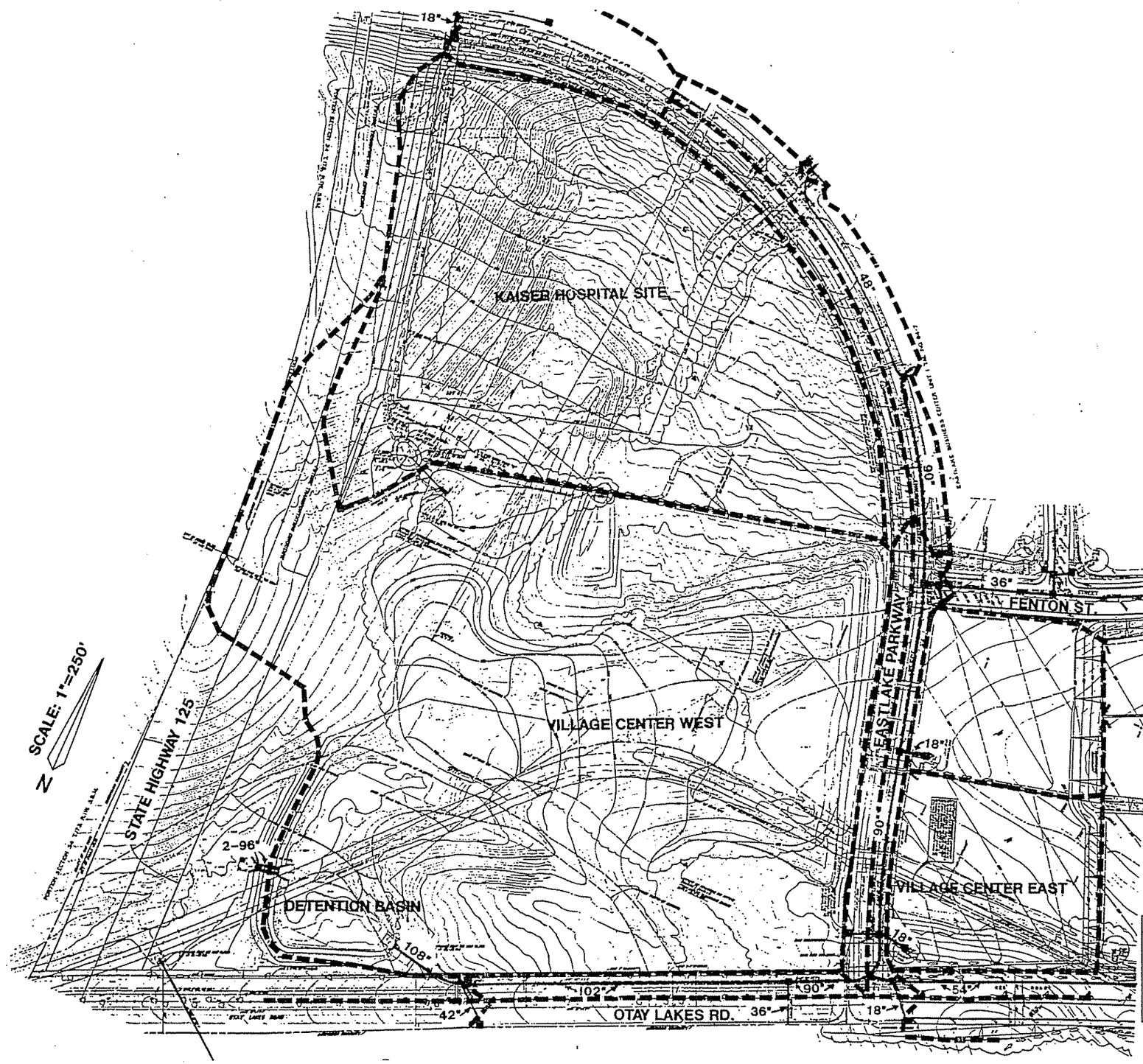
1. The housekeeper designated for trash and linen pick-up will also collect the placentas from the L & D area.

2. The Housekeeper will verify that the placentas are double red bagged at the collection point. These items are then transported in a covered container to the Morgue.

3. All placentas are placed in the basket located in the refrigeration unit. These items are then picked up daily with the exception of Sunday by BFI Incorporated.

HYDROLOGY REPORT

APPENDIX F



LEGEND

EXISTING DRAINAGE AREA BOUNDARIES

PROPOSED DRAINAGE AREA BOUNDARIES

EXISTING STORM DRAIN FACILITIES

DIRECTION OF DRAINAGE

STORM DRAIN-PIPE SIZE 102"

EXHIBIT A

EXISTING CONDITIONS

Prepared in the office of:

Nieto Consulting Engineers, Inc.
Civil Engineers • Planners • Surveyors
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San Diego, California 92131
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EASTLAKE I S.P.A. PLAN AMENDMENT ENVIRONMENTAL IMPACT REPORT
Hydrologic and Hydraulic Analysis

Prepared For:

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Ms. Marni Borg

Prepared By:

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Mr. Philip R. Kern, P.E.
Project No.: 21419

EASTLAKE I S.P.A. PLAN AMENDMENT
ENVIRONMENTAL IMPACT REPORT
Hydrologic and Hydraulic Analysis

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EastLake I S.P.A. PLAN AMENDMENT ENVIRONMENTAL IMPACT REPORT Hydrologic and Hydraulic Analysis

I. PURPOSE AND SCOPE OF INVESTIGATION

The purpose of this study is the determination of drainage related impacts, planning guidelines, and mitigation measures required as a result of proposed land use modifications, and the planned construction of site specific improvements within the EastLake I Sectional Planning Area (S.P.A.) Amendment project site.

Revisions are proposed to land use intensities, grading design, site improvements, project areas and types of land use from those originally adopted under the EastLake I S.P.A. Plan and associated Final Environmental Impact Report. A fully detailed description of the project characteristics and proposed discretionary actions can be found in the "Project Description" section of the EastLake I S.P.A. Plan Amendment.

The scope of this investigation has been limited to the research and review of existing documentation, construction plans, technical reports and other reference materials available describing the existing conditions and proposed project. In addition, a brief site investigation and photographic record were conducted to verify the present condition of the site. Much of the project information available has been provided by the applicant and, while it appears to be complete and of good quality, it should not be assumed to be fully comprehensive or exhaustively detailed. However, this investigation and review is programmatic in nature and consequently the level of detail presented is adequate at this time. Detailed project design plans will be subject to review by the City of Chula Vista at a later date. Independent calculations, modeling and analyses to verify the existing technical data were not performed, as they are considered to be outside the scope of this investigation. Within this scope, however, is the evaluation of proposed project development plans against those originally proposed, and determination of potential impacts due to project implementation as they relate to drainage concerns. Impacts evaluated include effects on drainage patterns, runoff characteristics, local drainage systems, regional flood control facilities, erosion and sedimentation, and water quality. A summary of project related impacts, recommended mitigation measures, and analysis of significance is provided at the conclusion of the report.

II. PROJECT SETTING

The EastLake I SPA Amendment project site, the subject of this analysis, is located on the west side of EastLake Parkway between Otay Lakes Road and proposed State Highway 125, and on the east side of EastLake Parkway between Otay Lakes Road and Fenton Street in the eastern part of the City of Chula Vista, California. The SPA Amendment project site covers an area of approximately 72 acres, and is proposed to be divided into three specific land use areas, a 31 acre medical center parcel on the north, a 29 acre Village Center (commercial) parcel straddling EastLake Parkway on the southeast, and a 12 acre open space parcel on the southwest, including a detention basin.

At present, 60 percent of the site contains rough graded, but unimproved building pads. The rest of the site, mainly in the southwest corner around the detention basin, has remained ungraded. The existing grading and drainage conditions on the site are represented by the grading plans for "EastLake Village Center, Unit No. 3" prepared by Project Design Consultants and approved September 28, 1990. A field review of the site was made on January 31, 1992 and, with the exception of the installation of landscaping, irrigation and some minor drainage facilities, the site is in substantially the same condition as shown on the above plans. All public streets adjacent to the site were fully improved and completed under plans for the EastLake I Subdivision (Unit 1), including the installation of storm drains, catch basins, curb inlets and other drainage facilities. The location and size of existing facilities are shown in more detail in Exhibit A, "Existing Conditions". The westerly portion of the SPA Amendment project site generally drains in a southwesterly direction towards the large detention basin existing onsite. The easterly portion of the site consisting of two building pads presently drains in a westerly direction to two individual desilting risers. All drainage from the street and building pads in the area is collected by the existing storm drain system and discharged into the large detention basin to provide a reduction in the peak discharge downstream from the site during intense (greater than 10 year frequency) storm events.

Hydrologically, the EastLake SPA Amendment site is located in the extreme upper reaches of the Telegraph Canyon Creek watershed. The City of Chula Vista is currently constructing the third of three phases of regional drainage improvements along Telegraph Canyon Creek, between Paseo Ladera and the EastLake community. These improvements are being designed to convey a one hundred year flood resulting from a fully developed watershed. Although the EastLake site does not have a history of flooding, there have historically been problems along Telegraph Canyon Creek between San Diego Bay and Interstate 805 resulting from undersized culverts, debris buildup and underimproved reaches of channel.

The City of Chula Vista, Army Corps of Engineers and County of San Diego have been working cooperatively over the long term to remedy the deficiencies through capital improvement projects, floodplain management, maintenance programs and the regulation of development impacts. The existing drainage facilities serving the Village Center area were designed and analyzed on both a local and regional level by Rick Engineering Co. (REC) for the EastLake Business Center Unit 1 project. Design of the local storm drain facilities is summarized in the "Drainage Study for EastLake Business Center Unit 1", dated June 1985. This study utilizes the Rational Method as specified in the San Diego County Hydrology Manual and City of Chula Vista Subdivision Manual, and has provided a system design based on a 50 year return frequency storm. The analysis has also taken into account the ultimate development of tributary offsite areas, and has used a runoff coefficient of 0.85 for onsite areas, which is consistent for the commercial/industrial land use proposed for the Business Center and Village Center. For analysis of the regional hydrologic conditions, Rick Engineering has used the HEC-1 computer model developed by the U.S. Army Corps of Engineers, and has summarized their findings in the "Detention Basin and Interim Channel Study for the EastLake Business Center" originally dated November 11, 1985 with the latest revision dated November 6, 1986. As implied by the title, this regional model has been used to analyze the inflow and outflow (to Telegraph Canyon Creek) of the onsite detention basin in order to maintain 10 year discharges at or below pre-development levels. This detention basin is designed to have an ultimate storage volume of 15.8 acre-feet, once the pad grading for the site has been fully completed, which included filling on the east side of the basin. At a 10 year peak water surface elevation of approximately 519.0, the basin has an interim volume of 28 acre-feet and an ultimate volume of 11.2 acre-feet. A 10 year frequency, six hour duration storm event was used for the regional analysis, and a runoff curve number of 92 was also utilized which corresponds to a commercial/industrial urban land use.

Rick Engineering has also analyzed the routing of the one hundred year storm through the detention basin in their April 1987 HEC-1 analysis of Telegraph Canyon Creek, and has concluded that the basin has a negligible effect on downstream discharges during a one hundred year event. The above study mentions an ultimate detention basin storage capability of 19.1 acre-feet, and it is apparent from a brief review of Appendix 5 of the report that this is the available <u>total</u> volume of the basin to the top of the dam, elevation 524.0 MSL. Clearly, to avoid dangerous overtopping of the dam, it would not be desirable to utilize all of the 19.1 acre-feet of volume of detention purposes, and Appendix 5 confirms that this is, in fact, the case. A one hundred year storm will produce a peak volume in the basin of 14 acre-feet, and a peak stage (water surface elevation) of 520.85 MSL, about 2 feet above the top of the wall of the outlet structure.

III. IMPACTS ATTRIBUTABLE TO PROJECT IMPLEMENTATION

At present, the westerly portion of the SPA Amendment project site drains overland to the existing detention basin at its southwest corner. The easterly portion consists of two building pads which each drain to individual, small desilting basins with risers connected to the public storm drain system in EastLake Parkway. The existing storm drain system, southwesterly detention basin and desilting basins eventually discharge into Telegraph Canyon Creek, which is the main watercourse draining the region under consideration. As a part of the conditions of development of the EastLake community, the project developer has been providing financial participation for the Telegraph Canyon Creek regional drainage improvements.

Regrading of the project site is proposed as a part of the projects implementation, and is shown in Exhibit B, "Proposed Conditions." Although this recontouring will not affect regional drainage patterns, there may be some localized effects due to changes in grades proposed in two areas. The first is a strip along the north side of Otay Lakes Road covering an area of approximately one acre which was originally planned to drain directly to the existing detention basin. Project implementation will involve filling this southerly portion of the site above the level of the street and redirecting 2.8 c.f.s. (50 year) of the surface flow to the storm drains within Otay Lakes Road, which discharge into the onsite detention basin a short distance away. This flow rate determination was based on the same criteria Rick Engineering used in their Rational Method Drainage Study, utilizing a runoff coefficient of 0.85 and a rainfall intensity of 3.2 inches per hour. This small redirection of surface flow is not expected to cause a significant impact. A more significant change to the local drainage patterns will be caused by regrading at the northeast corner of the proposed Kaiser Hospital site along EastLake Parkway. At this location, runoff from roughly 8.7 acres is proposed to be diverted easterly to EastLake Parkway rather than flowing southwesterly as originally planned. An additional flow of about 23 c.f.s. (50 year) would be directed into EastLake Parkway storm drains, a flow for which they were not designed, and could potentially cause some localized overloading of the system. If overloaded, the system would send the excess flow on the surface down the west side of EastLake Parkway toward the intersection of Otay Lakes Road during a major storm event.

Changes in runoff characteristics, principally discharge volume and velocity, have the potential to cause significant impacts on downstream facilities and properties if not properly mitigated by facility improvement. In the case of the EastLake I SPA Amendment site, no significant impacts are anticipated due to the fact that the drainage facilities serving the area have been adequately planned and constructed for the intended uses of the site with respect to the amount of impervious area, and assuming there are no significant changes to the existing drainage patterns. With regard to runoff volume, previous design studies have assumed a high density residential/commercial/industrial land use which is wholely consistent, in terms of the amount of impervious area, with the proposed hospital/commercial uses on the site. Runoff volumes will be adequately handled and mitigated by the existing detention basin at the southwest corner of the site which will maintain 10 year frequency runoff volumes at or below pre-existing levels. During a one hundred year storm, the Telegraph Canyon Creek drainage facilities will be adequate to handle the flows from the EastLake site once their construction has been fully completed offsite. The offsite facilities will also negate any effects that would be attributed to concentration of flow and increased flow velocities from project development, as they include energy dissipation, subsurface structures and channel armoring as a part of the improvements. As mentioned previously, EastLake has provided mitigation in the form of assistance in funding the construction of the above offsite improvements.

Regional facilities within the Telegraph Canyon watershed, and local storm drain facilities within the confines of the EastLake development are, or will be, in place and adequate to convey the storm water flows expected from the SPA Amendment project. However, project plans reviewed to date are programmatic in nature do not presently contain any detailed concepts or proposed designs for drainage systems within the boundaries of the SPA Amendment project site. In order to preclude any onsite impacts due to project development, the areas within the Kaiser project and future developments within the Village Center areas should include the design and construction of drainage systems adequate to convey a 50 year frequency storm without appreciable damage to structures, persons or property. These internal, project specific drainage systems could be either public or privately owned and maintained, and should be designed with a surface outlet for runoff draining to catch basins in sump situations to prevent localized flooding and damage in cases of subsurface storm drain clogging, or rainfall events exceeding a 50 year storm. A periodic maintenance program should also be in place to maintain the effectiveness of any drainage facilities which are proposed within the SPA Amendment project limits.

Regular maintenance of improved facilities is also one of the key elements to eliminating impacts related to erosion and debris deposition. At the time site was inspected on January 31, erosion scars, gullies, siltation and other evidence of adverse soil/water interaction was observed. These conditions are primarily due to the fact that no slope landscaping was present and some minor storm drain improvements were also incomplete. The soils in the area consist of clays and loams which exhibit slight to moderate erodibility characteristics, and moderate to high runoff potential, due to their relatively slow infiltration rates. These conditions present the potential for the occurrence of typical erosion/siltation problems, including capacity reducing deposition of debris, siltation within drainage structures, undercutting of unlined channel banks, scarring of slope faces and slope wash outs. Although not at an advanced stage, measures should be implemented to prevent the problems onsite from continuing. One of the two small desilting basins on the east side of EastLake Parkway, which was originally five feet deep according to the plans, was full to the top of the riser with silt, rendering it ineffective.

The presence of the large detention basin does not provide effective desilting action either, as the openings are so large (18" and 36") that they will easily pass silt laden runoff water to downstream structures. Normally, as project construction is completed, siltation and erosion problems will diminish as erodible surfaces are landscaped or paved. For these reasons, erosion control measures are significantly more important during the construction phases of project development.

Implementation of the EastLake Village Center and Kaiser Hospital projects could also affect the surface and groundwater quality of the eastern Chula Vista region, and, therefore, a brief discussion regarding the potential for impacts is merited. Development of the commercial/hospital uses of the project could have the potential for slightly less infiltration surface area due to smaller amounts of landscaped area than the original commercial/residential uses, reducing the available amounts of groundwater recharge. Previous evaluations of this effect for the so called "Eastern Territories", including the EIR for the Chula Vista General Plan update, have concluded that it has a negligible impact. The reasons for this are the fact that soils in the area are relatively impermeable Diablo Clays, roughly 50 percent of the Eastern Territories area will be retained as natural open space and will be available for recharge, and that the high mineral content and total dissolved solids of the groundwater render it of low quality and undesirable for domestic or agricultural uses. Potential for impacts to surface water quality are concerned principally with urban type runoff from the proposed uses. Oils, grease, heavy metals and pesticides are typically found in small concentrations in runoff from urban uses, however, creation of a hospital use in the area introduces the potential for other forms of hazardous wastes.

If these are planned to be present, they should remain indoors, or alternatively, be confined in an outdoor area where there is no potential for rainfall to wash them into the local drainage system and subsequently into wetland areas. Potential for a spill contaminating local reservoirs in the area is neglible due to the prevailing drainage patterns of the area. It should also be noted that permits are necessary for the use and storage of many types of hazardous materials, and permit conditions typically required include pre-treatment, facilities, holding tanks and spill prevention plans.

IV. MITIGATION MEASURES

- The drainage patterns have previously been established for the EastLake I SPA Amendment area of the Telegraph Canyon Creek watershed. The project proposes a localized, but significant diversion of drainage easterly to EastLake Parkway which may cause overloading of storm drain facilities and localized flooding. To alleviate this situation, all facilities downstream of this diversion should be analyzed to determine if they have the capacity to handle the additional flow. Alternatively, the onsite storm drain system could be designed to intercept the flow at the eastern boundary of the Kaiser site, and route it in a southwesterly direction to the detention basin as originally planned.

- Offsite drainage facilities have been designed and are being constructed to handle 50 year storm water flows expected to be generated by the project. Ten year frequency flows will be maintained at pre-development levels by the existing onsite detention basin. Onsite facilities for storm water collection should be designed and built as a part of the project to handle 50 year peak discharges.

- A regular maintenance program, either public or private, should be in place to minimize effects of soil erosion and facility choking debris. Project development should also include erosion control planning during construction, according to the standards of the City of Chula Vista, which should include the use of such measures as sandbags, silt fences, landscaping, temporary desilting basins, erosion control matting and others.

- In order to minimize impacts to water quality, chemicals, toxic materials, petroleum products and hazardous wastes should be stored and used indoors. Alternatively, outdoor storage and use areas should impound these materials in case of rainfall or a spill and conduct them to the metropolitan sewer, pre-treatment system or holding tank.

V. ANALYSIS OF SIGNIFICANCE

The proposed project has the potential to cause adverse impacts in the areas of established drainage patterns, storm water runoff characteristics, siltation and erosion, and water quality. Implementation of the above drainage system improvements and mitigation measures will reduce the potential impacts resulting from project development to insignificance.

VI. BIBLIOGRAPHY AND REFERENCES

1. Final Environmental Impact Report - EastLake I S.P.A. Plan, City of Chula Vista Department of Planning, January 1985.

2. Drainage Study for EastLake Business Center Unit 1, Rick Engineering Co., Water Resources Division, November 1985.

3. Detention Basin and Interim Channel Study for the EastLake Business Center, Rick Engineering Co., November 1986.

4. Grading Plan for EastLake Village Center Unit No. 3 (C.T. 84-7), Project Design Consultants, September 1990, Sheets 1-7, City of Chula Vista W.O. PG 349, Drawing Nos. 90-444 - 90-450.

5. Improvement Plans for EastLake I Unit I (C.T. 84-7) Rick Engineering Co., September 1985, Sheets 1-44, City of Chula Vista W.O. EY 184, Drawing Nos. 85-656 - 85-700.

6. Grading Plans for EastLake Business Center Unit No. 1 (C.T. 84-7), Rick Engineering Co., January 1986, Sheets 1-26, City of Chula Vista W.O. PG 093, Drawing Nos. 85-655 - 85-681.

7. Telegraph Canyon Creek - HEC-1 Model Analysis Hydrology Report, Rick Engineering Company, Water Resources Divisions, April 1987.

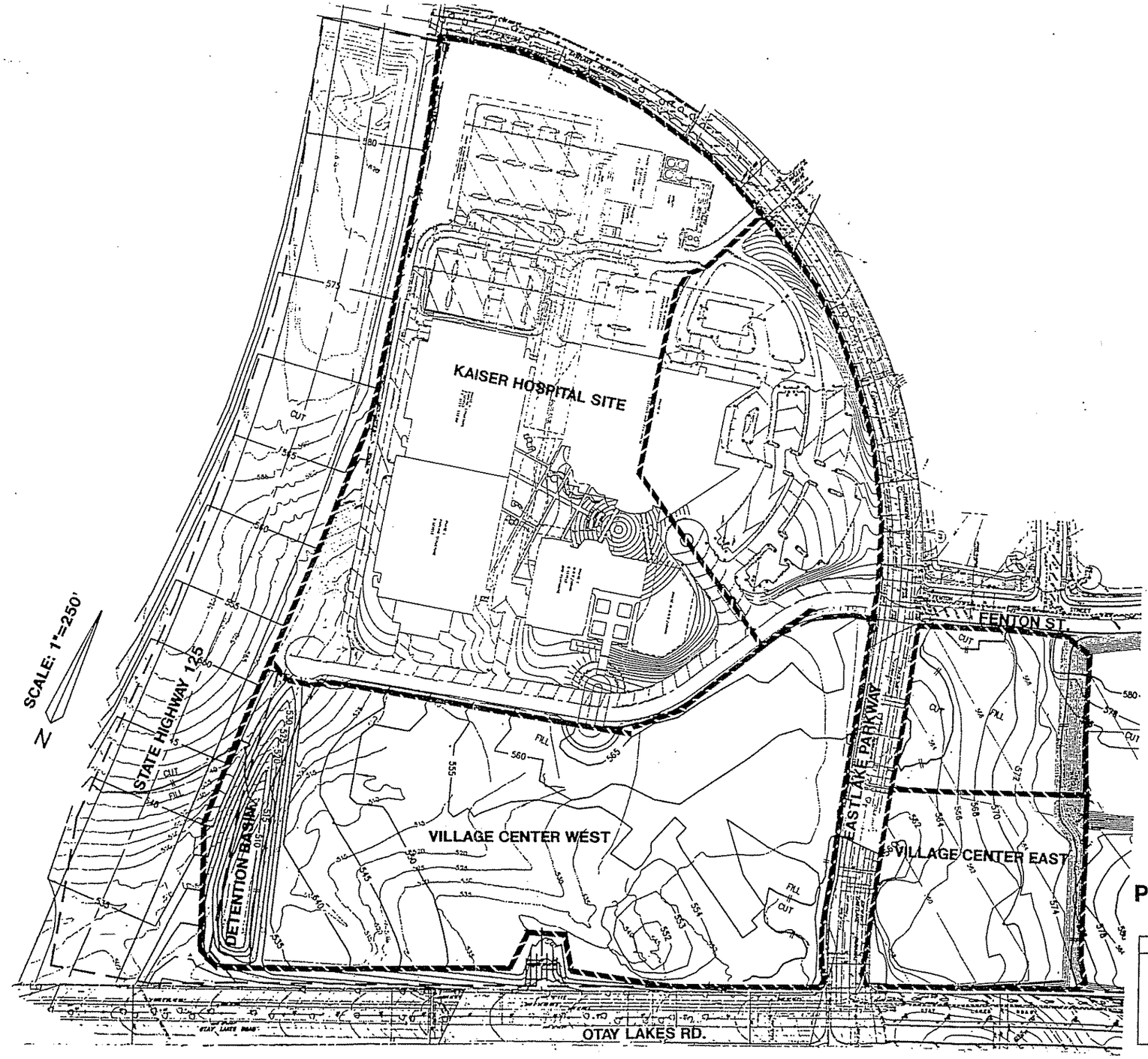

EXHIBIT B

PROPOSED CONDITIONS

Prepared in the office of:
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GEOLOGY REPORTS

APPENDIX G

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September 23, 1991

EastLake Development Company
900 Lane Avenue, Suite 100
Chula Vista, California 92013

Job No. 05-1054-050-01-00
Log No. 1-2096

Attention: Mr. William Branyan

SUBJECT: GEOTECHNICAL CONDITIONS
EastLake Activity Center
Chula Vista, California

Gentlemen:

In accordance with your authorization, we have prepared this letter to summarize the geotechnical conditions present at the subject site. It is our understanding that this information will be used in the preparation of an EIR.

SCOPE OF WORK

Our evaluation consisted of a review of geotechnical reports and letters, published and unpublished that relate to the project site and are listed in the attached references. Additionally, we visited the site to assess its existing condition. Finally, we prepared this letter.

PROPOSED DEVELOPMENT

It is our understanding that the site will be fine graded to prepare pads for construction of a medical center, mixed use commercial and a retail center. Structures will range from low to mid-rise and attendant parking and access streets will also be constructed.

SITE DESCRIPTION

The site is located south and east of the intersection of EastLake Parkway and future SR 125 (see attached plan). Presently, the site has been rough graded into relatively flat pads with sheet drainage to a detention basin or into storm drains.

SITE GEOLOGY AND GEOTECHNICAL CONDITIONS

The subject site is underlain by compacted fill and bedrock of the Otay and Sweetwater Formations. The oldest bedrock exposed during the grading of the site is the Sweetwater Formation which consists of dense, locally cemented coarse grained sandstone and gravel conglomerate. Overlying the Sweetwater Formation is the Otay Formation which is composed of dense, locally cemented fine sandstone and interbedded claystone. The contact between the formations is at roughly elevation 550 feet. The contact is gradational and interfingering and is relatively flat-lying.

Prior to grading, the bedrock was covered with topsoil and alluvial deposits. Within the subject site, the topsoil and alluvium was removed to the underlying bedrock and replaced with compacted fill. The fill operations occurred over several years and were observed and tested by this firm. The older grading operations have been reported in the referenced letters and reports. As-Graded reports for the most recent grading are presently being prepared. Fill soil consists primarily of sand and clay derived form the Otay Formation in other areas of the EastLake Master Planned Community. The fill soils exhibit medium to high expansion characteristics.

No faulting was observed to be present at the site during grading. The nearest active fault to the site is the Rose Canyon fault zone located 9 miles to the northwest. It is estimated that a maximum probable earthquake of M 6.5 would produce bedrock accelerations of .25g. Adherence to local building codes, the UBC and the standard practices of the Association of Structural Engineers of California should mitigate structural failures due to earthquake shaking.

No landslides were observed at the site prior to or during grading. Manufactured slopes with gradients no more than 2:1 (horizontal to vertical) are considered stable with factors of safety equal to or greater than 1.5.

CONCLUSIONS

There are no unmitigatable geotechnical conditions present at the site given the proposed development. Earthquake shaking can be mitigated through proper structural design. The effects of expansive soil can be mitigated through foundation design or import of non-expansive soil during fine grading.

The opportunity to be of service is appreciated. If you have any questions, please do not hesitate to contact this office.

Very truly yours,

ICG Incorporated

W. Lee Vanderhurst C.E.G. 1125
Registration Expires: 6-30-92
President/Principal Geologist

Anthony F. Belfast P.E. C40333
Registration Expires: 3-31-95
Vice-President/Principal Engineer

WLV/AFB/pb

REGISTERED GEOLOGIST
W. LEE VANDERHURST
No. 1125
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
ANTHONY F. BELFAST
NO. C 040333
CIVIL
STATE OF CALIFORNIA

References

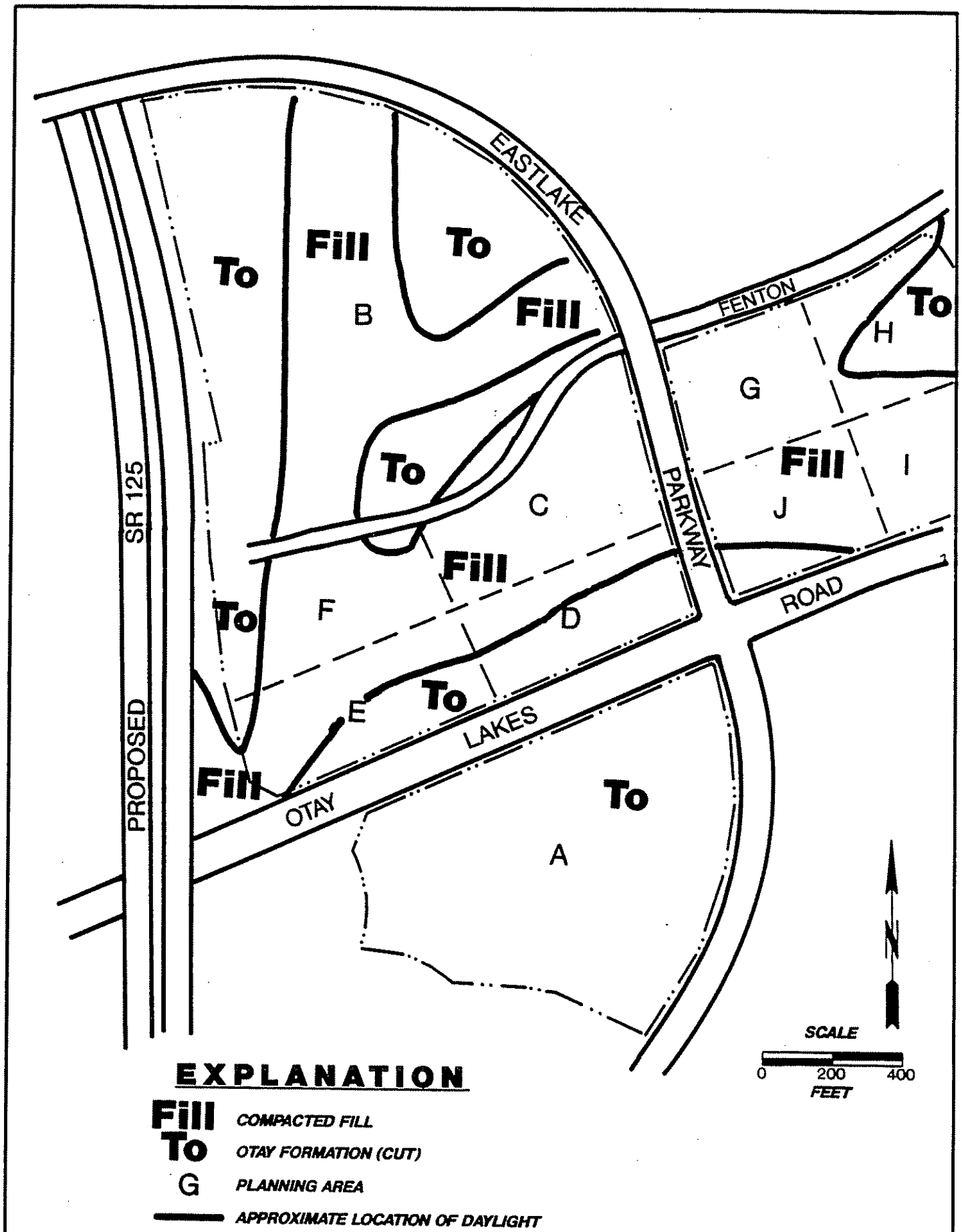
1. San Diego Geotechnical Consultants, Inc., November 16, 1984, "Preliminary Geotechnical Investigation, EastLake Village Center, EastLake Business Center, Chula Vista Tract No. 84-7, Chula Vista, California", Unpublished Report No. SD 1321-00 to EastLake Development Company.

2. San Diego Geotechnical Consultants, Inc., June 30, 1987, "As-Graded Geotechnical Report, EastLake Business Center, Unit 1 and Unit 2 Lots 36, 37, and 38, Chula Vista Tract No. 84-7, Chula Vista, California ", Unpublished Report No. 05-1054-002-00-10 to EastLake Development Company.

3. San Diego Geotechnical Consultants, Inc., September 14, 1987, "Supplemental Geotechnical Investigation, Remedial Earthwork Evaluation, EastLake Commercial Center, Chula Vista, California", Unpublished Report No. 05-1054-010-00-00 to EastLake Development Company.

4. San Diego Geotechnical Consultants, Inc., April 18, 1988, "Soils Compaction Report, Off-site Fill, South Of EastLake Parkway, EastLake Business Center, Chula Vista, California", Unpublished Report No. 05-2815-001-00-10 to Brehm Communities.

5. ICG Incorporated, May 24, 1990, "Interim Compaction Report, Off-Site Disposal Area, EastLake Village Center, Chula Vista, California", Unpublished Report No. 05-1054-032-01-10 to EastLake Development Company.



EASTLAKE ACTIVITY CENTER GEOLOGIC PLAN

JOB NO.:	DATE:	FIGURE:
05-1054-050-01-00	OCTOBER 1991	1

ICG Incorporated

LAW/CRANDALL, INC. ▲ geotechnical, environmental & construction materials consultants

10037 Barnes Canyon Road, Suite A, San Diego, California 92121, Phone (619) 458-9379, Fax (619) 458-0541

Los Angeles ▲ Anaheim ▲ Los Alamitos ▲ Marina del Rey ▲ Riverside ▲ San Diego

Gentlemen:

Please find attached a copy of the report or letter that you requested. As you may observe, the firm's name has been changed from LeRoy Crandall and Associates (LCA) to Law/Crandall, Inc. (L/C). This change was made to more accurately reflect our role within the Law Companies Group, Inc.

However, let us assure you that the change in no way affects our total commitment to client service, which you came to expect from LeRoy Crandall and Associates in over 35 years of service to our friends and associates. While our name has changed, our personnel, management, and commitment to the quality service remain the same.

We have unfortunately used up all of our existing stocks of LCA Letterhead, and have therefore, reproduced our report on our new Law/Crandall letterhead. We hope you understand the reason for this change and that this will serve as an introduction to continued years of mutually beneficial service under our new name, Law/Crandall, Inc.

Yours very truly,

LAW/CRANDALL, INC.

John R. Theissen, GE 825
Chief Engineer

HC1/JRT:hc

LAW/CRANDALL, INC. ▲ geotechnical, environmental & construction materials consultants

10037 Barnes Canyon Road, Suite A, San Diego, California 92121, Phone (619) 458-9379, Fax (619) 458-0541

Los Angeles ▲ Anaheim ▲ Los Alamitos ▲ Marina del Rey ▲ Riverside ▲ San Diego

August 9, 1991

Kaiser Permanente
Kaiser Foundation Health Plan, Inc.
Southern California Region
Walnut Center
393 Walnut Street, 5th Floor
Pasadena, California 91188

(LCA S91020.AB)

Attention: Ms. Bebe Wright
Manager, Property Acquisition

Dear Ms. Wright:

We are pleased to present our "Report of Preliminary Foundation Investigation, Proposed Hospital Complex, North of Otay Lakes Road and West of Eastlake Parkway, at the End of Fenton Street, Chula Vista, California, for Kaiser Permanente." We previously performed a geologic hazards review and limited Phase I environmental assessment of the site and presented the results in a report dated March 21, 1991 (LCA S91020.EFO).

The scope of this investigation was planned in collaboration with Ms. Bebe Wright. We were advised of the features of the proposed complex by Ms. Carolyn Brink. The results of the preliminary foundation investigation are presented in the report, along with preliminary recommendations for excavation and grading, foundation design, and floor slab support.

If you have any questions regarding this report, or if we can be of further service to you on this or future phases of the project, please do not hesitate to contact us.

Respectfully submitted,

LeROY CRANDALL AND ASSOCIATES

Susana Kemmerrer, RCE 43832
Project Engineer

John R. Theissen, RGE 825
Senior Engineer
Manager, Geotechnical Engineering

REGISTERED PROFESSIONAL ENGINEER
JOHN ROBERT THEISSEN
No. 825
Exp. 3-31-94
GEOTECHNICAL
STATE OF CALIFORNIA

WW7/SK:hc
(5 copies submitted)

REPORT OF PRELIMINARY FOUNDATION INVESTIGATION

PROPOSED HOSPITAL COMPLEX

NORTH OF OTAY LAKES ROAD

AND WEST OF EASTLAKE PARKWAY

AT THE END OF FENTON STREET

CHULA VISTA, CALIFORNIA

FOR

KAISER PERMANENTE

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1.0 SUMMARY

We have performed a preliminary foundation investigation for Kaiser Permanente for the property located north of Otay Lakes Road and west of Eastlake Parkway, at the western end of Fenton Street in Chula Vista, California. We recently completed a geologic hazards review and limited Phase I environmental site assessment of the site, and presented the results in a report dated March 21, 1991 (LCA S91020.EFO).

According to present plans, the proposed development will consist of a six-story hospital building, a five-story medical office building, and a nine-level parking structure. Excavations up to 20 feet deep for the hospital building basement and 30 feet deep for the parking structure basement are planned. A shallower basement is planned for the medical office building.

Fill soils 1½ to 24 feet thick were encountered in 13 of our 20 borings. The fill consists primarily of silty sand, clayey sand, and clay, with some gravel. The fill was observed and tested by others; we were not able to obtain records of the fill compaction to verify that 90% of maximum density was obtained.

A layer of natural silt, about 2 feet thick, was encountered in one of our borings. The site is underlain by firm to hard sandstone. The sandstone was encountered at ground surface in seven of the borings.

The existing fill soils are generally dense, with some moderately dense layers. Due to their compressibility and associated settlement, as indicated by the consolidation tests performed on the existing fills, as well as the expansion potential of the clay soils, we would not recommend supporting major structures on these soils because of possible differential movement. To provide uniform support, the proposed structures may be supported on shallow spread footings, deepened footings, or end-bearing drilled piers, established in the underlying firm sandstone. According to present plans, most or all of the existing fill soils

at the buildings locations will be removed by the planned excavations. Where the fill is removed, building floor slabs may be supported entirely on the firm sandstone. Some fill may remain under the building slabs after the planned excavation is completed. As no transitions between bedrock and compacted fill should be allowed under buildings, any remaining fill should be overexcavated and replaced with a compacted rock fill, a lean concrete slurry mix, or structural concrete. The building floor slabs may then be supported on the firm sandstone and the rock or concrete fill. As an alternative, the firm sandstone may be overexcavated to allow for the placement of at least 3 feet of compacted fill under a slab, so it may be supported entirely on compacted fill.

Conventional earthmoving equipment may be used in the existing compacted fill and weakly cemented sandstone layers. Heavy-duty earthmoving equipment with rippers may be required in the cemented sandstone layers.

To finalize the results of this preliminary investigation, minimal additional investigation should be performed. The final report should include the necessary data to satisfy the requirements of the Office of the State Architect and the California Division of Mines and Geology for hospital building sites.

2.0 SCOPE

This report presents the results of a preliminary foundation investigation of the subject site, which is being considered for construction of a hospital complex. The locations of the proposed buildings and our exploration borings are presented on Plate 1, Plot Plan. We previously performed a geologic hazards review and limited Phase I environmental site assessment for the site and presented the results in a report dated March 21, 1991 (LCA S91020.EFO).

This foundation investigation was authorized to determine preliminary information on the soil and foundation conditions of the property. Minimal additional investigation will be required to finalize our recommendations when the precise building configurations are known.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Kaiser Permanente and their consultants to be used solely in the preliminary evaluation of the subject project. The report has not been prepared for use by other parties, and may not contain sufficient information for purposes of other parties or other uses.

3.0 SITE CONDITIONS

The site is a 32-acre lot in the Eastlake Village Center. It is located north of Otay Lakes Road and west of Eastlake Parkway, at the western end of Fenton Street, in Chula Vista, California, as shown on Plate 1. The site is currently unoccupied and has been previously rough graded.

The site consists of two graded pads connected by a 5- to 10-foot-high fill slope. This slope has suffered erosion as evidenced by gullies on the slope surface. Both pads slope downtoward the south, with a total difference in elevation of about 60 feet between the upper end of the northern pad and the lower end of the southern pad.

A partially filled drainage channel is visible in the southwestern portion of the site. Where this channel crosses the northern part of the site (northern pad), it has been completely filled, as evidenced by the deeper fill encountered in our borings in this location.

The site is bounded to the northwest by an off-site, cut slope about 50 feet high. A hill or pile of soil is located in the southwestern portion of the site. A siltation basin about 20 feet in diameter is also located in the southwestern portion of the site.

4.0 FOUNDATIONS AND EARTHWORK EVALUATION

4.1 STRUCTURAL INFORMATION

We were informed that the proposed hospital complex will consist of a six-story hospital building, a five-story medical office buildings, and a nine-level parking structure. The proposed building locations and configurations are shown on Plate 1.

The hospital building will have one basement level extending some 20 feet below the ground surface. The parking structure will extend some 30 feet below the ground surface. A shallow basement, estimated at about 10 feet deep, is planned for the medical office building.

The hospital and medical office buildings will be of steel-frame construction with reinforced concrete basements. The parking structure will be of reinforced concrete construction. Structural loads were unknown at the time this report was written.

4.2 SOIL CONDITIONS

Fill soils 1½ to 24 feet thick were encountered in 13 of our 20 exploration borings. The fill consists of silty sand, clayey sand, and clay, with some gravel. San Diego Geotechnical Consultants, Inc., reportedly observed and tested placement of the fill; however, we were not able to obtain their compaction report to verify that 90% compaction or better was attained. The fill soils encountered in our borings were generally dense, with some moderately dense layers also encountered. According to our laboratory results, the fill soils will become more compressible when saturated. The clay soils are moderately expansive and will shrink and swell with changes in the moisture content.

Natural soils, about 2 feet thick, were encountered in one of the borings. These soils consist of moderately firm silt.

The site is underlain by weakly to strongly cemented sandstone, silty sandstone, and clayey sandstone. The sandstone is firm to very firm.

Water was not encountered within the maximum depth of 41 feet explored.

4.3 FOUNDATIONS

4.3.1 General

The existing fill soils on the site are more compressible than the existing sandstone under loads, such as those that would be associated with the proposed buildings. The clay fill is also expansive. However, according to present plans, most or all of the existing fill soils at the building locations will be removed by the planned excavations. Where the fill is removed, buildings may be supported entirely on conventional spread footings established in the firm sandstone.

As encountered in our borings, existing fill may underlie the western half of the hospital building, the western portion of the medical office building, and the southern portion of the parking structure. To provide uniform support for the buildings, deepened spread footings,

extending through the fill and into the firm sandstone, may be used in areas of moderately shallow fill. Conventional spread footings may be used to support the building on the firm sandstone in areas of shallow fill or exposed sandstone. Drilled piers may be required for foundation support in areas of deeper fill.

4.3.2 Bearing Value

As described above, the proposed buildings may be supported on conventional or deepened spread footings or drilled, end-bearing piers established in the firm sandstone. For preliminary planning purposes, a bearing value of 8,000 pounds per square foot may be used for this material. Footings or piers should extend at least 1 foot into the firm sandstone and at least 2 feet below the lowest adjacent grade or floor level. For each additional foot of embedment, the bearing value may be increased by 500 pounds per square foot, up to a maximum value of 10,000 pounds per square foot.

4.4 MOISTURE PROTECTION

To protect against moisture from irrigation and other sources, we recommend the basement walls and floor slabs on grade be waterproofed or at least dampproofed, depending on the degree of moisture protection desired.

4.5 EARTHWORK

4.5.1 Floor Slab Support

As described above, most of the existing fill beneath the buildings will be removed by the planned excavations. Assuming these fill soils are completely removed, the floor slabs for these buildings may be supported entirely on the firm sandstone.

Depending on final building placement and finished floor elevations, the buildings may overlie a transition zone between the firm sandstone and the existing fill. Because of settlement considerations, no transition zones between the compacted fill and sandstone should be allowed under buildings. To minimize differential settlement and provide uniform support for the hospital building floor slab, the existing fill and any disturbed or unsuitable

natural soils should be overexcavated and replaced with a rock fill, a lean concrete slurry mix, or structural concrete. Alternatively, the sandstone may be overexcavated to allow the placement of at least 3 feet of properly compacted fill soils under the slab.

4.5.2 Paving Support

To provide support for pavement, any loose, soft, or unsuitable materials and at least the upper 1 foot of existing fill and clay soils should be removed and replaced with properly compacted fill. Any required additional fill should be properly compacted.

4.5.3 Material for Fill

The on-site, sandy soils, less any clay, debris, and organic matter, may be used in the required fills. Any imported fill should be relatively non-expansive with an Expansion Index of less than 35.

4.5.5 Excavations and Slopes

Conventional earthmoving equipment may be used for excavations within the existing fill and natural soils. Heavy-duty earthmoving equipment with rippers may be required in the more cemented layers. Where the necessary space is available, temporary unsurcharged excavations deeper than 5 feet should be sloped back at least ½:1 (horizontal to vertical) in the sandstone, and at 1:1 in the existing fill; otherwise, they should be shored.

Where sloped embankments are used, the tops of the slopes should be barricaded to keep vehicles and storage loads back at least 7 feet from the edge of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are recommended along the tops of the slopes where necessary to prevent runoff water from entering the excavations and eroding the slope faces.

The soils exposed on the slope faces should be observed during excavation by a representative of our firm so that the slopes can be modified if variations in the soil conditions occur. Permanent slopes should be planted soon after completion to prevent erosion.

4.6 FLOOR SLAB SUPPORT

The floor slabs for the structures may be entirely supported on the firm, undisturbed sandstone. Alternatively, to provide uniform floor slab support, the building floor slabs should be supported either entirely on compacted fill, or on a combination of the firm sandstone and structural concrete fill, lean concrete slurry fill, or compacted rock. For the latter case we recommend a joint be constructed in the floor to permit some differential movement between the sandstone and the rock or concrete fill. If a floor covering that would be critically affected by moisture, such as vinyl, is to be used, the floor slab should be supported on a layer of gravel or on an impermeable membrane to form a capillary break.

5.0 BASIS FOR RECOMMENDATIONS

The recommendations provided in this report are based on our understanding of the described project information and on our interpretation of the data collected during the subsurface exploration. We have made our recommendations based on experience with similar subsurface conditions under similar loading conditions. The recommendations apply to the specific project discussed in this report; therefore, any change in building loads, building locations, or site grades should be provided to us so we may review our conclusions and recommendations and make any necessary modifications.

The recommendations provided in this report are also based on the assumption that the necessary geotechnical observations and testing during construction will be performed by representatives of our firm. The field observation services are considered a continuation of the geotechnical investigation and essential to verify that the actual soil conditions are as anticipated. This also provides for the procedure whereby the client can be advised of unanticipated or changed conditions that would require modifications of our original recommendations. In addition, the presence of our representatives at the site provides the client with an independent professional opinion regarding the geotechnically related construction procedures. If another firm is retained for the geotechnical observation services, our professional responsibility and liability would be impaired.

APPENDIX

EXPLORATIONS AND LABORATORY TESTS

EXPLORATIONS

The soil conditions beneath the site were explored by drilling 20 borings at the locations shown on Plate 1. The borings were drilled to depths of 6 to 41 feet below the existing grade using 24- and 30-inch-diameter, truck-mounted, bucket-type drilling equipment. Caving was not encountered in the borings, and no drilling mud or casing was used to extend the borings to the depth drilled. A ripper was used to penetrate the cemented materials in two of the borings. Three borings were terminated due to hard drilling and/or slow progress in the bedrock.

The soils encountered were logged by our field technician, and undisturbed and loose samples were obtained for laboratory observation and testing. The logs of the borings are presented on Plates A-1.1 through A-1.20; the depths at which undisturbed samples were obtained are indicated to the left of the boring logs. The energy required to drive the sampler 12 inches is indicated on the logs. The soils are classified in accordance with the Unified Soil Classification System described on Plate A-2.

LABORATORY TESTS

The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests, as well as an estimate of the degree of compaction of the fill samples, are shown to the left of the boring logs.

Direct shear tests were performed on selected undisturbed samples to determine the strength of the soils. The tests were performed at field and increased moisture contents and at various surcharge pressures. The yield-point values determined from the direct shear tests are presented on Plate A-3, Direct Shear Test Data.

Confined consolidation tests were performed on nine undisturbed samples to determine the compressibility of the soils. Water was added to four of the samples during the tests to illustrate the effect of moisture on the compressibility. To simulate the effects of the planned excavations, three of the samples were loaded, unloaded, and subsequently reloaded. The results of the tests are presented on Plates A-4.1 through A-4.5, Consolidation Test Data.

The optimum moisture content and maximum dry density of the soils were determined by performing compaction tests on samples obtained from Borings 2, 6, 13, and 20. The tests were performed in accordance with the ASTM Designation D1557-78 method of compaction. After completion of the compaction tests, California Bearing Ratio tests were performed on the samples from Borings 2 and 20 in accordance with the ASTM Designation D1883-87 method. The results are presented on Plates A-5.1 and A-5.2, Compaction and C.B.R. Test Data.

An expansion test was performed on one undisturbed sample to determine the volume change of the soil due to changes in the moisture content. The sample was confined under a nominal surcharge pressure, soaked, and the resulting expansion was measured. Next, the sample was allowed to air-dry and the resulting shrinkage was measured. The results of the expansion test are presented on Plate A-6, Expansion Test Data.

-oOo-

BORING 1

DATE DRILLED: May 6, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 89.8 *

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
		—	8.9	128	35	■
85	5					
		—	14.3	116	20	■
		—	12.6	117	45	■
80	10					
		—	13.0	115	35	■
		—	14.8	114	50	■
75	15					
		—	13.8	117	60	■
70	20	—	12.9	122	72	■

SILTY SANDSTONE - medium grained, some Clay, weakly to moderately cemented, light grey

Fine to medium grained

Fine grained, moderately to strongly cemented, light greyish brown

NOTE: Water not encountered. No caving.

* Elevations refer to assumed datum; see Plate 1 for location of bench mark.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

J. S91020.AB DATE 5/24/91 F.T. TBC DR. O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 2

DATE DRILLED: May 2, 1991
EQUIPMENT USED: 24" - Diameter Bucket

ELEVATION 93.0

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
		89	19.7	104	7	■	SM CL	FILL - SILTY SAND and CLAY - fine, dark brown and brown
90		95	14.1	111	15	■		Greyish brown
	5	87	17.0	102	11	■		Pieces of Sandstone
85								
	10							
80								
	15							

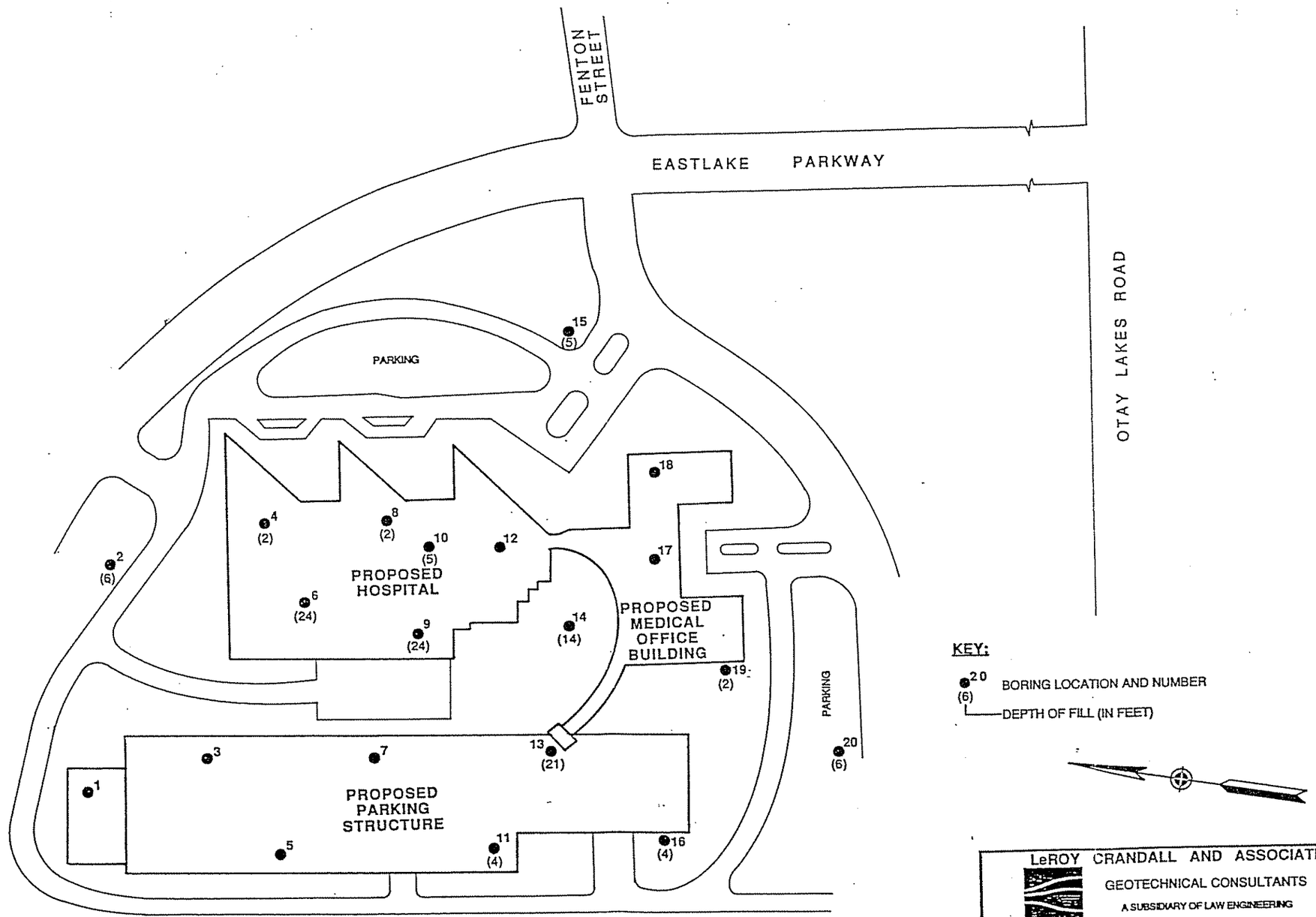
NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

J S91020.AB DATE 5/24/91 F.T. CL DR. lk O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES



KEY:

20 BORING LOCATION AND NUMBER
(6) DEPTH OF FILL (IN FEET)

NOTE:
BENCH MARK AT SOUTHWEST CORNER OF MILLER ROAD AND EASTLAKE PARKWAY ASSUMED ELEVATION = 100.0

REFERENCE:
SKETCH (UNDATED) PROVIDED BY KAISER PERMANENTE

LeROY CRANDALL AND ASSOCIATES
GEOTECHNICAL CONSULTANTS
A SUBSIDIARY OF LAW ENGINEERING
10037 BARNES CANYON ROAD, SUITE A, 92121 (619) 458-9379

PLOT PLAN

JOB NO.: S91020.AB	REVISIONS: -
DATE: 5-31-91	
SCALE: 1" = 20'	
DRAWN BY: SKR	
CHECKED BY:	
SHEET 1 OF 1	

BORING 3

DATE DRILLED: May 6, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 88.0

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
85		—	10.5	122	20	■
	5	—	11.2	119	40	■
80						
	10	—	10.4	120	40	■
75		—	13.1	114	40	■
	15	—	16.5	113	60	■
70						
	20	—	13.5	120	75	■

SANDSTONE - medium to coarse grained, some Clay, moderately cemented, light greyish brown

CLAYEY SANDSTONE - fine grained, moderately to strongly cemented, light brown

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 4

DATE DRILLED: May 6, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 90.9

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
90							SM SC	FILL - SILTY SAND and CLAYEY SAND - fine, light greyish brown
		—	12.3	108	5	■		SILTY SANDSTONE - fine to medium grained, some Clay, weakly cemented, greyish brown
	5							
85		—	28.5	88	5	■		Lenses of Claystone, light greyish brown
	10							
80		—	10.8	121	20	■		Light grey
	15							
75		—	13.0	115	25	■		
		—	14.7	115	30	■		Fine grained
		—	14.7	114	40	■		
	20							
70		—	13.6	116	45	■		Light brown
		—	10.4	126	60	■		Fine to coarse grained
	25							
65		—	11.9	122	60	■		Weakly to moderately cemented
	30							
60		—	10.9	125	51	■		Medium to coarse grained
	35							
55		—	9.1	116	51	■		Moderately to strongly cemented
	40							
		—	7.6	126	77	■		Medium grained

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. CL DR. lk O.E. TBC W.P. lk CHKD SK

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 5

DATE DRILLED: May 6, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 84.3

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		—	10.3	119	30	■	SANDSTONE - fine to medium grained, some Clay, weakly cemented, light grey
80	5						
		—	—	—	100	□	Moderately to strongly cemented
75	10						
		—	13.0	119	40	■	SILTY SANDSTONE - fine grained, some Clay, moderately cemented, light greyish brown
70	15	—	11.2	121	60	■	SANDSTONE - medium to coarse grained, some Clay, moderately cemented, light greyish brown
		—	12.5	119	50	■	
65	20	—	9.4	124	100	■	Strongly cemented
60	25	—	11.7	123	60	■	Fine grained, light brown

□ Indicates no sample recovery.

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 6

DATE DRILLED: May 3, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 86.0

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
85		100	8.5	125	5	■	SM CL	FILL - SILTY SAND and CLAY - fine, light grey
80	5	9.3	17.2	109	5	■		Organic odor, dark brown
75	10	92	15.8	108	5	■		Few Gravel
							CL	FILL - SILTY CLAY - greyish brown
70	15	91	16.8	106	5	■		Some Sand and rootlets
		85	16.9	99	< 5	■		Dark brown
65	20	87	19.6	101	< 5	■		
		86	18.4	100	< 5	■		
		—	18.0	95	30	■	ML	SANDY SILT - some Clay, light greyish brown
60	25	—	12.1	119	30	■		SILTY SANDSTONE - medium to coarse grained, some Clay, weakly cemented, light greyish brown
55	30	—	7.6	130	46	■		Weakly to moderately cemented
50	35	—	10.4	125	46	■		Fine to medium grained, some Gravel
	40	—	14.0	118	46	■		Light brown

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. CL DR. lk O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 7

DATE DRILLED: May 7, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 80.8

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
80		—	12.5	117	10	■	SANDSTONE - fine to medium grained, some Clay, weakly cemented, light brown
		—	16.7	109	< 5	■	Light greyish brown
75	5	—	12.6	108	20	■	
70	10	—	10.4	111	20	■	Light grey
		—	12.2	119	40	■	
		—	11.0	122	40	■	
65	15	—	13.9	118	60	■	Moderately cemented
		—	16.3	114	60	■	Light brown
60	20	—	14.6	117	60	■	Fine grained, light grey
	25	—	11.8	120	60	■	Medium to coarse grained, light greyish brown

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. rk O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 8

DATE DRILLED: May 3, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 83.1

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
							SM FILL - SILTY SAND and CLAYEY SAND - fine, light greyish brown
80		—	11.8	114	15		SILTY SANDSTONE - medium grained, some Clay, weakly cemented, light grey
	5						
75		—	8.8	104	53		Fine to medium grained, weakly to moderately cemented
	10						
70		—	17.7	112	50		Fine grained, weakly cemented
	15						
		—	15.4	117	50		Light greyish brown
65		—	11.9	118	60		Fine to medium grained, weakly to moderately cemented
	20	—	13.6	120	60		
		—	11.3	127	60		
60		—	8.6	129	60		Light brown
	25	—	8.7	116	100		Medium to coarse grained, some Gravel
55							Few strongly cemented layers
	30	—	8.7	118	77		Fine grained, layer of Gravel (to 2" in size)
50							
	35	—	—	—	77		Medium to coarse grained
45							
	40	—	7.3	122	77		

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. CL DR. lk O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 9

DATE DRILLED: May 3, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 81.2

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
80							SM	FILL - SILTY SAND - fine to medium, some Clay, light grey
	5	83	14.4	101	< 5	■		
75								
	10	83	14.7	100	< 5	■		Fine, light greyish brown
70								
	15	89	14.0	108	15	■		Piece of asphalt paving
65		90	12.2	109	5	■		
		88	14.3	103	5	■	SM CL	FILL - SILTY SAND and CLAY - fine, light grey and dark brown
	20	90	15.4	105	< 5	■	CL	FILL - SANDY CLAY - dark brown
60		93	15.3	109	5	■		
	25	—	13.2	99	5	■		SILTY SANDSTONE - fine to medium grained, some Clay, weakly cemented, light brown
55		—	13.1	112	10	■		Fine grained
	30	—	10.9	126	46	■		Fine to medium grained, weakly to moderately cemented
50								
	35	—	—	—	77	■		Medium grained
45								
	40	—	6.9	124	77	■		Moderately cemented

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. CL DR. O.E. TBC W.P. lk CHKD 56

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 10

DATE DRILLED: May 2, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 81.8

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
80		92	14.6	111	7	■	SM	FILL - SILTY SAND - fine, some Clay, light greyish brown
	5							
75		—	9.2	118	44	■		SILTY SANDSTONE - medium to coarse grained, weakly cemented, light grey
	10							
70		—	17.7	108	38	■		Fine to medium grained, some Clay
	15							
		—	13.7	115	44	■		Fine grained, light brown
65								Few lenses of Gravel
		—	13.1	119	67	■		Weakly to moderately cemented
	20							Moderately to strongly cemented, (USED RIPPER)
		—	12.9	120	78	■		
60		—	13.7	120	78	■		Weakly to moderately cemented
	25	—	11.0	119	57	■		
55		—	9.1	114	95	■		Some Gravel (USED RIPPER)
	30							
50		—	7.6	122	95	■		(USED RIPPER)
	35							
45		—	10.6	116	95	■		
	40							

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. lk O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 11

DATE DRILLED: May 6, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 76.4

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
75		89	20.2	103	10	■	SM	FILL - SILTY SAND - fine to medium, light greyish brown
							CL	FILL - SILTY CLAY - light brown and dark brown
	5							SANDSTONE - fine to medium grained, some Clay, weakly cemented, light grey
70		—	11.9	118	25	■		Weakly to moderately cemented
	10	—	13.2	105	60	■		
65		—	16.6	111	60	■		Fine grained, some Silt
		—	17.3	108	35	■		Moderately cemented, light greyish brown
	15							
60		—	12.7	121	60	■		
	20							
55		—	6.6	135	60	■		Fine to medium, moderately to strongly cemented, light brown
	25							
50		—	6.9	124	100	■		Strongly cemented, brown
	30							
45		—	7.6	131	77	■		Medium to coarse, grey and brown
	35							

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. O.E. TBC W.P. lk Cl IKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 12

DATE DRILLED: May 2, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 79.3

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
75	5	—	17.2	107	40	■	SANDSTONE - fine grained, some Clay and Silt, weakly cemented, light greyish brown Layer of Sandy Claystone
70	10	—	11.8	118	35	■	Fine to coarse grained, light grey
65	15	—	14.1	119	40	■	SILTY SANDSTONE - fine to medium grained, some Clay, weakly to moderately cemented, light brown Layer of Gravel
		—	14.7	115	53	■	
60	20	—	12.3	120	53	■	
		—	8.4	116	74	■	Medium to coarse grained
55	25	—	8.2	121	54	■	Fine to medium, few Gravel, reddish brown Strongly cemented
		—	12.1	118	95	■	(USED RIPPER)
50	30	—	9.1	117	63	■	(BORING TERMINATED AT A DEPTH OF 31-1/2' DUE TO SLOW PROGRESS)
45	35						

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. lk O.E. TBC W.P. lk CHKD 54

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 13

DATE DRILLED: May 6, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 75.0

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
		100	13.0	133	5		SC CL	FILL - SILTY SAND and CLAY - fine to medium, few Gravel and Cobbles, light brownish grey
70	5							
		95	14.8	111	5			
							CL	FILL - SANDY CLAY - few Gravel, dark brown
65	10	97	13.4	113	10			
		91	15.4	107	10			
		91	17.9	107	< 5			
60	15							
		97	14.3	113	10			Few rootlets
55	20	97	13.3	113	20			
								SILTY SANDSTONE - fine to coarse grained, weakly to moderately cemented, light brown
50	25	—	7.4	129	50			
45	30	—	9.6	126	55			Fine to medium grained

NOTE: Water not ecnountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 14

DATE DRILLED: May 6, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 76.8

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
75		95	13.3	115	10	■	SC	FILL - CLAYEY SAND - fine to medium, few Gravel and Cobbles, light brownish grey Pieces of Sandstone
	5							
70		97	13.3	117	5	■		Some Clay, brown
	10							
65		88	14.8	106	5	■		
	15	—	14.1	111	15	■		SILTY SANDSTONE - fine grained, some Clay, weakly cemented, light grey
60		—	9.7	124	35	■		Medium to coarse grained, light greyish brown
	20	—	8.1	126	40	■		Weakly to moderately cemented
55		—	11.1	123	40	■		Fine to medium grained, light greyish brown
	25	—	14.3	117	40	■		Fine grained, light brown
50								
	30	—	12.9	121	40	■		Fine to medium grained

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. lk O.E. TBC W.P. lk CHKD SK

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 15

DATE DRILLED: May 2, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 79.7

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		83	13.4	100	4		SM FILL - SILTY SAND - fine to medium, some Clay, light greyish brown
75	5	93	13.1	112	7		
70	10						
65	15						

NOTE: Water not encountered. No caving.

S91020.AB DATE 5/24/91 F.T. CL DR. IK O.E. TBC W.P. lk CHKD

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 16

DATE DRILLED: May 7, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 71.0

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
70		85	21.7	99	< 5	■	CL	FILL - SANDY CLAY - dark brown
		—	11.5	84	5	■		Layer of Silty Sand, fine, light grey
	5	—	13.3	101	10	■		SANDSTONE - fine grained, weakly cemented, light greyish white
65		—	13.0	114	35	■		
	10	—	9.8	117	45	■		Fine to medium grained, light grey
60		—	15.8	111	45	■		Fine grained, light brown
	15	—	11.6	122	60	■		
55		—	8.5	130	60	■		Fine to medium grained
		—	6.9	126	60	■		Fine to coarse grained
	20	—	8.6	129	60	■		Fine to medium grained
50								
	25	—	8.4	130	60	■		
45								
	30							

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

S91020.AB DATE 5/24/91 F.T. TBC DR. lk O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 17

DATE DRILLED: May 7, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 68.5

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		—	12.0	119	10	■	SANDSTONE - fine to medium grained, weakly cemented, light grey
65		—	15.6	112	30	■	
	5	—	14.5	116	60	■	Fine grained, some Clay and Gravel, light greyish brown
60		—	10.2	126	60	■	
	10	—	18.8	121	100	■	
55		—	10.3	124	100	■	
	15	—	8.1	132	100	■	(BORING TERMINATED AT A DEPTH OF 16' DUE TO HARD DRILLING)
50							
	20						

NOTE: Water not encountered. No caving.

JOB S91020.AB DATE 5/24/91 F.T. RH DR. O.E. TBC W.P. lk CHKD 5k

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 18

DATE DRILLED: May 7, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 67.7

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.	
		—	13.5	114	5	■	SANDSTONE - fine to medium grained, weakly cemented, light grey
65		—	13.7	114	20	■	
	5	—	15.7	115	35	■	Fine grained, light greyish brown
60		—	12.4	122	50	■	Moderately cemented
	10	—	9.1	125	60	■	Fine to medium grained, few Gravel
		—	9.9	126	60	■	Light brown
55		—	13.9	117	60	■	
	15	—	7.5	117	100	■	Medium to coarse grained
50							(BORING TERMINATED AT A DEPTH OF 18' DUE TO HARD DRILLING)
	20						

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

J.K. S91020.AB DATE 5/24/91 F.T. RH DR. JK O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 19

DATE DRILLED: May 8, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 55.1

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
55							CL	FILL - SANDY CLAY - few rootlets, dark brown
		94	14.9	110	< 5	■	SM	FILL - SILTY SAND - fine, brown
		—	14.6	105	5	■		SANDSTONE - fine grained, weakly cemented, light greyish brown
		—	20.0	96	5	■		
50	5							
		—	5.7	131	40	■		Fine to coarse grained, some Gravel, light brown
		—	13.1	117	35	■		Fine to medium grained, light grey and light brown
45	10	—	12.0	121	60	■		Light brown
		—	9.4	116	60	■		
		—	8.9	132	60	■		Fine to coarse grained, light greyish brown
40	15							
		—	7.1	132	60	■		
	20							

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

J. S91020.AB DATE 5/24/91 F.T. RH DR. O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

BORING 20

DATE DRILLED: May 7, 1991
EQUIPMENT USED: 30" - Diameter Bucket

ELEVATION 26.8

ELEVATION (ft.)	DEPTH (ft.)	% COMPACTION	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.		
25		100	12.3	118	5		SM CL	FILL - SILTY SAND and CLAY - fine, light grey and brown
		94	15.5	110	5			Light grey
	5	90	18.8	105	< 5			
20								
	10							
15								
	15							

NOTE: Water not encountered. No caving.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

J S91020.AB DATE 5/24/91 F.T. RH DR. lk O.E. TBC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel - sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel - sand - silt mixtures.
			GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand - silt mixtures.
			SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		

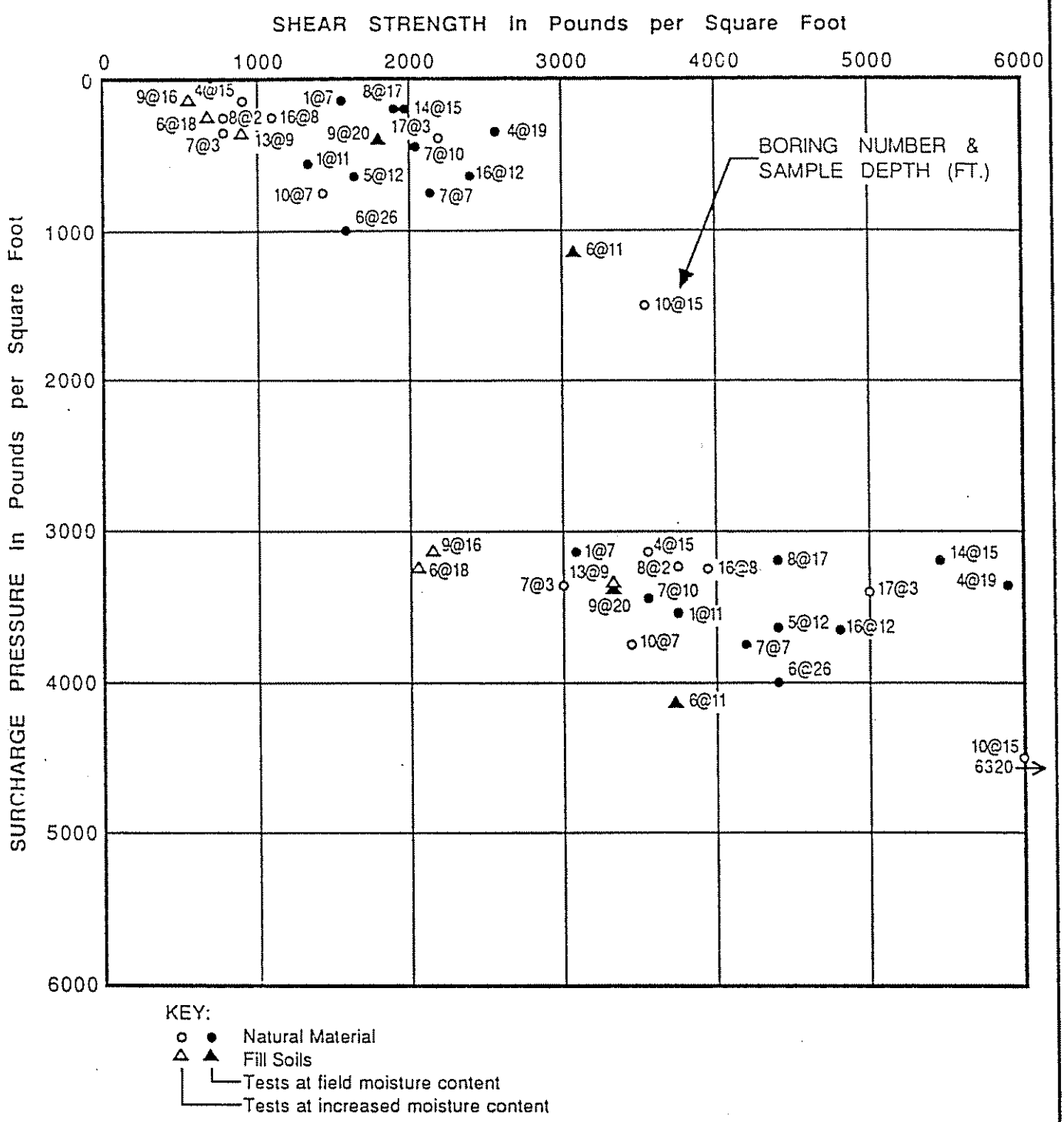
No.200 No.40 No.10 No.4 3/4" 3" 12"

U. S. STANDARD SIEVE SIZE

UNIFIED SOIL CLASSIFICATION SYSTEM

Reference:
The Unified Soil Classification System, Corps of Engineers, U.S. Army
Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

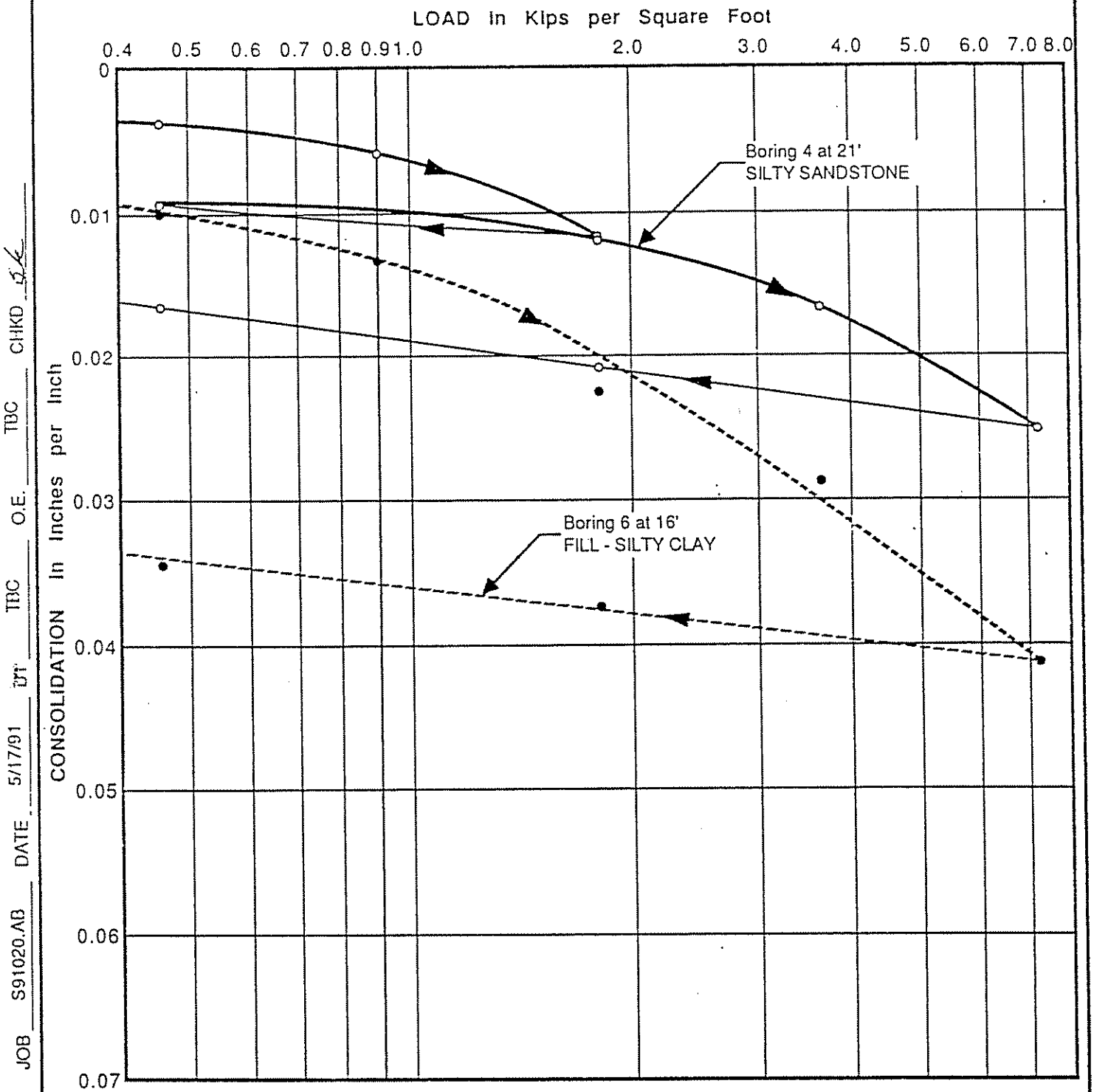
LeROY CRANDALL AND ASSOCIATES



JOB S91020.AB DATE 5/16/91 BY TBC O.E. TBC CHKD. JK

DIRECT SHEAR TEST DATA

LeROY CRANDALL AND ASSOCIATES

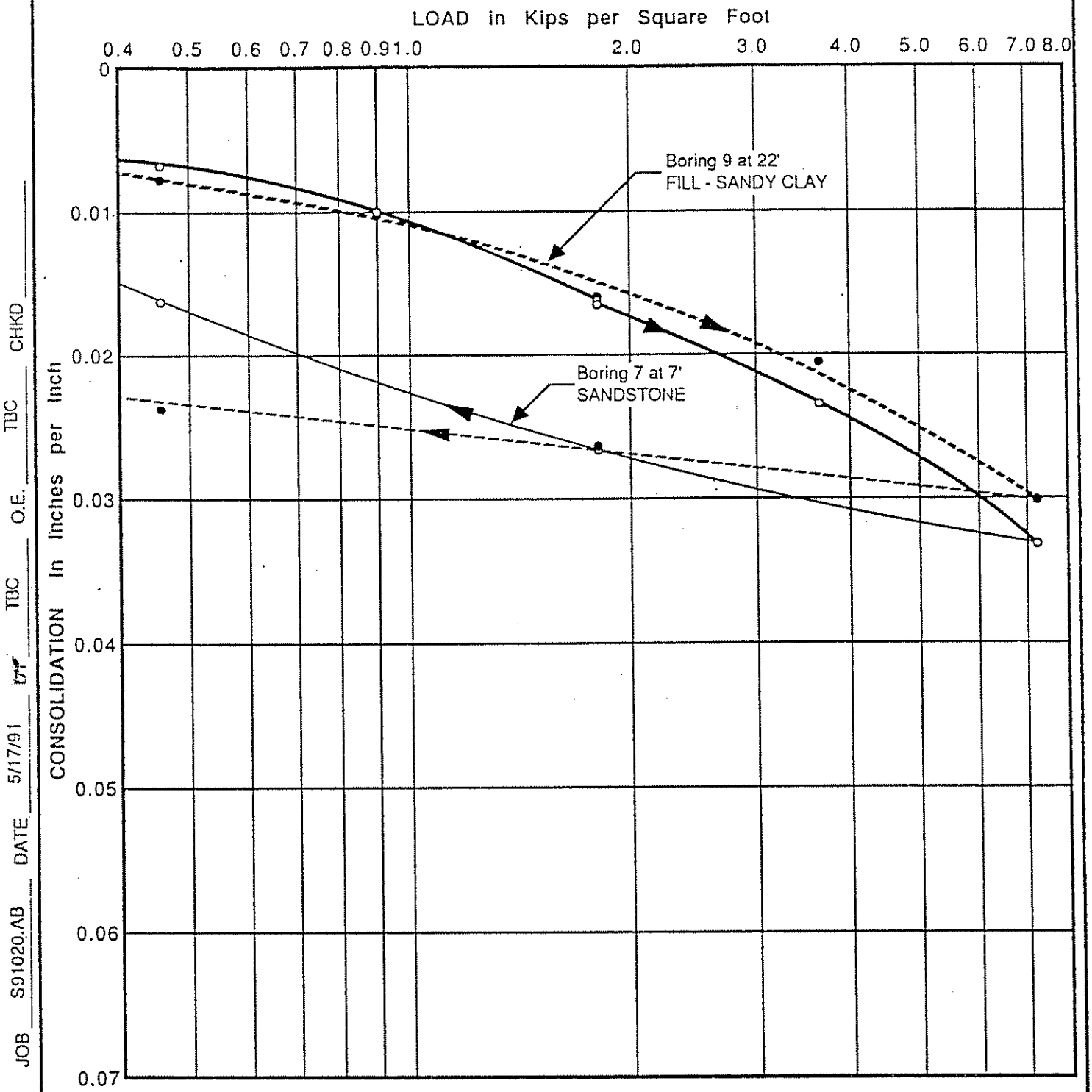


NOTE : Samples tested at field moisture content

JOB S91020.AB DATE 5/17/91 DT TBC O.E. TBC CHKD

CONSOLIDATION TEST DATA

LeROY CRANDALL AND ASSOCIATES

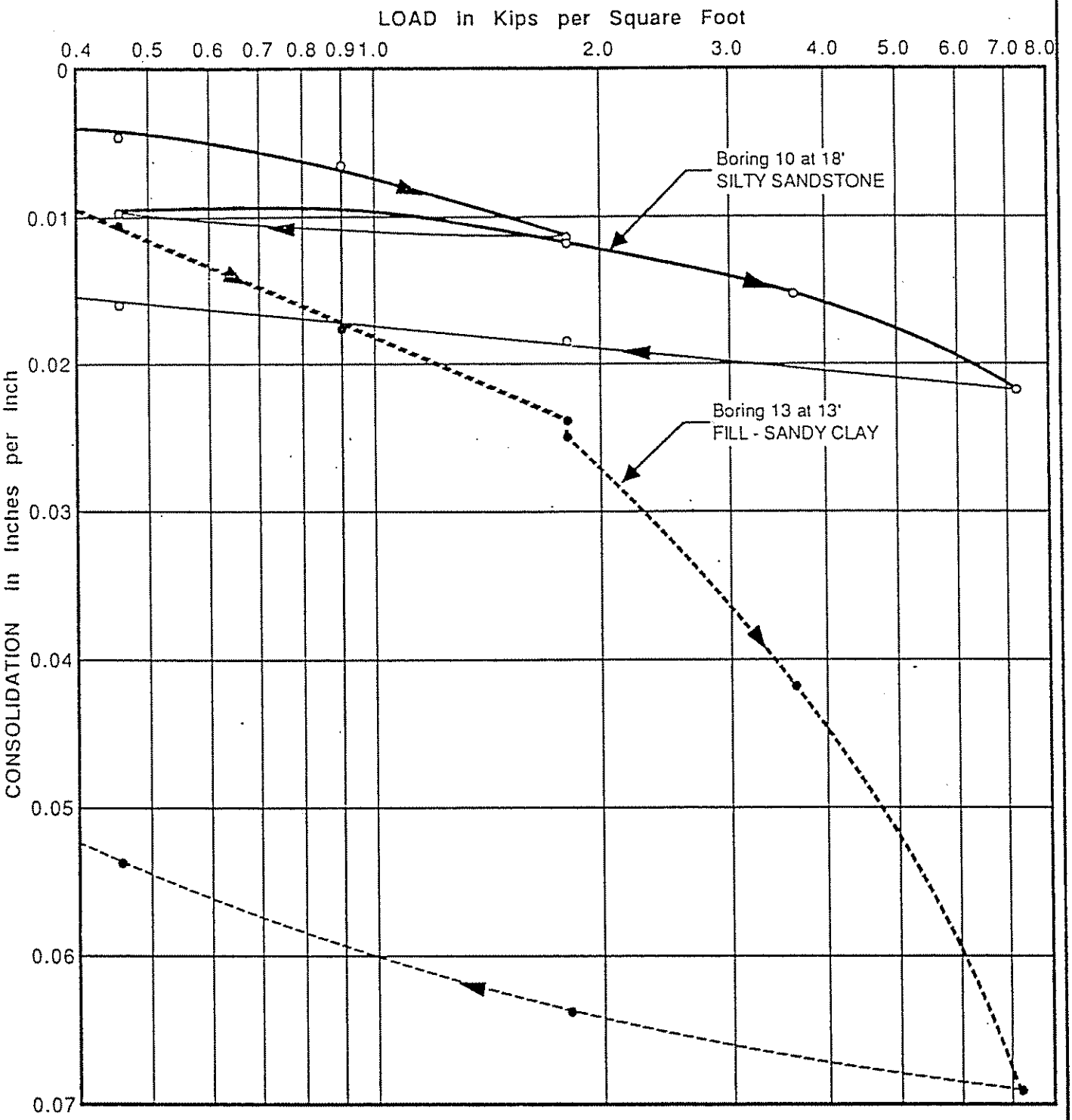


NOTE : Water added to sample from Boring 7 after consolidation under a load of 1.8 kips per square foot. The other sample tested at field moisture content.

CONSOLIDATION TEST DATA

LeROY CRANDALL AND ASSOCIATES

PLATE A - 4.2

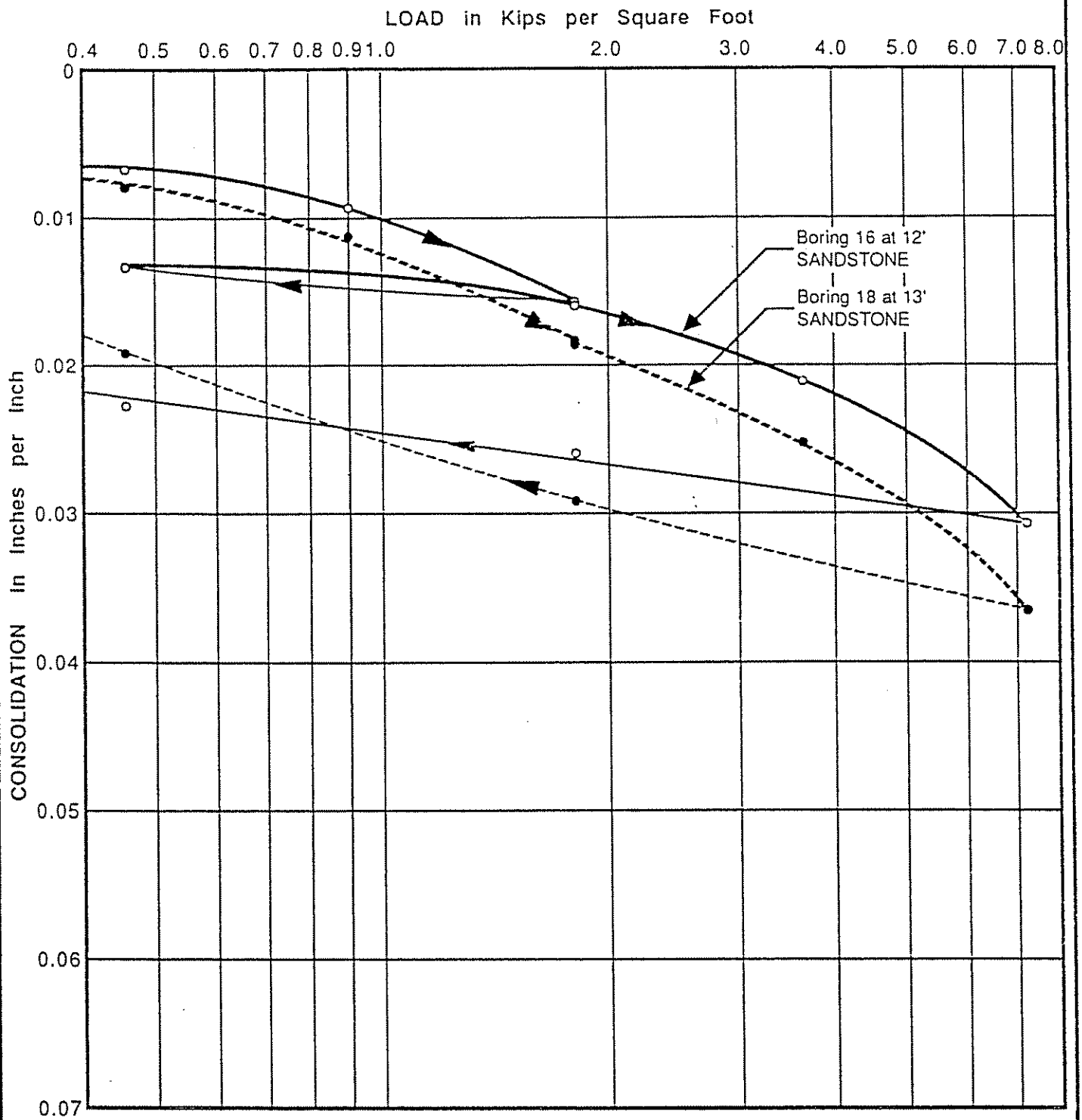


NOTE : Water added to sample from Boring 13 after consolidation under a load of 1.8 kips per square foot. The other sample tested at field moisture content.

CONSOLIDATION TEST DATA

JOB S91020.AB DATE 5/17/91 BY TBC O.E. TBC CHKD JC

LeROY CRANDALL AND ASSOCIATES

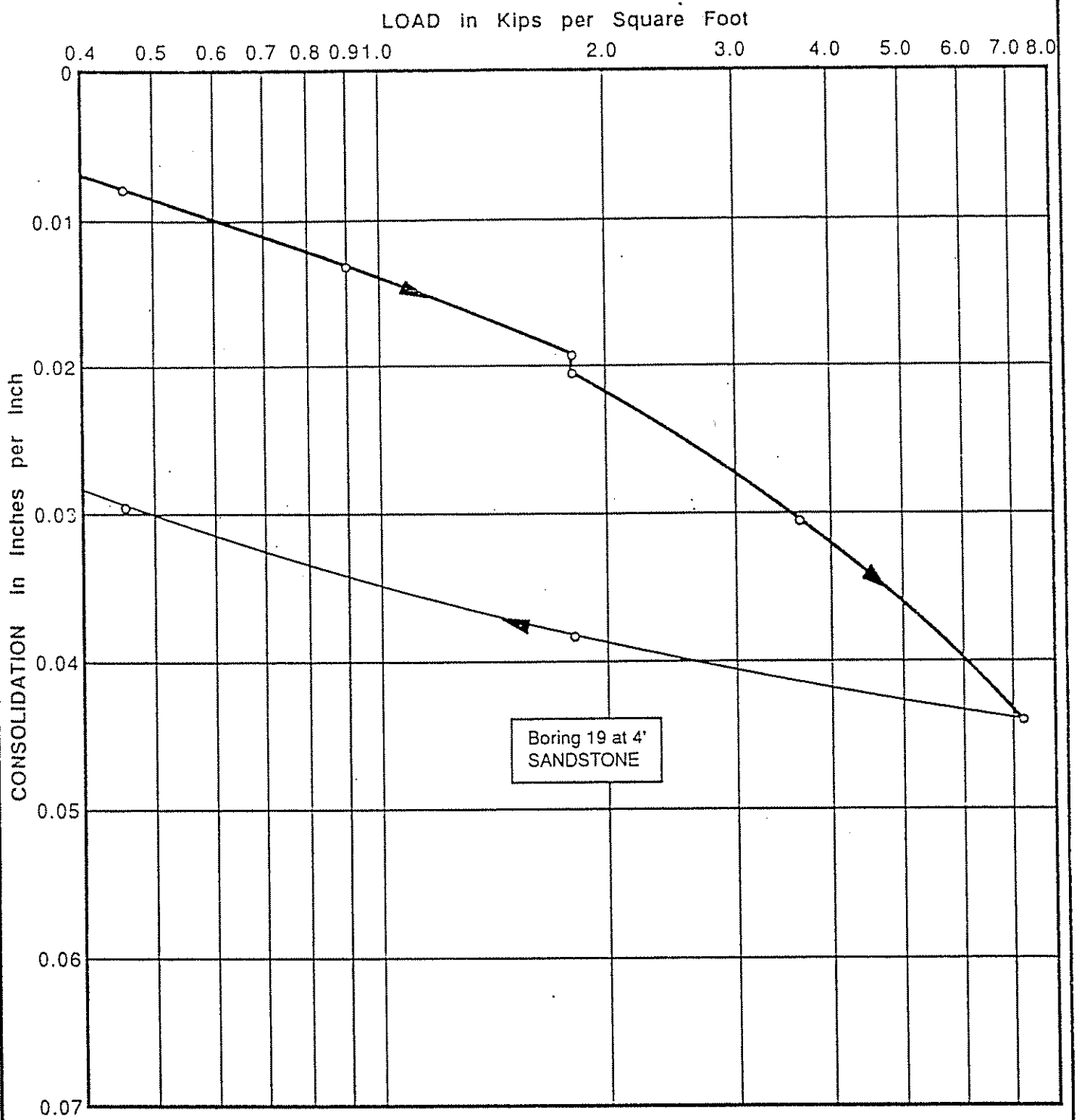


NOTE : Water added to sample from Boring 18 after consolidation under a load of 1.8 kips per square foot. The other sample tested at field moisture content.

JOB S91020.AB DATE 5/17/91 BY TBC O.E. TBC CHKD

CONSOLIDATION TEST DATA

LeROY CRANDALL AND ASSOCIATES



NOTE : Water added to sample after consolidation under a load of 1.8 kips per square foot.

JOB S91020.AB DATE 5/17/91 BY TBC O.E. TBC CHKD

CONSOLIDATION TEST DATA

LeROY CRANDALL AND ASSOCIATES

JOB S91020.AB DATE 5/20/91 BY TBC O.E. TBC CHKD D.K.

BORING NUMBER AND SAMPLE DEPTH:	2 at 1' to 2'	6 at 15' to 16'
MATERIAL TYPE:	FILL - SILTY SAND and CLAY	FILL - SILTY CLAY
MAXIMUM DRY DENSITY*: (lbs./cu. ft.)	117	116
OPTIMUM MOISTURE CONTENT*: (% of dry wt.)	13	14
EXPANSION (%): (From optimum to saturated moisture content)	10.9	–
C. B. R.** (% of standard)		
AT 90% COMPACTION:	1	–
AT 95% COMPACTION:	1	–

*TEST METHOD: ASTM Designation D1557-78

**TEST METHOD: ASTM Designation D1883-87

COMPACTION AND C. B. R. TEST DATA

LeROY CRANDALL AND ASSOCIATES

BORING NUMBER AND SAMPLE DEPTH	13 at 5' to 6'	20 at 3' to 5'
MATERIAL TYPE:	FILL - SILTY SAND and CLAY	FILL - SILTY SAND and CLAY
MAXIMUM DRY DENSITY*: (lbs./cu. ft.)	120	121
OPTIMUM MOISTURE CONTENT*: (% of dry wt.)	11	10
EXPANSION (%): (From optimum to saturated moisture content)	–	2.9
C. B. R.** (% of standard)		
AT 90% COMPACTION:	–	3
AT 95% COMPACTION:	–	6

*TEST METHOD: ASTM Designation D1557-78

**TEST METHOD: ASTM Designation D1883-87

COMPACTION AND C. B. R. TEST DATA

JOB S91020.AB DATE 5/20/91 BY TBC O.E. TBC CHKD SK

BORING NUMBER AND SAMPLE DEPTH:	6 at 16'
SOIL TYPE:	FILL - SILTY CLAY
CONFINING PRESSURE: (lbs./sq. ft.)	200
FIELD MOISTURE CONTENT: (% of dry wt.)	19.6
EXPANSION FROM FIELD TO SOAKED MOISTURE CONTENT: (%)	2.5
SOAKED MOISTURE CONTENT: (% of dry wt.)	22.1
SHRINKAGE FROM FIELD TO AIR-DRIED MOISTURE CONTENT: (%)	6.2
AIR-DRIED MOISTURE CONTENT: (% of dry wt.)	5.5
TOTAL VOLUME CHANGE: (%)	8.7

JOB S91020.AB DATE 5/31/91 TBC O.E. TBC CHKD

EXPANSION TEST DATA

AIR QUALITY REPORT

APPENDIX H

Giroux & Associates
Environmental Consultants

AIR QUALITY IMPACT ANALYSIS

EASTLAKE ACTIVITY CENTER/KAISER HOSPITAL

CITY OF CHULA VISTA, CALIFORNIA

Prepared for:

Lettieri-McIntyre & Assoc.
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Date:

~~March 25, 1992~~
April 20, 1992

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AIR QUALITY SETTING

Meteorology/Climate

The climate of Chula Vista, as with all of Southern California, is largely controlled by the strength and position of the semi-permanent high pressure center over the Pacific Ocean. The high pressure ridge over the West Coast creates a repetitive pattern of frequent early morning cloudiness, hazy afternoon sunshine, clean daytime onshore breezes and little temperature change throughout the year. Limited rainfall occurs in winter when the oceanic high pressure center is weakest and farthest south as the fringes of mid-latitude storms occasionally move through the area. Summers are often completely dry with an average of 10.3 inches of rain falling each year from November to early April at Lower Otay Reservoir, the nearest climate station to the project site.

Unfortunately, the same atmospheric conditions that create a desirable living climate, combine to limit the ability of the atmosphere to disperse the air pollution generated by the large population attracted to the San Diego County climate. The onshore winds across the coastline diminish quickly when they reach the foothill communities east of San Diego, and the sinking air within the offshore high pressure system forms a massive temperature inversion that traps all air pollutants near the ground. The resulting horizontal and vertical stagnation, in conjunction with ample sunshine, causes a number of reactive pollutants to undergo photochemical reactions and form smog that degrades visibility and irritates tear ducts and nasal membranes.

Because coastal areas are well ventilated by fresh breezes during the daytime, they generally do not experience the same frequency of air pollution problems found in some areas east of San Diego. Unhealthful air quality within the San Diego Air Basin's coastal communities, such as Chula Vista, may occur at times in summer during limited localized stagnation, but occurs mainly in conjunction with the occasional intrusion of polluted air from the Los Angeles Basin into the County. Localized elevated pollution levels may also occur in winter during calm stable conditions near freeways, shopping centers or other major traffic sources, but such clean air violations are highly localized in space and time and would not be found at the project site. Except for the occasional interbasin transport, air quality in the project vicinity is probably quite good.

Local meteorological conditions in the project vicinity have not been routinely monitored, but they likely conform to the regional pattern of strong onshore winds by day, especially in summer, and weak offshore winds at night, especially in winter. These local wind patterns are driven by the temperature difference between the normally cool ocean and the warm interior and steered by any local topography. In summer, moderate breezes of 8-12 mph blow onshore and up the valley from the SW by day, and may continue all night as a light onshore breeze since the land remains warmer than the ocean. In winter, the onshore flow is weaker and reverses to blow from the NE in the evening as the land becomes cooler than the ocean.

Both the onshore flow of marine air and the nocturnal drainage winds are accompanied by two characteristic temperature inversion conditions that further control the rate of air pollution dispersal throughout the air basin. The daytime cool onshore flow is capped by a deep layer of warm, sinking air. Along the coastline, the marine air layer beneath the inversion cap is deep enough to accommodate any locally generated emissions. However, as the layer moves inland, pollution sources (especially automobiles) add pollutants from below without any dilution from above. When this progressively polluted layer approaches foothill communities east of coastal developments, it becomes shallower and exposes residents in those areas to the concentrated reacted byproducts of coastal area sources. A second inversion type occurs when slow drainage or stagnation of cool air at night creates localized cold "pools" while the air above the surface remains warm. Such radiation inversions occur throughout the San Diego area but are strongest within low, channelized river valleys. They may trap vehicular exhaust pollutants such as carbon monoxide (CO) near their source until these inversions are destroyed by surface warming the next morning. Any such CO "hot spots" are highly localized in space and time (if they occur at all), but occasionally stagnant dispersion conditions are certainly an important air quality concern in combination with continued intensive development of the Chula Vista area. The intensity of development near the project site is extremely low such that non-local background pollution levels during nocturnal stagnation periods are also low. The local airshed, therefore, has considerable excess dispersive capacity that limits the potential for any localized air pollution "hot spots" from project implementation.

AIR QUALITY SETTING

Air Quality

Ambient Air Quality Standards (AAQS): In order to gauge the significance of the air quality impacts of the proposed Eastlake Activity Center/Kaiser Hospital project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people whose current health condition makes them most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other diseases or illness and persons engaged in strenuous work or exercise, called "sensitive receptors." Hospital patients, because of their often immuno-suppressed condition, represent a very notable sensitive receptor population, and their exposure to potentially unhealthful air quality is, therefore, a serious concern. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone at levels that just meet Federal AAQS may nevertheless have an adverse respiratory health impact. Just meeting standards may not provide a sufficient health protection cushion for sensitive receptor populations.

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 was extended to 1987 for certain National AAQS, and that deadline passed with the San Diego Air Basin (SDAB) still far from attainment. A California Clean Air Act (AB-2595) and a new Federal Clean Air Act have both since been promulgated that establish more realistic implementation timeframes for airsheds with moderately degraded air quality such as SDAB. Because California had established AAQS several years before the Federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between State and Federal clean air standards. Those standards currently in effect in California are shown in Table 1. The new Federal Clean Air Act requires that EPA review all National standards, and EPA has indicated that some of the Federal AAQS will be proposed for modification within the next one-two years.

Baseline Air Quality: The nearest air quality measurements to the project site are made in downtown Chula Vista by the San Diego County Air Pollution Control District (APCD), the agency responsible for air quality planning, monitoring and enforcement

in the SDAB. Table 2 summarizes the last six complete years (final 1990 data have not been officially published) of monitoring data from the Chula Vista (80 East J. St.) station. Progress toward cleaner air is seen in almost every pollution category in Table 2. The only national clean air standard that was exceeded throughout the 6-year monitoring period was the hourly ozone standard which was exceeded an average of less than 4 times per year (once per year is allowable). The more stringent State standards for ozone and for 10-micron diameter respirable particulate matter (PM-10) were exceeded on a somewhat higher frequency; but, overall air quality in Chula Vista, as representative of the Eastlake project site, is nevertheless very good in comparison to other areas of the SDAB.

There are no clear-cut trends in the Chula Vista baseline air quality data in Table 2 except to note that any improvement of the few standards routinely exceeded is very slow. Extrapolation of the pollution trendline suggests that limited violations of standards could occur well into the future. Since observed San Diego County ozone air quality sometimes derives from the southward drift of pollution from the South Coast Air Basin which is forecast to continue to exceed ozone standards to the year 2007, some ozone standard violations will likely occur in the County beyond the 1996-7 attainment target date despite Countywide pollution control efforts. A further improvement in ambient air quality from locally generated emissions reductions will thus occur within the next decade, but complete attainment of all standards may not happen until after the turn of the century.

Air Quality Planning: The Clean Air Act Amendments of 1977 require that a plan be prepared for all airsheds that do not meet national AAQS. The violations of ozone and carbon monoxide standards within the SDAB require that a plan be developed outlining the stationary and mobile source pollution controls to be undertaken to improve air quality. The air quality planning process is further complicated by requirements of the California Clean Air Act (AB-2595), mandating an air quality attainment plan and a year-to-year five percent air quality improvement. To a large extent, state and federal planning requirements can be met through a coordinated process, but the state law may be an even more strict requirement in that meeting some state standards more stringent than federal standards entails an even more accelerated air quality improvement schedule.

The regional air quality attainment plans required by AB-2595 are now being prepared by SANDAG and the APCD. This plan is also intended to serve as the framework for air quality planning efforts required under the recently (November 1990) promulgated National Clean Air Act Amendments. In San Diego County, air pollution planning agencies recognize that there is nothing that can be done within the basin to neutralize the effects of pollution blowing into the San Diego County from the Los Angeles Basin. The planning process thus segregates weather conditions under which local air quality levels are influenced by outside sources from those where the county is uniquely responsible for its own air quality problems. The plan must also demonstrate that improved air quality will be maintained after attainment; thus, the plan must have provisions for continued air quality improvement to accommodate San Diego County growth and motor vehicle travel.

Regional air quality improvement efforts are focused on transportation issues, such as transportation control measures, transportation system management and direct source regulations. To address transportation-related air quality problems, level of service standards for arterials, highways and transit systems are being developed along with goals for reducing single-occupant auto trips. Although the areas of focus are well known, specific AQP guidelines and standards are not currently available. Thus, a direct comparison or evaluation of the project components with the regional standards cannot be made at this time.

In general, however, hospitals, associated medical facilities and commercial development are not of themselves emitters of air pollutants. They cause mainly mobile source emissions to be generated. Project consistency with any regional air quality planning is determined in terms of whether overall growth has been correctly anticipated in a given sub-region. Medical facilities serve the general population, but will not cause automotive travel to be generated unless there are people in need of such services. By and large, institutional uses (hospitals, schools, churches, etc.) are growth-accommodating and not growth-inducing. They are thus related to the air quality planning process only inasmuch as the rate of growth they are accommodating by providing needed services is consistent with the air quality planning process.

At the local planning level, cities must contribute to the air quality improvement effort with a day to day decision making framework to ensure attainment of regional standards and objectives. Even though no current local air quality plan exists in Chula Vista, the City Council has implemented the Growth Management Program which requires Air Quality Improvement Plans (AQIP) for major development projects (50 residential units or commercial/industrial projects generating more than 500 trips per day). Through the Growth Management Program, Chula Vista is actively working to establish effective long-term strategies that implement state and regional air quality standards and objectives.

AIR QUALITY IMPACT

Project-Related Emissions Sources

Project implementation will result in an increase in air pollutant emissions primarily from transportation sources. Impacts from transportation sources can not be completely analyzed on any single project basis because the pattern of movement of people and goods interacts with the entire spectrum of sub-regional land use and infrastructure. All growth inherently impedes future attainment of clean air standards because of associated mobile source emissions. One can not assume, however, that people would not get sick or need jobs or need daycare for their children or go to church or to the cinema if the Eastlake Activity Center were not built. San Diego County in-migration is forecast to exceed out-migration, and the birth rate is expected to continue to exceed the death rate. Intensification of land use therefore will occur. Minimizing the impacts on air quality from such growth depends on a close linkage between growth management, mobility and a reduced dependence on the single- or low-occupant automobile as almost the sole means of transportation accommodating such growth.

Hospitals are generally not considered major sources of air pollution emissions because pollution generation would be counter-productive to the hospital's health care delivery responsibility. A medical center, as with most other institutional developments, is primarily an indirect source of emissions by virtue of its vehicular trip generation for staff, patients, visitors and suppliers. To a large extent, the choice of mode of access is beyond the direct control of medical center administration. It should further be noted that project implementation will not create such indirect source emissions that would not occur without the project. A demand for medical services will exist whether or not this project is built such that comparable project-related indirect emissions sources will occur for the "no-project" alternative. It can, in fact, be argued quite convincingly that development of a Kaiser Medical Center in Chula Vista will reduce the vehicle miles traveled (VMT) by patients and staff compared to the existing use of a single County-wide facility at Zion Avenue. Meeting a demand for medical services as close as possible to the source of the demand not only reduces overall travel distance, but also may enhance the attractiveness of several non-single-occupant transportation options. A direct, short bus trip may be acceptable, but a trip of many miles with multiple transfers clearly can not compete with the convenience of an automobile.

Village Center uses are similar to a medical center as representing a transportation-dominated source of air emissions. As with the medical center, a determination needs to be made whether the proposed land uses meet the needs of the local community and are planned in as "air-quality friendly" a manner as possible.

Project-related emissions as a basis for the impact analysis have been determined from information supplied by the architect of record for this proposed project. Potential emissions sources include:

1. Construction activities - Site improvements will cover 71.8 acres, of which a portion will be in structures and a larger portion in roadway, parking and open space. Dust emissions during clearing, grading and construction will depend on the duration of construction, depth of excavation and physical factors such as wind speed, soil moisture and soil silt content. Some parameters are not yet known pending site seismic studies, and some factors vary seasonally or year to year such that only a generalized dust emission factor can be ascribed to project construction.

   Heavy equipment exhaust emissions and vehicular source emissions from trucks hauling building materials and from construction employee commuting will be generated during construction. Until a contractor is selected, and until additional geotechnical studies are completed, factors such as equipment mix, excavation depth, material hauling or employee commuting distance cannot be accurately estimated. As with the dust emission estimates, a state-wide average construction equipment and vehicular use activity level must be used in the absence of any definitive, project-specific input data. Based on similar development in California, project development will entail the expenditure of around 14 million brake-horsepower-hours of equipment operations as a basis for calculating total project-related construction activity air pollution emissions.

   Construction also may have "spill-over" effects through interference with off-site traffic through lane blockage, detours, trucks idling or parked in travel lanes, etc. The magnitude of such effects attributable to project development is not known but can generally be maintained at an insignificant level through good planning and construction permit requirements.

2. Vehicular Source Emissions - Phase I buildout may generate 20,320 daily automotive trips from Village Center and Kaiser Medical office building uses. At full SPA Plan Amendment area buildout, site-related trip generation may be as high as 50,000. These trip forecasts are based on current trip-making characteristics and do not incorporate any substantial trip reduction associated with anticipated enhanced transportation demand management (TDM) programs. However, even with a high successful TDM program, project-related trip generation will still be very substantial.

3. Stationary Source Emissions - Project development will entail on- and off-site energy consumption with associated air pollution emissions. Most stationary source emissions will be associated with electrical power generation at SDG&E facilities within the San Diego Air Basin. Minor amounts of air emissions will be released from on-site fuel combustion for space heating, cooking, hot water, etc. Similarly insignificant amount of pollution will be released from landscape utility equipment, or maintenance activities. No medical waste incineration will occur at the Medical Center. An emergency generator will be routinely tested to verify its ability to run during an electrical outage. Medical equipment sterilization will be performed for items requiring ultra-sterilization.

Ethylene oxide (ETO), the fumigant most commonly used for such purposes, is a suspected carcinogen such that emission controls on ETO must be included as conditions on any use permit for the facility.

Construction Impacts

The clearing and grading of the project site, the excavation of utility access, the preparation of foundations and footings, and building assembly will create temporary emissions of dusts, fumes, equipment exhaust and other air contaminants during the project construction period. Emissions from such activities are difficult to estimate because project-specific emission characteristics vary from site to site. In general, the most significant source of air pollution from project construction will be the dust generated during clearing, excavation and site preparation. Typical dust lofting rates from construction activities are generally assumed to average 1.2 tons of dust per month per acre disturbed. This is a universal factor used throughout the entire United States, and thus does not incorporate any local variation in parameters such as windspeed, surface silt content, soil moisture, etc. The limited rainfall of Southern California and moderate daytime winds makes construction dust more of a potential problem than might be suggested by a universal dust emission factor. Because there is no way to accurately estimate site-specific modification to the generic dust generation factor, the approach by most air pollution regulatory jurisdictions has been to require a very aggressive program of dust control during construction to compensate for any uncertainty in the possible particulate air quality impact from project construction.

Dust emissions were calculated by assuming that the entire 71.8 acre project site is under heavy construction at some point during the buildout lifetime of the project. Disturbance will be extensive during Phase I development, and then occur again with lesser intensity as surface parking is replaced with parking structures and nursing towers are constructed. The dust generation period was assumed to cover 11 months for each individual project. In the absence of any dust control, such a disturbance area and period will cause 950 tons of fugitive dust to be added to the local airshed. Dust control through regular watering and other fugitive dust abatement measures required by the San Diego APCD can reduce dust emission levels by roughly one-half to around 0.6 ton/day emissions. Total suspended particulate (TSP) emissions over the buildout lifetime of the SPA Plan Amendment area will thus total around 450 tons. The respirable 10-micron diameter fraction (PM-10) of TSP for which there are ambient standards is approximately one third in close proximity to the dust source. PM-10 emissions over the buildout lifetime may thus be around 150 tons assuming that the input assumptions for this project are reasonably representative of actual on-site conditions.

Much of this dust is comprised of large particles that are readily filtered by human breathing passages, and thus settles out rapidly on parked cars and other nearby horizontal surfaces. It, therefore, comprises more of a soiling nuisance rather than any potentially unhealthful air quality impact. The small diameter fraction of total dust generation, however, will be carried for considerable distances by typical daytime west to east winds. It will, therefore, contribute incrementally to San Diego Air Basin regional

dust levels which sometimes already exceed ambient particulate standards. Because of the temporary nature of construction activities, short-term construction dust impacts from any single project are normally not designated as a significant air quality impact. However, because construction activity emissions represent such a significant portion of the regional particulate burden, they are cumulatively significant, especially given the pace of construction in San Diego County. To the extend that mitigation of the cumulative PM-10 impact can be implemented beyond the minimum APCD requirements for nuisance abatement, such enhanced controls should be made a condition of approval for any discretionary action concerning the proposed SPA Plan Amendment.

Because of the health sensitivity of hospital patients and the possibility that construction disturbance may cause soil-borne bacteria, molds or viruses to be lofted into the air, after the hospital is constructed and is accepting patients, all major grading and site disturbance in the SPA Amendment area should cease should the prevailing winds be from the south to the north. Construction should be stopped until the wind changes direction so as not to be blowing toward the hospital. The construction area should be watered down to minimize the potential for contaminants in the soil to become air-borne. A disease outbreak at the City of Hope Hospital was linked to soil-borne organisms from nearby construction invading the hospital ventilation system through the air-conditioning cooling tower. While dust impacts are considered as an insignificant temporary nuisance, any airborne emissions carry some element of risk in a health-care environment and must be minimized as fully as possible.

Equipment exhaust as well will be released during temporary construction activities, particularly from on-site mobile sources during site preparation and from off-site equipment hauling concrete, steel, wood, etc. during actual construction. The fleet mix (on-site equipment or off-site trucks) for any individual project varies by project and by contractor, but one can use a generalized estimate of average equipment activity levels. The California ARB estimates that around 200,000 Brake-Horsepower-Hour of on- and off-site equipment are required to build out one acre of land into primarily commercial or institutional land uses. If all such equipment is diesel-powered, then the following total emissions will result from project buildout of the entire 71.8 acre parcel:

Pollutant	EMFAC	Emissions (tons)
Reactive Organics	(1.86 lb/1000 BHP-HR)	13.3
Carbon Monoxide	(6.85 lb/1000 BHP-HR)	49.2
Nitrogen Oxides	(19.87 lb/1000 BHP-HR)	142.7
Suspended Particulates	(1.60 lb/1000 BHP-HR)	11.5
Sulfur Dioxide	(0.48 lb/1000 BHP-HR)	3.4

These emissions will be concentrated into selected time periods with a substantial fraction occurring during the preliminary Village Center and MOB development, with correspondingly lesser during the subsequent site intensification. Although the construction activity equipment emission rates may be substantial (especially the NOx from diesel-powered machinery), they will be widely dispersed in space and time by the mobile nature of much of the equipment itself. Furthermore, daytime ventilation during much of the year in Chula Vista is usually more than adequate to disperse any local pollution accumulations near the project site. Any perceptible impacts from individual construction activity exhaust will, therefore, be confined to an occasional "whiff" of characteristic diesel exhaust odor, but not in sufficient concentration to expose any nearby receptors to air pollution levels above acceptable standards. It is furthermore anticipated that the California ARB will soon promulgate emissions standards for off-road construction equipment. As newer, better controlled equipment replaces the pre-1993-94 fleet, the above emissions will be somewhat reduced by such replacement.

When construction activities extend beyond the immediate confines of any individual site from activity spill-over onto the roadway system around the developing parcel, it may also affect non-project traffic. Detours, delays, congestion from lane closures or slow moving vehicles may affect external traffic. As a rule of thumb, speed reduction due to congestion causes emissions of CO and ROG from a car to double if the speed is cut in half while NO_x levels remain almost unchanged. When this effect is multiplied by a large number of cars affected over an extended period of time, the cumulative effect could become significant. Construction planning procedures to minimize traffic interference, therefore, must be included in any project construction specifications. With an effective congestion/traffic management program during construction, impacts can be maintained at an insignificant level. Spill-over may also physically entail material dropped, washed, carried or deposited off-site around a construction area. Non-site traffic subsequently will crush, pulverize and cause fine material to be lofted into the air. Dust control planning thus encompasses both on-site as well as off-site control. Housekeeping procedures to keep material on-site, and maintenance to remove material that accidentally escapes the on-site control thus must be an integral part of project planning to sustain physical spillage impacts at an insignificant level.

Vehicular Emissions Impacts

Vehicular emissions from project implementation constitute the most significant development-related air quality concern. The emissions burden associated with the Eastlake I Activity Center project can be readily calculated using the California ARB's URBEMIS3 urban emissions computer model. The results of that calculation for analysis years from 1990 through 2010 are summarized in Table 3 for the proposed SPA Amendment along with a comparison of emissions from full SPA buildout. The computer output from the emissions model is attached as an appendix to this report.

There are no absolute standards of impact significance in terms of total emissions. The San Diego APCD does have a threshold level for stationary sources that triggers certain requirements to use best available control technology (BACT) or to concurrently reduce emissions elsewhere within the basin (off-sets) if thresholds are exceeded. That concept has often been applied to indirect sources such as general development, but the use of such a stationary source limit is not wholly appropriate. A factory is either built or not built, and there are engineering solutions to emissions reductions that can be required by the APCD. Indirect sources, however, will likely be built in another jurisdiction with identical emissions under the no-project alternative, and the APCD has little or no control on vehicular emissions. Implementation of the SPA Plan Amendment certainly causes vehicular emissions to be generated that far exceed the APCD insignificance level. Any residual air quality impact significance compared to the no-project alternative or to buildout under the adopted plan, however, can not be evaluated in terms of emissions magnitude alone. One can state with certainty that the cumulative impact of the project's mobile source emissions will create a significant cumulative air quality impact. Impact significance on an individual project basis, however, can not be evaluated unless one can compare the impact with some certainty to the air quality implications of the "no-project" scenario.

The fact that the no project alternative is not superior to the SPA Plan Amendment is most readily seen with respect to the proposed MOB and hospital.

People will continue to require increasing amounts of medical care in conjunction with projected Kaiser Permanente membership growth. If the demand is not met at the new facility, it will require longer trips to existing Kaiser medical care resources. Kaiser Permanente currently has 56,955 members within a 14 zip-code region comprising its South County service area. The average trip length difference between driving to the Zion Avenue facility versus the proposed Eastlake site is slightly over 12 miles. On an average day, about one percent of the total membership visits a medical care facility (pers. comm. V. Furukawa, Kaiser Permanente, March 16, 1992). A detailed analysis of the travel pattern from every membership residence (zip-code centroid) was performed by Kaiser staff to suggest that the average daily VMT reduction from having a South County facility is around 7,750 miles per day, doubling to almost 16,000 miles saved per day for a year 2007 South County membership projection of 115,000. When accompanied by the fact that hospital patient visitors and staff may also experience some VMT reduction, the travel reduction benefit will create a measurable air quality benefit.

Air emissions reductions from VMT savings were calculated by combining VMT savings estimates with the California EMFAC7EP emissions computer model. The emissions reduction derives primarily from travel in the "hot-stabilized" mode which is where a vehicle is operating most efficiently, but not from the "cold-start" mode where much of a trip's emissions occur. The air quality benefit from VMT reduction is therefore not as significant as if the whole trip were eliminated. Nevertheless, a substantial emissions benefit can be documented as seen as follows:

	Reactive Organics	Carbon Monoxide	Nitrogen Oxide
1992 (7750VMT reduced):			
Emission Factor (gram/mile)	0.29	4.48	0.67
Emissions Saved (pounds/day)	5.0	76.5	11.4
2007 (15,850 VMT reduced)			
Emissions Factor (gram/mile)	0.07	1.56	0.23
Emissions Saved (pounds/day)	2.4	54.5	8.0

These calculated emissions savings when compared to total burden shown in Table 3, in no way alter the conclusion that the project creates a significant cumulative air quality impact. They suggest, however, that the same level of emissions will result for the no-

project alternative plus the emissions shown above as a penalty for not meeting the ability to serve medical service demand closer to the residences of Kaiser members from which trips originate.

While project-related mobile source emissions are created regionally and thus do not have a very direct impact on local Chula Vista air quality, the incremental addition of project-related traffic over a wide area may change microscale air quality distributions. To determine whether future traffic changes will create an adverse air quality impact, a microscale air quality analysis was performed at twenty-one (21) intersections where project-related traffic may create microscale pollution "hot spots". Calculations were made for the no-project, with-project and project with SR 125 ramps scenarios. A screening procedure based on the California line source pollution model CALINE4 was used for this analysis because an explicit analysis of 63 intersections (21 intersections X 3 scenarios) was beyond the scope of this assessment. Carbon monoxide (CO) was used as an indicator of any "hot spot" potential because CO, unlike regional pollutants such as ozone, is directly related to source activity immediately adjacent to the receptor (a primary, unreacted pollutant impact). The results of the microscale impact analysis are shown in Table 4.

Maximum hourly CO impacts (at the Otay Lakes/Eastlake intersection) are 1.8 ppm above the no-project scenario. With the proposed SR-125 ramps, the microscale impact drops to 1.2 ppm. The worst-case cumulative impact of all traffic sources, in conjunction with the worst-case hourly background CO levels shown in Table 2 (assuming they stay constant for the next 20 years), do not exceed the most restrictive hourly CO standard of 20 ppm. Since the 8-hour average traffic volume is less than the peak hour used in Table 4, and since the 8-hour average vehicle speed is faster than for rush hour with lower emissions per vehicle, and since the exceedingly restrictive dispersion conditions used in the hourly analysis do not persist for 8 hours, the 8-hour microscale CO impact is much lower than hourly values. The 8-hour CO impact is therefore well below 1 ppm, and also considered as insignificant.

Siting health care facilities in close proximity to a future freeway such as SR 125 is a concern for patient health. However, freeway emissions per mile from each "hot-stabilized" vehicle are much lower than arterial traffic "cold-start" vehicles. Measurements of CO adjacent to a number of freeways in California has often shown lower levels than near a nearby congested intersection. With adequate distance separation between the freeway and ventilation system intakes and with air filtration generally used in a medical care environment, no impacts from freeway proximity is expected for the proposed medical center component of this project.

Stationary Source Impacts

Stationary source emissions from retail, offices and medical center uses are primarily in the form of electrical generation emissions from SDG&E power plants. Because some power is generated outside the basin, and some grid power derives from non-traditional

or non-fossil fuel sources such as co-generation or nuclear, and because the fuel mix burned at fossil-fueled plants varies depending on the availability of oil or natural gas, one can not accurately estimate the future electrical generation impact of general growth. Kaiser has a very active program to develop alternatives to purchased power because medical uses are very electrical power intensive. Fuel cells, plasma furnaces and other non-traditional sources are under consideration for the proposed hospital, as are more efficient fossil-fuel uses where a natural-gas fired turbine generates electricity and the exhaust gas is used to run heaters, chillers or boilers for space heating, air conditioning and steam for sterilization. If and when an energy system design is finalized, and if it has the potential to emit air pollutants, it will require separate environmental documentation and an APCD authority to construct/permit to operate.

The proposed medical center itself will have no significant sources of pollution venting to the atmosphere. It is obviously counter-productive to be emitting additional air pollution in a health care environment, and the rules of the APCD strictly regulate even the most minor emissions sources. Almost all hospitals once had incinerators to burn both contaminated combustible material as well as to destroy pathological waste. Increasingly stringent rules of the APCD and a high percentage of plastics in the waste stream (which releases several known carcinogens when burned) have caused a sharp decline in the use of incinerators at hospitals that have them on their premises. New hospitals simply do not include an incinerator because it would likely not receive a permit to operate from the APCD even if hospital administration wanted to have one for some reason. Many hospitals do have a sterilizer which is used to decontaminate any inert waste so it can be safely landfilled. Any possibly infectious waste is placed in autoclavable bags which are then heated by steam or by microwave energy for a pre-determined period of time. A temperature test strip that changes color with thermal dose is often included with the load to be stabilized to verify that sufficient temperature exposure has occurred. Except for an emergency pressure vent, however, there is no atmospheric pathway that would allow any sterilizer vapor to have contact with the ambient atmosphere.

One small source of possible toxic air contaminants (TAC) will likely occur at the new medical center is the use of small amounts of ethylene oxide (ETO) as a fumigant for super sterilization. Because of its limited volume of use, the waste gas is often vented to the atmosphere. A risk screening analysis for such a system was recently performed as part of a hazardous materials study for the proposed Palmdale Medical Center is Los Angeles County. The analysis showed that the maximum individual lifetime excess cancer risk from ETO inhalation was 7.6 in one million compared to a lifetime risk of 270,000 per million from all cancers. A risk of less than 1 per million is considered completely insignificant. A risk up to 10 per million is considered acceptable by programs such as Prop. 65. The ETO inhalation risk thus falls into the "acceptable" category. This hazardous materials study recommended installation of a monitoring system in the sterilizer vent to verify that ETO emissions never exceed the 10 per million risk level and that provisions be made for a future add-on installation of an activated carbon absorption unit if risk/emissions standards change. With such provisions, ETO emissions will not pose a significant threat to the environment.

TABLE 4

EASTLAKE I ACTIVITY CENTER - MICROSCALE IMPACT ANALYSIS
(Hourly CO Concentrations (ppm) above non-local background)

	2010 No Proj.	2010 With Proj.	2010 With Proj. & Ramps
Otay Lakes/Bonita	6.2	6.1	6.0
Otay Lakes/East H St.	6.3	6.4	6.5
Otay Lakes/La Media	6.4	6.7	6.9
Otay Lakes/Corral Cyn.	4.1	5.2	5.7
Otay Lakes/Eastlake	6.8	8.6	8.0
Otay Lakes/Lane	4.1	4.5	4.3
Otay Lakes/Hunte	3.5	3.7	3.9
Corral Cyn./Bonita	4.1	3.9	3.7
Corral Cyn./East H St.	3.7	4.4	4.1
Corral Cyn./Palomar	2.3	3.3	3.3
Corral Cyn./Orange	6.9	6.9	7.0
Medical Center/Palomar	3.1	3.0	3.0
Eastlake/East H St.	4.0	4.4	4.3
Eastlake/Palomar	2.7	3.0	2.9
Eastlake/Orange	7.2	7.6	7.2
Eastlake/Hunte	5.9	5.7	5.8
Lane/East H St.	4.7	5.4	4.4
Hunte/East H St.	4.5	4.9	4.1
Hunte/Orange	4.6	5.0	4.9
La Media/Palomar	5.1	5.0	5.2
La Media/Orange	9.7	9.8	10.0

Source: Screening procedure from Caltrans "Air Quality Technical Analysis Notes" (1985) based on CALINE4 model.

An on-site emergency generator is the only combustion source, other than heating or cooking with natural gas, that would be associated with the proposed facility. Emissions from generators vary such that it is not possible at present to specify the exact emission level or dispersion pattern until a vendor has been selected and a guarantee has been received from the engine manufacturer. Any uncertainty notwithstanding, emissions have been estimated using a generic emission factor and assuming that a 1,000 HP emergency generator is run for 15 minutes as a test period. Emission factors from EPA's "Compilation of Air Pollutant Emission Factors" (AP-42) predict the following emissions assuming propane is used to fuel the generator.

Nitrogen Oxides	6.0 pounds
Carbon Monoxide	0.8 pounds
Hydrocarbons	2.4 pounds
Sulfur Dioxide	negligible
Particulates	negligible

If diesel fuel is used for the emergency generator for its monthly test, emissions will be somewhat higher, but still far below any level of significance.

Analysis of Alternatives

The proposed SPA Plan Amendment represents an intensification of land use that replaces planned residential use with a medical center plus makes some additional adjustments/fine tuning to the land use plan. The proposed project is not consistent with the population/housing/employment/land use projections used in the development of the federally adopted 1982 air quality plan (the 1982 State Implementation Plan (SIP) Revisions). The 1982 SIP Revisions were based on the SANDAG Series V growth projections. Although later projections recognize a likely higher intensity of use for the project vicinity, inconsistency with the 1982 SIP Revisions growth forecasts is considered as a potentially significant air quality impact.

Revisions to the 1982 plan have been made as part of the 1991 plan prepared to meet the requirements of the California Clean Air Act (CCAA). These revisions use Series VII forecasts which do include a probable intensification of use for the project area (Cinti, 1992). Since the 1991 plan is expected to be the basis for the 1993 federal plan developed in response to the Clean Air Act Amendments of 1990, that inconsistency will be eliminated with the preparation of the new plan. Since the plan adoption will probably occur before completion and occupancy of much of the Eastlake I Activity Center, the inconsistency will no longer exist upon project completion and is therefore not considered as a significant impact.

Overall project-related vehicular pollution emissions will obviously be directly proportional to total trip generation for any alternative development scenario. Table 5 shows the mobile source emissions for a variety of development options with the Amendment Area and for full SPA buildout. Within the Amendment Area, the proposed intensification creates a dramatic increase in emissions compared to previously adopted/approved development plans. However, as previously noted, the emissions difference between the proposed project and previously considered alternatives does not represent "new" emissions that would not occur without the project. Under the previous plans, that same emissions difference would occur in conjunction with travel to uses not built on the project site. Not only would those emissions occur elsewhere, but it was previously shown that there will be an emissions penalty for Kaiser subscriber travel to existing facilities instead of to the new Chula Vista Medical Center. The lesser intensity developments are therefore probably slightly less preferable in terms of regional air quality. Since the proposed project may have a slight regional benefit, and since maximum development creates no microscale air quality concerns in the project vicinity, it may actually be slightly preferred over the other Table 5 alternatives.

TABLE 5

EASTLAKE I SPA AMENDMENT
COMPARISON OF EMISSIONS FOR VARIOUS
LAND USE ASSUMPTIONS

2010 Amendment Area	Reactive* Organics	Carbon Monox.	Nitrogen Oxides	Particulates PM-10	Sulfur Oxides
Proposed Proj.	494.3	5,457.4	928.9	1,623.6	106.1
General Plan	159.7	1,748.6	301.6	262.0	34.4
Original SPA	223.3	2,483.1	414.7	337.2	47.1
Transportation Phasing Plan	207.8	2,330.7	382.6	301.5	43.4
Proj. w/M.C. Phases I & II	343.7	3,787.1	646.5	1,019.1	73.8
Medical Center Phases I & II	208.5	2,309.2	390.7	824.0	44.7
2010 Full SPA Buildout					
Proposed Project	676.3	7,513.4	1,265.4	2,630.4	144.8
General Plan	464.8	5,205.7	865.0	1,802.1	99.3
Original SPA	405.2	4,539.2	751.3	1,344.0	85.8
Transportation Phasing Plan	354.7	3,990.2	654.3	1,114.1	74.6
Project w/M.C. (I & II)	528.5	5,875.8	988.4	2,041.9	113.1
Med. Ctr. - I & II	390.4	4,365.3	727.3	1,830.8	83.4

* = Assumes 92% of TOG equals ROG
Source: URBEMIS3 Computer Model, Output in Appendix

MITIGATION

Construction of the Eastlake I Activity Center, including the Kaiser Hospital and Medical Office Building, may create short term construction impacts that create a potentially significant temporary air quality impact. Similarly, long term air quality impacts derive from transportation sources on a regional scale. Mitigation of such impacts requires adequate controls on construction activities through grading or construction permits, and through adoption of a variety of transportation control measures (TCMs).

Construction impact mitigation requires the development and implementation of a construction dust abatement and construction management program. Transportation impact mitigation is evaluated in a detailed Air Quality Improvement Program (AQIP) prepared by Cinti & Associates (January 1992). The suggested elements of the construction impact mitigation program that can maintain overall impacts at an insignificant level program are shown in Table 6. The AQIP is incorporated by reference, and the most significant aspects of that document are discussed below.

The AQIP identifies four aspects/activity sources that will substantially reduce vehicular emissions from their unmitigated level. While the residual impact will still be cumulatively significant, the reduction will nevertheless be highly air quality positive. Measures identified in the AQIP as being incorporated include:

1. Community Level

   - The project will connect to residences, schools, parks, etc., by a system of bicycle and pedestrian trails.

   - The business center component will reduce commute distances and maintain a sub-regional jobs/housing balance.

   - Light rail access will be incorporated into the project once it is extended to Eastlake. Park-and-ride bus oriented facilities will be the emphasis until the light rail option is available.

2. Project Level

   - The site has easy access to major existing and planned transportation facilities such as SR-125.

   - Major transportation facilities are expected to become major transit and multi-occupant vehicle corridors.

   - Intersection level of service performance standards will minimize "hot spot" potential.

3. Medical Center Site

- Local availability of medical services will reduce regional travel to existing Kaiser facilities.

- Kaiser Permanente will implement a Transportation Demand Management (TDM) program among its employees patterned after the KaiseRider program in place at its existing facilities. The program will include the following facility improvements:

  . Carpool preferential parking
  . Vanpool preferential parking
  . Bicycle parking
  . Showers and clothing lockers
  . Passenger loading areas
  . A commuter information board

  The program will offer the following on-going services:

  . Rideshare registration
  . Personalized rideshare matching
  . Carpool and vanpool formation assistance
  . Distribution of carpool passes
  . Distribution of bus maps and schedules, park-and-ride maps, bicycle safety brochures, etc.
  . Subsidize $15.00 for bus passes
  . Meet your match promotions
  . Guaranteed ride home program
  . Subsidize $25.00 monthly per vanpooler
  . Three month empty seat subsidy for vanpools
  . Recognition awards
  . Financial incentive $1/day incentive

4. Village Center Site

- The Center includes a 144-space park-and-ride shared parking allocation.

- Public transit will be expanded as sufficient ridership develops in conjunction with land use intensification.

TABLE 6

RECOMMENDED CONSTRUCTION IMPACT MITIGATION MEASURES

- All primary project construction shall implement an aggressive program of construction dust control sufficient to meet the requirements of the San Diego County APCD.

  The minimum content of such a program will include:

  a. Apply sufficient water to all major soil disturbance areas to maintain a soil moisture of 4 percent in the upper 6" soil stratum. Other equally effective dust palliatives shall be used if drought conditions limit water availability.

  b. Perform daily street sweeping at the conclusion of each workday up to a distance of 250 feet in either direction of any construction site access entrance until all on-site paving is completed.

  c. Wash off all trucks leaving the site and wet down or tarp any trucks hauling dirt away from the site.

  d. Double sandbag all site perimeters adjoining traveled roads from November to April to prevent dirt from washing off the site and being pulverized by passing vehicles.

  e. Establish landscaping within 90 days of the completion of grading, or hydroseed with a native plant mix as an interim ground cover to minimize wind erosion. Irrigate as necessary to sustain ground cover.

  f. Terminate all grading, excavation and travel on unpaved surfaces when hourly average wind speeds exceed 30 mph. Wind speeds will be monitored with an on-site wind sensor mounted in an unobstructed location.

- All primary project construction contractors shall implement a traffic management program to reduce the number of employee or material delivery trips and to minimize conflict with regional transportation patterns. The elements of such a program shall include:

TABLE 6 (cont'd)

a. Provide rideshare incentives for all workers on site.

b. Provide construction personnel parking off arterial roadways to minimize traffic interference.

c. Schedule receipt of concrete, asphalt, steel and other materials from 9 a.m. to 3 p.m. as much as practically possible.

d. Restrict any lane closures of public roadways to the hours of 9 a.m. to 3 p.m.

e. Complete all street sweeping/washing of adjacent roadways by 4 p.m.

APPENDIX

URBEMIS 3 COMPUTER MODEL OUTPUT

EASTLAKE I SPA AMENDMENT

- PROJECT ANALYSIS YEARS - 1995 - 2010
- CUMULATIVE ANALYSIS - 2010
- ADOPTED GENERAL PLAN BUILDOUT - 2010
- ORIGINAL EASTLAKE I SPA - 2010
- APPROVED PROJECTS - 2010
- PROJECT WITH MEDICAL CENTER PHASES I & II - 2010
- MEDICAL CENTER PHASES I & II - 2010

Project Name : EASTLAKE AMENDMENT Date : 09-29-2098

Analysis Year = 1995 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	6	1800	1
Ind./Business Park	130.0/Acre	2	260	1
Church	40.0/Acre	4	160	1
Retail	700.0/Acre	17	12110	1
Library	400.0/Acre	1	400	1
Medical Office	26.0/1000 Sqf	215	5590	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.2	40.1	58.0	77.2	27.0
Trip Speed	35	35	35	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	1.7	95.6	2.7
Light Duty Trucks	14.3	2.2	95.0	2.8
Medium Duty Trucks	4.3	5.3	94.7	0.0
Heavy Duty Trucks	3.9	29.8	70.3	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	29.5	296.7	42.0
Ind./Business Park	4.1	41.4	5.9
Church	2.1	20.1	3.1
Retail	157.9	1519.1	235.0
Library	5.2	50.2	7.8
Medical Office	74.9	725.2	110.9

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	543.7	135.6	5.1
Ind./Business Park	76.5	19.1	0.7
Church	39.5	1.2	0.4
Retail	2992.6	94.4	28.1
Library	98.8	3.1	0.9
Medical Office	1414.8	118.7	13.3

Project Name : EASTLAKE AMENDMENT Date : 09-29-2098

Analysis Year = 2000 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	6	1800	1
Ind./Business Park	130.0/Acre	2	260	1
Church	40.0/Acre	4	160	1
Retail	700.0/Acre	17	12110	1
Library	400.0/Acre	1	400	1
Medical Office	26.0/1000 Sqf	215	5590	1
Hospital	26.0/1000 Sqf	580	15080	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.3	40.2	58.3	77.4	27.2
Trip Speed	35	35	35	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.2	97.3	2.5
Light Duty Trucks	14.3	0.6	96.8	2.6
Medium Duty Trucks	4.3	2.0	98.0	0.0
Heavy Duty Trucks	3.9	18.0	82.0	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	24.4	253.7	39.1
Ind./Business Park	3.4	35.4	5.5
Church	1.7	17.3	2.9
Retail	131.3	1306.2	218.1
Library	4.3	43.1	7.2
Medical Office	62.3	623.0	102.9
Hospital	184.0	1875.8	299.6

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	499.3	119.9	4.7
Ind./Business Park	70.3	16.9	0.7
Church	36.3	1.1	0.3
Retail	2748.2	83.4	25.8
Library	90.8	2.8	0.9
Medical Office	1299.2	104.9	12.2
Hospital	3802.6	763.9	35.6

Project Name : EASTLAKE AMENDMENT Date : 09-29-2098

Analysis Year = 2005 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	6	1800	1
Ind./Business Park	130.0/Acre	2	260	1
Church	40.0/Acre	4	160	1
Retail	700.0/Acre	17	12110	1
Library	400.0/Acre	1	400	1
Medical Office	26.0/1000 Sqf	215	5590	1
Hospital	26.0/1000 Sqf	580	15080	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.4	40.3	58.6	77.6	27.4
Trip Speed	35	35	35	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
ight Duty Autos	72.8	0.0	97.5	2.5
_ight Duty Trucks	14.3	0.0	97.4	2.6
Medium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	13.6	86.4	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	22.7	238.1	38.1
Ind./Business Park	3.2	33.3	5.4
Church	1.6	16.2	2.8
Retail	122.6	1229.6	212.4
Library	4.1	40.6	7.0
Medical Office	58.1	586.3	100.2
Hospital	171.5	1762.9	291.8

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	472.7	116.9	4.4
Ind./Business Park	66.5	16.5	0.6
Church	34.4	1.1	0.3
Retail	2601.9	81.4	24.5
Library	85.9	2.7	0.8
Medical Office	1230.1	102.3	11.6
Hospital	3600.2	744.9	33.9

Project Name : EASTLAKE AMENDMENT Date : 07-27-2078

Analysis Year = 2010 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	6	1800	1
Ind./Business Park	130.0/Acre	2	260	1
Church	40.0/Acre	4	160	1
Retail	700.0/Acre	17	12110	1
Library	400.0/Acre	1	400	1
Medical Office	26.0/1000 Sqf	350	9100	1
Hospital	26.0/1000 Sqf	1000	26000	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	35	35	35	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.0	97.5	2.5
Light Duty Trucks	14.3	0.0	97.4	2.6
Medium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	11.4	88.6	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	22.4	234.0	38.0
Ind./Business Park	3.1	32.7	5.4
Church	1.6	16.0	2.8
Retail	121.1	1208.9	211.7
Library	4.0	39.9	7.0
Medical Office	93.4	938.3	162.6
Hospital	291.7	2987.6	501.4

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	462.3	113.7	4.4
Ind./Business Park	65.1	16.0	0.6
Church	33.6	1.0	0.3
Retail	2544.5	79.1	24.1
Library	84.0	2.6	0.8
Medical Office	1958.3	162.0	18.5
Hospital	6070.4	1249.2	57.4

Project Name : EASTLAKE I SPA CUM Date : 11-11-2042

Analysis Year = 2010 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	6	1800	1
Ind./Business Park	130.0/Acre	128	16614	1
Church	40.0/Acre	4	160	1
Retail	700.0/Acre	17	12110	1
Library	400.0/Acre	1	400	1
Medical Office	26.0/1000 Sqf	350	9100	1
Hospital	26.0/1000 Sqf	1000	26000	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	35	35	35	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.0	97.5	2.5
ight Duty Trucks	14.3	0.0	97.4	2.6
edium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	11.4	88.6	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	22.4	234.0	38.0
Ind./Business Park	200.9	2088.7	341.9
Church	1.6	16.0	2.8
Retail	121.1	1208.9	211.7
Library	4.0	39.9	7.0
Medical Office	93.4	938.3	162.6
Hospital	291.7	2987.6	501.4

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	462.3	113.7	4.4
Ind./Business Park	4157.4	1022.8	39.3
Church	33.6	1.0	0.3
Retail	2544.5	79.1	24.1
Library	84.0	2.6	0.8
Medical Office	1958.3	162.0	18.5
Hospital	6070.4	1249.2	57.4

Project Name : GENERAL PLAN BUILDOUT Date : 11-11-2042

Analysis Year = 2010 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	9	2700	1
Commercial Retail	500.0/Acre	28	14000	1
Research/Manufacturing (Cum)	130.0/Acre	185	24050	1
Commercial Retail (Cum)	500.0/Acre	6	3000	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	35	35	35	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.0	97.5	2.5
Light Duty Trucks	14.3	0.0	97.4	2.6
Medium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	11.4	88.6	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	33.6	351.0	56.9
Commercial Retail	140.0	1397.6	244.7
Research/Manufacturing (Cum)	301.6	3157.6	511.0
Commercial Retail (Cum)	30.0	299.5	52.4

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	693.5	170.5	6.6
Commercial Retail	2941.7	91.5	27.8
Research/Manufacturing (Cum)	6225.8	1520.5	58.9
Commercial Retail (Cum)	630.4	19.6	6.0

Project Name : ORIG. EASTLAKE I SPA Date : 02-27-2009

Analysis Year = 2010 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	12	3600	1
Commercial	700.0/Acre	22	15540	1
MFDU	8.0/Unit	405	3240	
Library	400.0/Acre	1	400	1
Ind./Business Park (Cum)	130.0/Acre	126	16354	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	30	30	30	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.0	97.5	2.5
Light Duty Trucks	14.3	0.0	97.4	2.6
Medium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	11.4	88.6	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	44.8	467.9	75.9
Commercial	155.4	1551.4	271.6
MFDU	38.5	423.9	60.2
Library	4.0	39.9	7.0
Ind./Business Park (Cum)	197.7	2056.1	336.6

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	924.6	227.4	8.7
Commercial	3265.3	101.5	30.9
MFDU	711.6	5.7	6.7
Library	84.0	2.6	0.8
Ind./Business Park (Cum)	4092.4	1006.8	38.7

Project Name : APPROVED PROJECTS (TPP) Date : 09-20-2060

Analysis Year = 2010 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	11	3300	1
Commercial	500.0/Acre	26	13000	1
MFDU	8.0/Unit	577	4616	
Ind./Business Park (Cum)	200.0/Acre	66	13200	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	30	30	30	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.0	97.5	2.5
Light Duty Trucks	14.3	0.0	97.4	2.6
Medium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	11.4	88.6	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	41.0	428.9	69.6
Commercial	130.0	1297.8	227.2
MFDU	54.9	604.0	85.8
Ind./Business Park (Cum)	159.6	1659.5	271.7

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	847.6	208.4	8.0
Commercial	2731.5	84.9	25.8
MFDU	1013.8	8.2	9.6
Ind./Business Park (Cum)	3303.1	812.6	31.2

Project Name : EASTLAKE W/MC PHASES I & II Date : 12-08-2064

Analysis Year = 2010 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Office	300.0/Acre	6	1800	1
Retail	700.0/Acre	17	11900	1
Ind./Business Park (Cum)	130.0/Acre	128	16614	1
Church	40.0/Acre	4	160	1
Library	400.0/Acre	1	400	1
Medical Office	26.0/Acre	215	5590	1
Hospital	26.0/1000 Sqf	580	15080	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	30	30	30	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.0	97.5	2.5
Light Duty Trucks	14.3	0.0	97.4	2.6
Medium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	11.4	88.6	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Office	22.4	234.0	38.0
Retail	119.0	1188.0	208.0
Ind./Business Park (Cum)	200.9	2088.7	341.9
Church	1.6	16.0	2.8
Library	4.0	39.9	7.0
Medical Office	57.4	576.4	99.9
Hospital	169.2	1732.8	290.8

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Office	462.3	113.7	4.4
Retail	2500.4	77.8	23.6
Ind./Business Park (Cum)	4157.4	1022.8	39.3
Church	33.6	1.0	0.3
Library	84.0	2.6	0.8
Medical Office	1203.0	99.5	11.4
Hospital	3520.9	724.5	33.3

Project Name : ALT 2- MC PHASES I&II ONL Date : 05-10-2069

Analysis Year = 2010 Temperature = 75
EMFAC7 VERSION : EMFAC7D ...11/88

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Ind./Business Park (Cum)	130.0/Acre	126	16354	1
Medical Office	26.0/Acre	215	5590	1
Hospital	26.0/1000 Sqf	580	15080	1

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	8.8	3.2	5.2	8.1	5.5
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	30	30	30	30	30
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	0.0	97.5	2.5
Light Duty Trucks	14.3	0.0	97.4	2.6
Medium Duty Trucks	4.3	0.0	100.0	0.0
Heavy Duty Trucks	3.9	11.4	88.6	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Lb/Day

Unit Type	TOG	CO	NOx
Ind./Business Park (Cum)	197.7	2056.1	336.6
Medical Office	57.4	576.4	99.9
Hospital	169.2	1732.8	290.8

Project Emissions Report in Lb/Day

Unit Type	FUEL USE	PM10	SOx
Ind./Business Park (Cum)	4092.4	1006.8	38.7
Medical Office	1203.0	99.5	11.4
Hospital	3520.9	724.5	33.3

FISCAL ANALYSIS

APPENDIX I

EASTLAKE ACTIVITY CENTER
FISCAL IMPACT ANALYSIS

April 17, 1992

Prepared for:

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CHAPTER I - INTRODUCTION AND SUMMARY

SCOPE OF REPORT

John McTighe & Associates was retained by Lettieri-McIntyre and Associates, Inc. to prepare an analysis of the fiscal impact on the City of Chula Vista of the proposed amendment to the EastLake Activity Center.

This analysis has considered all known non-enterprise fund operating costs and revenues that might be directly attributable to the development of EastLake Activity Center including the Kaiser Permanente Medical Center. It needs to be emphasized that indirect fiscal impacts have not been analyzed in the study. While these indirect impacts may be significant, they are not possible to project with any degree of certainty. Therefore, this analysis has examined only those fiscal impacts that will occur as an immediate result of the development of the EastLake Activity Center as proposed.

City operating costs were projected based on a computer model that took into consideration the fiscal year 1991-92 budget of the City and input received from the various City operating departments. The model includes an allocation of indirect and overhead costs to direct service activities of the City. In this manner the projections of added costs attributed to EastLake Activity Center will in fact reflect the full costs to the City of accommodating this addition to the City. A comparison of the cost impact of the buildout or the currently approved land use plan with the proposed plan has been made throughout the analysis. In addition, Appendix B shows the breakdown of the cost projections between the non-medical center uses and the medical center uses.

City revenue projections were based on the existing revenue sources of the City. Computer modeling of the relationship of individual revenue accounts to population, land use and other factors was developed by John McTighe & Associates to simulate the changes in revenue that could be expected over the development of this project. A separate model of assessed valuation/property tax changes was developed to project the effect on City property tax revenues based on the developer's projection of buildout rate and product pricing. Revenues have been compared between the buildout of the currently approved land use plan and the proposed land use plan for each revenue category. Additionally, Appendix C contains tables showing the amount of each revenue category attributed to non-medical center uses and to medical center uses.

While every attempt has been made to assure accuracy in the projections given the assumptions incorporated in the analysis, unforeseen changes in State law, City Council policy, the general economy or the rate and type of development could result in differences from the projected outcomes.

The principal value of this type of analysis lies in being able to compare land use decisions with the present circumstance and with one another. When these comparisons are combined with the ecological, economical, social and political considerations and placed in context with other fiscal factors affecting the City, a reasoned judgment about a project's relative effect on the City's fiscal position can be made.

CHARACTERISTICS OF THE PLAN

The land use plan analyzed in this study is based on information provided to John McTighe & Associates from the EastLake Development Company. Table I-1 shows the land uses per this input.

Table I-1
EastLake Activity Center
Land Use Plan in Net Acres

Land Use	Current Plan	Proposed Plan
Residential	18.0	0.0
Retail	23.0	17.3
Industrial	4.5	2.0
Office	11.0	6.0
Medical Center	0.0	30.6
Community Purpose Facility		4.0
Open Space	16.9*	11.9
Total	73.4	71.8

* Includes community purpose facility uses also.

Table I-2 on the following page shows the assumed non-residential rate of development. These rates of development were based upon information provided by the EastLake Development Company and Kaiser Permanente.

Table I-2
EastLake Activity Center Fiscal Impact Analysis
Non-Residential Acres Absorbed by Fiscal Year

Land Use	1992	1993	1994	1995	1996	1997	1998	Ultimate	Total
Retail			3.50		6.00	7.80			17.30
Industrial			2.00						2.00
Office						6.00			6.00
Medical (non-exempt)		30.60			(3.00)		(12.29)	(15.31)	0.00
Medical (exempt)					3.00		12.29	15.31	30.60
Community Purpose Facility					4.00				4.00
Open Space		0.00			0.00	11.90			11.90
Annual Totals	0.00	30.60	5.50	0.00	10.00	25.70	0.00	0.00	71.80
Cumulative Total	0.00	30.60	36.10	36.10	46.10	71.80	71.80	71.80	

Kaiser Medical Center
Square Feet of Buildings Occupied by Fiscal Year

Building Type	1992	1993	1994	1995	1996	1997	1998	Ultimate	Total
Medical & Admin. Offices				270,000				215,000	485,000
Hospital						505,000		315,000	820,000
Central Plant				25,000				10,000	35,000
Total	0	0	0	295,000	0	505,000	0	540,000	1,340,000

SUMMARY OF ANALYSIS

The development of EastLake Activity Center is projected to have an overall positive fiscal impact on the City of Chula Vista. In other words, cumulative operating revenues are projected to exceed cumulative operating costs over the period of time analyzed in this study. EastLake Activity Center's annual impact after buildout is projected to be a positive $263,009 per year in current 1992 dollars. Based on the size of the surplus of revenue over expenditures at the ultimate buildout, it is anticipated that the impact will remain positive.

The EastLake Activity Center development is expected to have a neutral effect on the City's capital expenditures and revenues, in that the development will provide public facilities financed either from the developer of the property or from the property itself through the use of public debt mechanisms tied to the property (i.e. 1913 Act assessment districts). The EastLake I Public Facilities Financing Plan is expected to be revised to cover any changes attributed to the amendment of the EastLake I SPA for the EastLake Activity Center. The Public Facilities Financing Plan will detail the methods to be used to finance the affected public facilities.

The following tables and figures reflect the projections of operating cost and revenue by fund as fully discussed in Chapters II and III.

Table I-3 shows the projected combined operating funds costs and revenues over the buildout period and for five years beyond. The funds included in this grouping are the General Fund, Special Gas Tax, Traffic Safety Fund and State Library Act Fund.

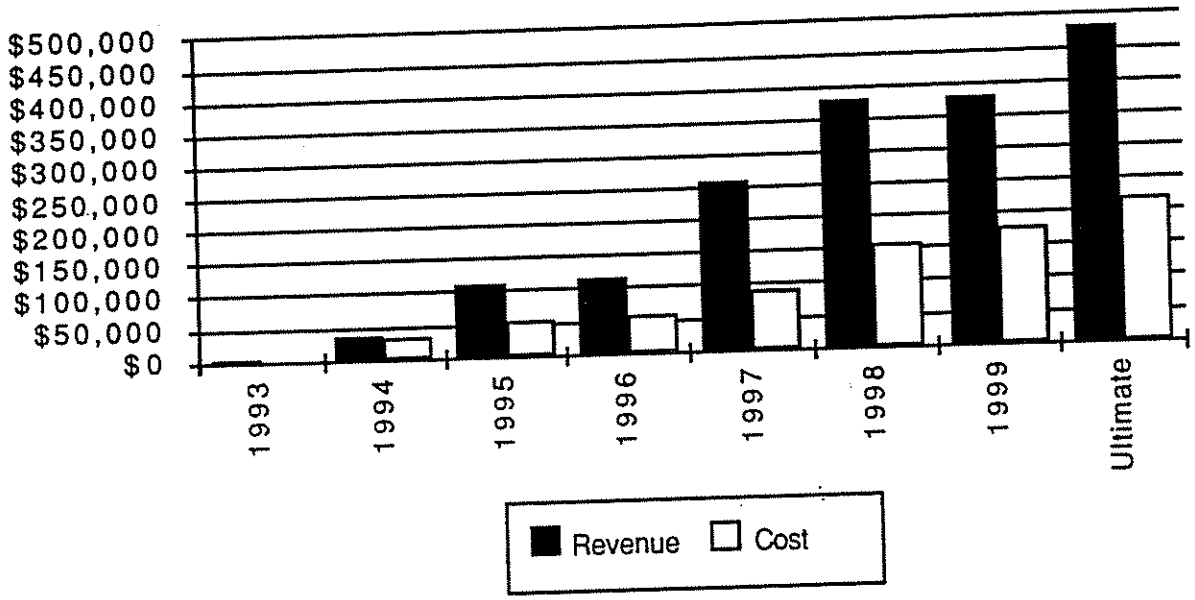
Table I-3
Projected Annual Operating Revenues and Costs
(in constant 1992 $)

Fiscal Year	Revenue*	Cost**	Annual Net Impact	Cumulative Net Impact	Revenue/ Cost Ratio
1993	$4,415	$0	$4,415	$4,415	n/a
1994	35,836	29,848	5,988	10,402	1.20
1995	110,930	50,926	60,004	70,406	2.18
1996	114,887	58,108	56,779	127,185	1.98
1997	260,353	87,933	172,421	299,606	2.96
1998	379,924	155,333	224,590	524,196	2.45
1999	379,924	176,546	203,377	727,574	2.15
Ultimate	480,951	217,942	263,009	n/a	2.21

* see Table III-1
** see Table II-3

Figure I-1 shows the relationship between the costs and revenues on an annual basis for each of the first eight years of development and at the ultimate buildout.

Figure I-1
EASTLAKE ACTIVITY CENTER COST AND REVENUE



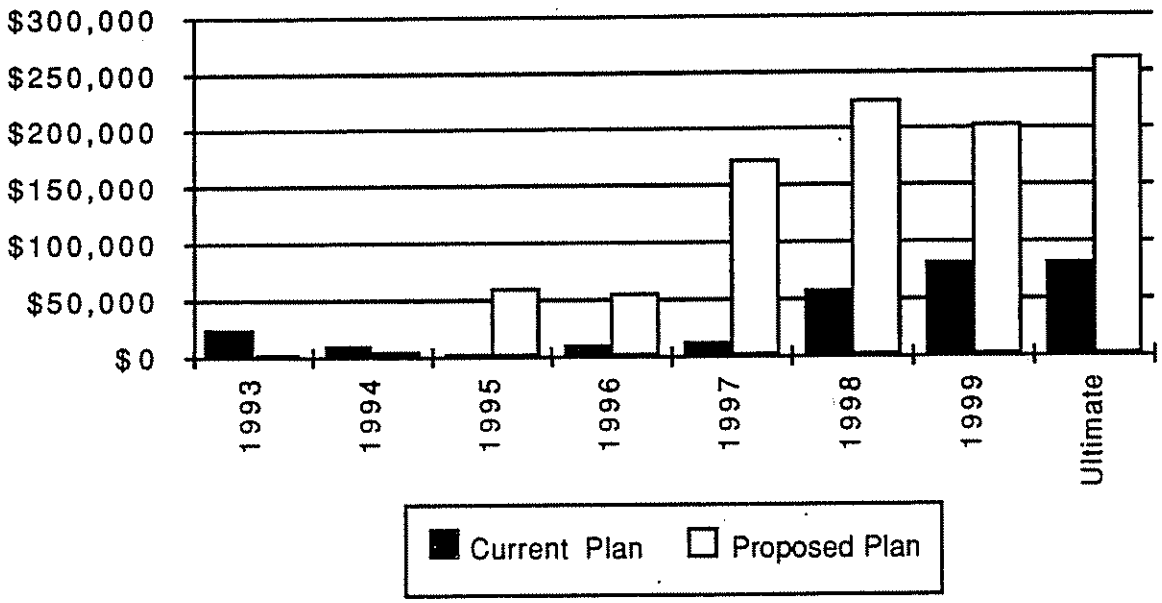
The following table compares the difference between the net annual fiscal impact of the currently adopted plan for the Activity Center with the proposed plan including the Kaiser Medical Center campus. This table shows that at the point of ultimate buildout, the proposed plan will have a $180,987 per year greater positive fiscal impact on the City than would result from the buildout of the current plan.

Table I-4
Comparison of Annual Net Operating Impact
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$24,109	$4,415	($19,694)
1994	10,144	5,988	($4,156)
1995	2,439	60,004	57,564
1996	9,555	56,779	47,224
1997	13,765	172,421	158,656
1998	57,975	224,590	166,616
1999	82,021	203,377	121,356
Ultimate	82,021	263,009	180,987

Figure I-2 on the following page graphically shows the comparison of the net annual impact of the two plans.

Figure I-2
Comparison of EastLake Activity Center Net Annual Fiscal Impact



CHAPTER II - OPERATING EXPENDITURE ANALYSIS

The analysis of municipal operating expenditures has been prepared based on information gathered from a review of the City of Chula Vista's 1991-92 operating budget and discussions and/or correspondence with various city departments.

To determine the full costs of providing city services, John McTighe & Associates prepared a cost allocation of the indirect and overhead costs contained in the City's budget. These costs have been allocated to twenty-two "direct service" activities. The 22 activities and their associated 1991-92 direct service budgeted expenditures are listed on Table II-1 below. Appendix A shows the costs that were allocated to each of these activities based on the City's previously developed allocation methodology.

Table II-1
City of Chula Vista
1991-92 General Fund Direct Service Activities' Full Cost

Activity/Department	1991-92 Full Cost
General Government & Non-Departmental	$ 1,727,363
Planning	1,760,224
Otay Ranch Project	244,513
Community Development	1,104,102
Police/Animal Regulation	18,114,302
Fire Protection	7,511,855
Building & Housing	1,288,738
Public Works/Engineering	
Engineering	
Design Engineering	645,624
Advance Planning - Sewer	715,670
Land Development	925,843
Construction Inspection	924,636
Geographic Information System	193,629
Traffic Engineering	692,979
Public Works	
Street Maintenance	1,847,005
Street Sweeping	343,940
Street Tree Maintenance	703,549
Traffic Operations	647,454
Traffic Signal & Street Light Maintenance	1,159,558
Sewer Systems Maintenance	1,312,354
Pump Station Maintenance	221,404
Parks & Recreation	4,982,667
Library	3,131,577
Total	$50,198,987

Source: City of Chula Vista 1991-92 Amended Budget; John McTighe & Associates

When all indirect and overhead costs were allocated, the resulting twenty-two activities were reviewed to determine which ones would be impacted as a result of the proposed development of EastLake Activity Center as illustrated in the conceptual development plan in Chapter I. Table II-2 lists the type of impact anticipated on each of the activities.

Table II-2
Effect of EastLake Activity Center Development on City Operating Expenditure Activities

No Impact	One-Time Impact	On-Going Impact
Legislative & Administrative*	Planning	Public Works Operations
Community Development	Building & Housing	Police/Animal Regulation
Otay Ranch Project	Engineering	Fire Suppression
Park & Recreation	Fire Prevention	
Library Operations		

* Approximately $5,560,458 of Legislative & Administrative costs have been allocated as overhead to other activities.

Source: John McTighe & Associates

The following discussion assesses the impact of the proposed land uses on those activities shown as impacted on Table II-2.

ONE TIME IMPACT

Planning

Planning will experience a one-time impact as the plans for the development of the EastLake Activity Center area are formalized and processed. Since the buildout of this project is anticipated to extend over an eight year period, this impact should not have a significant impact at any particular point in time. It is not now possible to quantify the cost of this impact on the current planning activity. However, Chula Vista's planning fees have been established at a level intended to recover the full cost of the Planning Department's processing resulting in no net cost to the City.

Building Inspection

The Building inspection activity provides structural plan check and field inspection services on all new construction within the City. This activity will experience a one-time impact as the construction on the site takes place. However, neither the magnitude nor the cost of this activity can be estimated without specific construction plans for the site. The full costs for these services are recovered through the levying of fees upon the subject construction. As a result, no net costs are assumed to be incurred by the City for the services of the Building Inspection activity during the buildout of EastLake Activity Center.

Engineering

There would be a one-time impact upon engineering services during the development of the property. Due to the lack of specific plans for development, it is not possible to project the cost of this impact at this time. However, the City's engineering fees have been established on a full cost recovery basis thereby assuring that the costs to be incurred by the City for engineering services will be fully offset by the imposition of fees upon the development requiring the expenditures to be made.

Fire Prevention

Fire prevention would experience one-time costs for review of the building plans for all structures proposed for the property. The costs for these services cannot be estimated at this time due to the lack of specific building plans for the property.

ON-GOING IMPACT

Table II-3 summarizes the projected annual on-going costs for each of the first seven years of buildout and at the point of ultimate development of the medical center. The bases for the projections are discussed in the following paragraphs.

Table II-3
Summary of On-going Annual City Cost Increments resulting from Development of EastLake Activity Center
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	90,250	29,848	($60,401)
1995	126,213	50,926	($75,287)
1996	169,767	58,108	($111,659)
1997	181,793	87,933	($93,860)
1998	326,639	155,333	($171,306)
1999	327,902	176,546	($151,356)
Ultimate	327,902	217,942	($109,960)

PUBLIC WORKS OPERATIONS

This grouping of activities consists of a variety of maintenance functions, primarily street maintenance & repair.

Street Maintenance

Street maintenance costs were estimated using a combination of the projected number of miles of public streets and the projected average daily traffic trips.

One-half of the cost of street maintenance was projected on the basis of the current annual cost per mile of maintaining the 275 miles of streets in the City's maintained system ($3,358.19). This was multiplied by the estimated number of miles of public streets to arrive at half of the annual costs of street maintenance.

The other half of the cost of street maintenance was projected on the basis of the projected number of average daily traffic trips to be generated within the project area as found on Table II-5. These were estimated using traffic generation factors determined by JHK, Inc., the EIR traffic consultant. The City is currently projected to have 1,169,792 ADTs. One-half of the estimated 91-92 cost of street maintenance divided by the estimated current ADTs yields an average annual maintenance cost per ADT of $.80. This factor of $.80 was applied to the estimated annual ADTs to arrive at the portion of the street maintenance costs attributable to actual travel trips.

Table II-4, below shows the total number of street miles projected per year that were used as the basis for the cost projections.

Table II-4
EastLake Activity Center
Number of Miles of City Maintained Streets

Fiscal Year	Miles
1993	.11
1994	.13
1995	.13
1996	.16
1997	.26
1998	.26
1999	.26
Ultimate	.26

Table II-5 shows the average daily traffic trips that were used in this analysis.

Table II-5
EastLake Activity Center Fiscal Impact Analysis
Average Daily Traffic Projections

Non-Residential Land Use	ADTs/Ac. or 1,000 s.f.	1992	1993	1994	1995	1996	1997	1998	Ultimate	Total
Retail	700	0	0	2,450	0	4,200	5,460	0	0	12,110
Industrial	130	0	0	260	0	0	0	0	0	260
Office	300	0	0	0	0	0	1,800	0	0	1,800
Medical (ADTs per 1,000 s.f.)		0	0	0	0	0	0	0	0	0
Offices & Administration	26	0	0	0	7,020	0	0	0	5,590	12,610
Hospital	26	0	0	0	0	0	13,130	0	8,190	21,320
Central Plant	0	0	0	0	0	0	0	0	0	0
Church w/Day Care	40	0	0	0	0	160	0	0	0	160
Library	400	0	0	0	0	400	0	0	0	400
Open Space	0	0	0	0	0	0	0	0	0	0
Total Non-Residential		0	0	2,710	7,020	4,760	20,390	0	13,780	48,660
Cumulative Non-Residential		0	0	2,710	9,730	14,490	34,880	34,880	48,660	
Total Annual		0	0	2,710	7,020	4,760	20,390	0	13,780	48,660
Cumulative Grand Total		0	0	2,710	9,730	14,490	34,880	34,880	48,660	

Table II-6
Street Maintenance Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	1,504	366	($1,138)
1995	2,040	2,612	571
1996	3,379	8,259	4,879
1997	4,393	12,207	7,814
1998	14,585	28,917	14,331
1999	14,585	28,917	14,331
Ultimate	14,585	40,002	25,416

Street Sweeping

The cost of street sweeping shown on the following table has been projected on the basis of $1,250.69 per mile of public street. This cost was determined by dividing the City's full cost budget for street sweeping by the 275 miles of public streets in the City.

Table II-7
Street Sweeping Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	79	136	58
1995	116	161	45
1996	182	161	($21)
1997	200	205	5
1998	450	320	($130)
1999	450	320	($130)
Ultimate	450	320	($130)

Street Tree Maintenance

Street tree maintenance was projected on the basis of the current average annual cost per mile of public streets in the city in 1991-92 of $2,558.36. This was derived by dividing the full cost of this activity by the 275 miles of streets estimated in the City's maintained system in 1991-92. This cost per mile of $2,558.36 was applied to the estimated number of miles of public streets to arrive at the estimate of annual costs for street tree maintenance in EastLake Activity Center. It should be noted, however, that this cost estimate is probably high in the first few years, since the maintenance of young trees is not as labor intensive as for more mature trees. However, over the long term the average maintenance costs would be applicable.

Table II-8
Street Tree Maintenance Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	161	279	118
1995	236	329	93
1996	372	329	($43)
1997	410	420	10
1998	920	654	($266)
1999	920	654	($266)
Ultimate	920	654	($266)

Traffic Signal and Street Light Maintenance

Traffic signal and street light maintenance costs were calculated on the basis of the number of miles of public streets based on the 1991-92 budget for an annual cost of $4,216.57 per mile.

Table II-9
Traffic Signal and Street Light Maintenance Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	265	459	194
1995	390	542	152
1996	613	542	($71)
1997	675	692	17
1998	1,517	1,078	($439)
1999	1,517	1,078	($439)
Ultimate	1,517	1,078	($439)

Traffic Operations

The traffic operations costs were projected on the same basis as street operations. That is, one half of the current year's cost was calculated on a per mile of public street basis of $1,172.19 and the other half was equated to be approximately $.28 per average daily traffic trip (ADT). These factors were then applied to the projected increases in miles of public streets and ADTs to arrive at the projections shown.

Table II-10
Traffic Operations Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	527	128	($399)
1995	715	916	200
1996	1,185	2,895	1,710
1997	1,540	4,279	2,739
1998	5,113	10,137	5,024
1999	5,113	10,137	5,024
Ultimate	5,113	14,022	8,910

POLICE AND ANIMAL REGULATION

Police and animal control services costs were allocated using the methodology developed by the City's Policy Analysis and Program Evaluation unit for allocation of police costs related to the port district activities. This methodology was chosen because of the disproportionate share of non-residential development included within the study area. Accordingly, costs were allocated on the basis of residential population, commercial and industrial acres. For purposes of the analysis, the medical center uses were classified as industrial acres. The amount of costs allocated were $94.35 per capita, $2,279.60 per commercial acre, and $1,726.04 per industrial acre. The resulting total police and animal control costs projections are shown on Table II-14, below.

Table II-14
Police and Animal Regulation Cost Projections
(in Constant 1989$)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	51,963	0	($51,963)
1995	69,549	11,431	($58,118)
1996	94,895	11,431	($83,464)
1997	101,727	30,286	($71,441)
1998	189,915	61,745	($128,171)
1999	189,915	82,958	($106,958)
Ultimate	189,915	109,383	($80,532)

FIRE

Fire services costs were allocated to EastLake Activity Center based on a methodology developed for allocation of fire services costs to the updated EastLake I fiscal impact analysis in February 1988. Briefly, an equivalent dwelling unit for fire services purposes was derived based on projections of city-wide growth of dwelling units, commercial acres and industrial acres. The SANDAG Series 7 growth rates were applied to the 1987 base number of dwelling units (45,101), commercial acres (786.7) and industrial acres (562.03) to project the future number of city-wide fire equivalent dwelling units. The cost of providing fire protection services was kept constant through 1992 and then increased by the cost of one additional engine company. The cost per equivalent dwelling unit was determined by dividing this annual cost by the number of EDUs in any particular year. The resulting cost per EDU was then applied to the number of fire EDUs that were projected to exist in EastLake Activity Center in that particular year based on the earlier described buildout scenario.

Table II-15
Fire Services Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	18,707	28,479	9,772
1995	26,623	34,936	8,313
1996	35,566	34,492	($1,075)
1997	38,009	39,842	1,833
1998	73,533	52,483	($21,050)
1999	73,533	52,483	($21,050)
Ultimate	73,533	52,483	($21,050)

PARKS AND RECREATION

Recreation costs were estimated on a residential per capita basis. Because there is no residential development in the proposed amended SPA, no cost for this service is assumed. The City's current cost for recreation services, including athletics, aquatics, senior programs and special programs, is estimated to be $13.55 per capita. The following table compares what the cost of recreation service under the existing plan would be if the residential land uses were to build out.

Table II-16
Recreation Services Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	3,732	0	($3,732)
1995	8,726	0	($8,726)
1996	11,252	0	($11,252)
1997	12,515	0	($12,515)
1998	13,778	0	($13,778)
1999	15,041	0	($15,041)
Ultimate	15,041	0	($15,041)

LIBRARY SERVICES

Similar to recreation services, library services costs have been assumed to relate to increases in residential population. Therefore, the following table shows what the impact on library services costs of the buildout of the current plan would be compared to no impact for the proposed plan.

Table II-17
Library Services Cost Projections
(in Constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	13,312	0	($13,312)
1995	17,817	0	($17,817)
1996	22,322	0	($22,322)
1997	22,322	0	($22,322)
1998	26,827	0	($26,827)
1999	26,827	0	($26,827)
Ultimate	26,827	0	($26,827)

CHAPTER III - OPERATING REVENUE ANALYSIS

ONE TIME IMPACT

The City receives one-time revenues associated with the processing of land development projects. Fees for building, plumbing, electrical, housing and sewer connection permits along with charges for environmental reviews, plan checks, zoning and engineering fees, etc., have been established by the City to recover costs incurred for these activities. The one-time revenues from these sources are expected to offset the City's expenditures resulting in no net cost to the City.

ON-GOING IMPACT

Figure III-1 shows the total on-going revenue per year projected through fiscal year 1998-99 and for ultimate buildout. Table III-1 shows the revenues projected during the first ten years. The following paragraphs describe how the revenues for each source were projected.

Figure III-1
Annual Operating Revenue

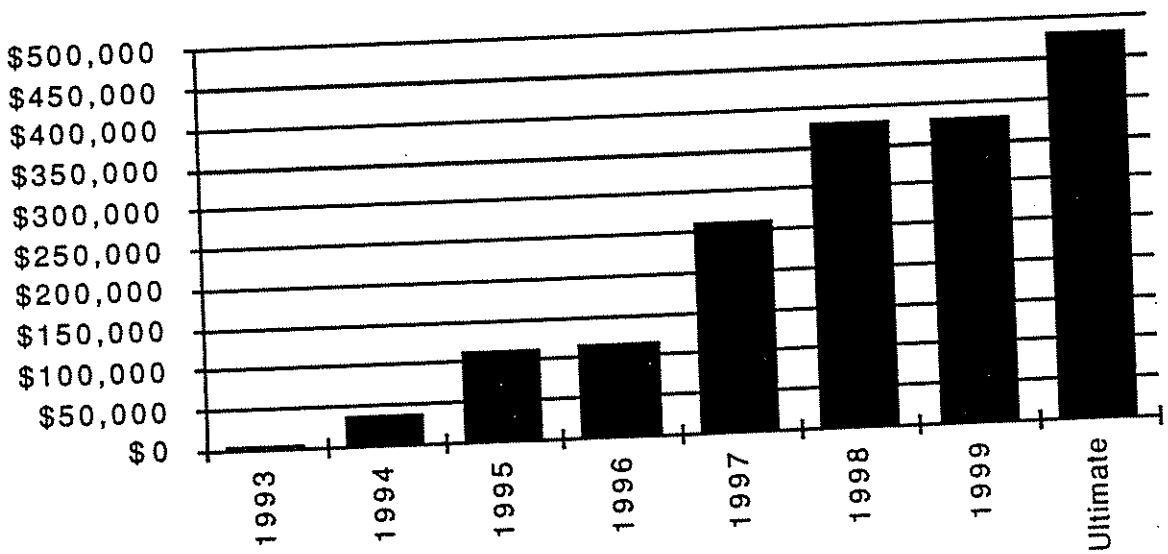


Table III-1
Summary of Annual Revenue Increments Resulting from Development of EastLake Activity Center
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$24,109	$4,415	($19,694)
1994	100,393	35,836	($64,557)
1995	128,652	110,930	($17,722)
1996	179,322	114,887	($64,435)
1997	195,558	260,353	64,795
1998	384,614	379,924	($4,691)
1999	409,923	379,924	($30,000)
Ultimate	409,923	480,951	71,027

PROPERTY TAX

Property taxes for general government purposes are limited to a total of 1% of the assessed market value. The taxes collected are apportioned among several different local government agencies in whose jurisdiction the property lies. The basis for apportionment of taxes has been established by formula for each tax rate area (TRA) based on the pre-1978 ratio of taxes within that TRA.

All of this property has been annexed to the City since 1978 and has therefore been subjected to the property tax allocation agreement then in place between the City and County of San Diego. As a consequence, the City of Chula Vista receives approximately 13.5% of the 1% property tax collected on all of the property contained within the boundaries of EastLake Activity Center. This figure represents the projected average distribution from all tax rate areas covering EastLake Activity Center.

The property taxes have been projected based on a combination of discussions with representatives of the EastLake Development Company and assumptions developed by John McTighe & Associates. Because the property tax yield to the City is dependent on the assessed value of the property, a series of computer models was developed which projected assessed value and property tax based on various assumptions. This analysis has taken a conservative approach at the estimate of assessed value. It has assumed that the "welfare exemption" will be applied for and granted in the year that construction is completed on any particular phase of the medical center. Therefore, only that value associated with the land value of the medical center property prior to the granting of the welfare exemption has been included. In those years that construction is taking place, the value of the construction completed to date would be entered on the supplemental tax roll. The property tax revenue from this roll is not distributed to taxing agencies in the same manner as the normal secured property tax. In fact, the City would receive a very small proportion of the tax revenue from the supplemental roll attributed to the medical center construction. Therefore, by excluding this revenue altogether, this analysis has assumed a "worst case" scenario. If in fact, Kaiser Permanente does not apply for the welfare exemption until all facilities are completed, the property tax revenue to the City of Chula Vista could be anywhere from $70,000 to $90,000 more in fiscal years 1995 through 1997. Table III-2 on the following page shows the property tax revenue from EastLake Activity Center based on the models.

Table III-2
Property Tax Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$22,427	$4,145	($18,281)
1994	43,615	26,395	($17,220)
1995	50,686	36,008	($14,678)
1996	63,862	36,008	($27,854)
1997	69,772	45,238	($24,534)
1998	150,878	78,913	($71,965)
1999	150,878	69,267	($81,611)
Ultimate	150,878	57,251	($93,627)

The details of the property tax projections and models are displayed in Appendix D.

SALES AND USE TAXES

Sales Tax revenues for the EastLake Activity Center are projected based on an estimate of per capita spending. It has been assumed that fifty percent of the sales tax generated within the City of Chula Vista is attributed to the fact that the people reside within the City (per capita), while the other fifty percent is attributed to the location of commercial and industrial businesses within the City.

The commercial sales tax per acre is estimated by deducting the total attributed to industrial uses city wide (based on $1,306.80 per acre) from the other 50% of the City's total sales tax revenue in the base year (1991-92). The remainder is then divided by the estimated number of acres of commercial land use within the City in 1991 to arrive at an annual commercial per acre sales tax revenue of $3,078.37. This amount was then multiplied by the number of commercial acres developed in EastLake Activity Center.

Sales tax was attributed to the medical center based on the information provided by Economics Research Associates in their "Economic Impact Study Chula Vista Medical Center" prepared for Kaiser Permanente in January 1992. According to that study, the Hospital Group is expected to generate $2,943,915 in annual taxable retail sales at buildout, while the Medical Group is expected to generate $1,107,721 at buildout. For purposes of this analysis, these amounts were prorated on the basis of the number of square feet of hospital and medical office completed by year. These results were combined with the results for the commercial and industrial uses within the Activity Center to arrive at the projected sales tax revenue to the City of Chula Vista as shown on Table III-3 on the top of the next page.

Table III-3
Sales & Use Tax Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	10,631	0	($10,631)
1995	24,859	19,554	($5,305)
1996	32,055	19,554	($12,500)
1997	41,533	56,155	14,622
1998	52,843	80,165	27,322
1999	107,858	96,385	($11,473)
Ultimate	107,858	96,385	($11,473)

BUSINESS LICENSES

The City projected receiving $380,000 from business license tax revenues in 1991-92. This amount has been calculated to average $160.73 per acre of land in the City utilized for commercial or industrial purposes. This amount was multiplied by the number of acres of commercial and industrial development within EastLake Activity Center to project the amount attributed to these uses. In addition, the amount of business license fees attributed to the Kaiser Medical Center was determined based on the analysis prepared by Economics Research Associates that projected the number of employees and physicians to be employed at the Medical Center. The annual fee amount per hospital employee is $6.50, while the annual fee amount per physician is $105.00. The number of employees and physicians to be employed at each year of the analysis was prorated by JMA based on the number ERA stated would be employed at buildout.

Table III-4
Business License Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	0	0	0
1995	0	18,635	18,635
1996	729	18,635	17,905
1997	1,216	49,314	48,099
1998	4,457	52,254	47,797
1999	4,457	52,254	47,797
Ultimate	4,457	82,524	78,067

MOTOR VEHICLE IN-LIEU

The City receives motor vehicle in-lieu tax revenue from the state based on the population of the City. Since the proposed plan does not include residential development, no revenue from this source has been included.

Table III-5
Motor Vehicle In-Lieu Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	17,716	0	($17,716)
1995	23,712	0	($23,712)
1996	29,708	0	($29,708)
1997	29,708	0	($29,708)
1998	35,704	0	($35,704)
1999	35,704	0	($35,704)
Ultimate	35,704	0	($35,704)

FRANCHISE TAXES

This revenue is derived from taxes placed on cable television, sanitary and gas & electric services provided within the City. The estimated city-wide revenue for 1991-92 from this source is $1,565,000.

The projections for this revenue source were based on a breakdown of the current charges for each of the three utilities among residential and non-residential users and then on the average per dwelling unit and/or developed non-residential uses. The following table shows the comparison of this revenue source projection.

Table III-6
Franchise Tax Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	4,351	0	($4,351)
1995	5,823	1,622	($4,201)
1996	8,623	1,622	($7,000)
1997	9,508	4,277	($5,231)
1998	16,879	6,578	($10,301)
1999	16,879	10,203	($6,676)
Ultimate	16,879	14,719	($2,160)

PROPERTY TRANSFER TAXES

Property transfer tax revenue is based on a rate of $.55 for each $1,000 of unencumbered real property value transferred. To be conservative, the projections have been based on 50% of the projected value of turnover property transactions and 100% of new property transactions. The resulting projection of revenue is as follows:

Table III-7
Property Transfer Tax Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	8,291	9,075	784
1995	3,218	3,752	535
1996	5,773	94	($5,679)
1997	2,999	4,689	1,690
1998	32,229	13,494	($18,734)
1999	846	541	($305)
Ultimate	846	541	($305)

UTILITY USERS TAX

The City levies taxes on the consumption of natural gas and electricity and on the gross revenue for telephone billings within the City. The current rates of these taxes are $0.0025 per kilowatt hour (KWH) of electricity, $0.00919 per therm of gas and 5% of the gross telephone revenues.

Electricity and natural gas usage factors for retail, office and industrial land uses that were derived in a Los Angeles study were used as the basis for estimating these rates for all uses other than the medical center. This analysis has assumed retail space consumption of electricity of 15 KWH per square foot per year and gas consumption of 0.75 therms per square foot per year. These rates of consumption times the current tax rates yield a tax revenue of $0.0444 per square foot per year of retail space. Assuming a 30% lot coverage of one story structure, this equates to $580.12 per year per gross acre of retail land use.

The office consumption figures are 34.2 KWH per square foot per year and 0.042 therms per square foot per year. At 30% coverage, this equals $1,122.36 per office acre per year for the gas and electric portions of the utility users tax.

Industrial uses were assumed to consume 50.1 KWH per square foot per year and 0.40 therms per square foot per year. This equates to $2,246.41 per acre, assuming 40% lot coverage for industrial uses.

An average monthly retail phone bill was assumed to be $50.00 and average monthly office and industrial phone bills were assumed to be $300.00. An average occupancy of 8.7 office tenants per gross acre, 3.1 industrial tenants per gross acre and 2.4 retail tenants per gross acre was assumed. This resulted in the utility users tax on telephones equating to an average of $1,566

per gross acre of office use, $558 per gross acre of industrial use and $72 per gross acre of retail use.

The gas and electric usages for the medical center were based on information provided by Kaiser Permanente. This information was based on actual usage during 1990 at various Kaiser Permanente facilities in the San Diego area. The following table shows this information.

Table III-8
Annual Gas and Electric Usage Per Square Foot by Type of Medical Center Use

Building Type	Electric (KWH)	Gas (Therms)
Medical Center	36.40	1.03
Medical Office Building	27.71*	.60**
Administration	26.42*	.43**
Parking Structure	2.00	.00

* A composite of 27.32 was used in the calculation (see Appendix E).
** A composite of .55 was used in the calculation (see Appendix E).

Source: Kaiser Permanente

In addition, Kaiser Permanente provided an estimate of annual telephone charges at completion of Phase II of an average of $550,000. For purposes of determining the Phase I and Ultimate Phase, we prorated 25% of this cost to Phase I, and doubled this cost for the Ultimate Phase. Appendix E shows the details of the calculation of the utility users tax which is projected to be generated from the medical center uses.

The total projections of revenue from the utility users tax are as follows:

Table III-9
Utility Users Tax Revenue Projection (in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	8,635	0	($8,635)
1995	11,556	27,696	16,140
1996	27,097	35,509	8,412
1997	29,054	90,157	61,103
1998	74,589	134,811	60,222
1999	74,589	134,811	60,222
Ultimate	74,589	213,479	138,889

INVESTMENT EARNINGS

The City places its idle funds in interest bearing investments. Generally, as a City's total revenue increases, the amount of money available for investment also increases. This analysis, however, has assumed that only the net positive difference between annual revenue and expenditures will be available to earn interest. A rate of 6.5% has been assumed on this balance. Therefore, the following projections of interest earnings attributed to EastLake Activity Center represent 6.5% of the difference between the amount of total revenue and the amount of total costs in any one year.

Table III-10
Investment Earnings Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$1,682	$269	($1,413)
1994	708	365	($342)
1995	170	3,662	3,492
1996	667	3,465	2,799
1997	960	10,523	9,563
1998	4,045	13,707	9,663
1999	5,722	12,150	6,427
Ultimate	5,722	16,052	10,330

SPECIAL GAS TAX FUND

The methodology used to project gas tax funds is based on the resident population. Since the proposed plan does not contain residential land uses, this revenue has been projected only for the current plan as shown on the following table.

Table III-11
Special Gas Tax Revenue Projection
(in constant 1992 $)

Fiscal Year	Current Plan	Proposed Plan	Difference
1993	$0	$0	$0
1994	6,446	0	($6,446)
1995	8,627	0	($8,627)
1996	10,809	0	($10,809)
1997	10,809	0	($10,809)
1998	12,990	0	($12,990)
1999	12,990	0	($12,990)
Ultimate	12,990	0	($12,990)

CITY OF CHULA VISTA COST ALLOCATION
1991-92 Amended Budget

Department/Activity	Employee Services	Other Services	Capital Outlay	1990-91 Total	Indirect Costs to be Allocated	Direct Cost Base	Indirect Cost Allocation	Grand Total
Building & Equipment								
GENERAL GOVERNMENT & NON-DEPARTMENTAL								
City Council	$224,968	$67,153	$888	$293,010	$0	$224,968	$50,414	$342,535
Boards & Commissions	14,680	52,000	90	66,770	0	14,680	3,290	69,970
Community Promotions	0	21,250	0	21,250	0	0	0	21,250
City Attorney	468,767	192,800	0	661,567	0	468,767	105,048	766,615
City Clerk/Elections	207,391	49,119	4,200	260,710	0	207,391	46,475	302,985
Administration	1,026,603	59,650	0	1,086,253	(978,253)	108,000	24,202	132,202
Management Services	1,055,188	258,532	0	1,313,720	(1,313,720)	0	0	0
Personnel Department	768,709	172,760	2,899	944,368	(941,469)	0	0	0
Finance/Purchasing	889,471	138,815	22,800	1,051,086	(953,286)	75,000	16,807	91,807
Insurance	0	894,540	0	894,540	(894,540)	0	0	0
Non-Departmental	113,165	366,025	0	479,190	(479,190)	0	0	0
SUB-TOTAL GENL. GOV'T. & NON-DEPARTMENTAL.....	$4,768,942	$2,272,644	$30,877	$7,072,463	($5,560,458)	$1,098,806	$246,236	$1,727,363
PLANNING	$1,292,461	$178,130	$1,500	$1,472,091	$0	$1,292,461	$289,633	$1,760,224
OTAY RANCH PROJECT	$199,750	$0	$0	$199,750	$0	$199,750	$44,763	$244,513
COMMUNITY DEVELOPMENT	$369,548	$651,740	$0	$1,021,288	$0	$369,548	$82,814	$1,104,102
POLICE/ANIMAL REGULATION	$13,248,727	$1,896,614	$23,484	$15,168,825	$0	$13,248,727	$2,968,961	$18,114,302
FIRE PROTECTION	$5,571,644	$691,638	$10,200	$6,273,482	$0	$5,571,644	$1,248,572	$7,511,855
BUILDING & HOUSING								
Administration	$142,400	$17,440	$0	$159,840	($159,840)	$0	$0	$0
Communications	163,465	19,215	0	182,680	($207,402)	0	0	0
Building Inspection	893,436	59,970	0	953,406	135,118	893,436	200,214	1,288,738
SUB-TOTAL	$1,199,301	$96,625	$0	$1,295,926	($232,123)	$893,436	$200,214	$1,288,738

CITY OF CHULA VISTA COST ALLOCATION
1991-92 Amended Budget

Department/Activity	Employee Services	Other Services	Capital Outlay	1991-92 Total	Indirect Costs to be Allocated	Direct Cost Base	Indirect Cost Allocation	Grand Total
PUBLIC WORKS/ENGINEERING								
Administration	$388,943	$46,760	$0	$435,703	($435,703)	$0	$0	$0
Operations Adminstration	388,939	49,853	2,110	440,902	(438,792)	0	0	0
Design Engineering	490,780	12,140	0	502,920	32,723	490,780	109,981	645,624
Eng. Advance Plng./Sewer	453,373	130,470	0	583,843	30,229	453,373	101,598	715,670
Land Development	698,230	24,589	0	722,819	46,555	698,230	156,469	925,843
Construction Inspection	673,510	55,290	0	728,800	44,907	673,510	150,930	924,636
Geographic Information Sys.	141,860	10,520	0	152,380	9,459	141,860	31,790	193,629
Traffic Engieering	518,380	23,870	0	542,250	34,563	518,380	116,166	692,979
Street Maintenance	861,060	629,400	0	1,490,460	163,587	861,060	192,958	1,847,005
Street Sweeping	0	343,940	0	343,940	0	0	0	343,940
Street Tree Maintenance	341,050	221,278	0	562,328	64,794	341,050	76,427	703,549
Traffic Operations	317,030	199,150	30,100	546,280	60,230	317,030	71,045	647,454
Traffic Sig./St. Lt. Maint.	216,090	853,990	30,000	1,100,080	41,053	216,090	48,424	1,159,558
Sanitary Sewer Maintenance	738,930	267,450	1,880	1,008,260	140,384	738,930	165,590	1,312,354
Wastewater Lift Station Mai	128,770	39,314	0	168,084	24,464	128,770	28,857	221,404
Bldg. Maint. & Repair	502,442	93,406	53,150	648,998	(691,304)	0	0	0
Custodial Maintenance	453,150	135,108	0	588,258	(674,349)	0	0	0
SUB-TOTAL	$7,312,537	$3,136,528	$117,240	$10,566,305	($1,547,199)	$5,579,063	$1,250,235	$10,333,647
PARKS & RECREATION								
Administration	$675,145	$38,470	$900	$714,515	($713,615)	$0	$0	$0
Park Maintenance	1,189,663	675,490	3,640	1,868,793	324,953	1,189,663	266,596	2,456,702
Recreation N & S	220,106	59,860	0	279,966	60,121	220,106	49,324	389,412
Open Space Administration	171,110	19,950	0	191,060	46,738	171,110	38,345	276,143
Maintenance "J" St. Marina	151,802	42,190	0	193,992	41,464	151,802	34,018	269,474
Senior Information Center	63,950	5,240	0	69,190	17,468	63,950	14,331	100,989
Athletics	132,851	63,815	0	196,666	36,288	132,851	29,771	262,725
Aquatics	311,892	143,430	1,530	456,852	85,192	311,892	69,893	610,408
Special Programs	243,275	24,600	4,450	272,325	66,450	243,275	54,516	388,841

CITY OF CHULA VISTA COST ALLOCATION
1991-92 Amended Budget

Department/Activity	Employee Services	Other Services	Capital Outlay	1991-92 Total	Indirect Costs to be Allocated	Direct Cost Base	Indirect Cost Allocation	Grand Total
PARKS & RECREATION (cont.)								
Senior Citizens	127,917	36,450	0	164,367	34,940	127,917	28,665	227,973
SUB-TOTAL PARKS & REC.	$3,287,711	$1,109,495	$10,520	$4,407,726	$0	$2,612,566	$585,461	$4,982,667
LIBRARY	$1,887,120	$821,565	$4,410	$2,713,095	$0	$1,887,120	$422,892	$3,131,577
TOTAL GENERAL FUND	$39,137,741	$10,854,978	$198,232	$50,190,952	($7,339,780)	$32,753,121	$7,339,780	$50,198,987

CITY OF CHULA VISTA COST ALLOCATION
1991-92 Allocation Factors

ASSUMPTIONS:

1991 Population	138,720
Base # of ADTs	1,148,034.60
Miles of Street	275
MGDs of Sewage	11.12
Acs. of park land	317.65
Acs. of Open Space	700

DEPARTMENT/FUNCTION	*ALLOCATION BASIS*	*AMOUNT*	
General Government	Constant Cost		
Planning	One Time		
Community Development	Constant Cost		
Police/Animal Control	72.25% on Per Capita	$94.35	/Capita
	23.00% per commercial acre	$2,279.60	/Comm Ac.
	4.75% per industrial acre	$1,726.04	/Ind. Ac.
Fire Protection	Constant Cost		
Building & Housing	One Time		
Public Works			
Street Maintenance	50%/Mile of Street	$3,358.19	/Mi. of Street
	50% per ADT	$0.80	/ADT
Street Sweeping	Per mile of Street	$1,250.69	/Mi. of Street
Street Tree Maintenance	Per mile of Street	$2,558.36	/Mi. of Street
Traffic Operations	50%/Mile of street &	$1,177.19	/Mi. of Street
	50% per ADT	$0.28	/ADT
T.S./St. Lt. Maintenance	Per mile of Street	$4,216.57	/Mi. of Street
Sewer System Maint.	Per MGD of Sewer Flow	$118,017.45	/MGD
Pump Station Maintenance	Per MGD of Sewer Flow	$19,910.46	/MGD
Enginnering	One Time		
Parks & Recreation			
Recreation	Per Capita	$13.55	/Capita
Park Maintenance	Per Acre of Park Land	$7,733.99	/Ac. of Parkland
Open Space Administration	Per Acre of Open Space	$394.49	/Ac. of Open Space
Library	Per Capita	$22.57	/Capita
METROPOLITAN SEWER CHARGE	Per MG of Annual discharge	$646.00	/MG/Yr.

Source: City of Chula Vista 1991-92 Amended Budget as of 12/31/91; John McTighe & Associates' Cost Allocation Model

EastLake Activity Center
Fiscal Impact Analysis

Summary of Projected City Operating Expenditures

Non-Medical Center Uses

DEPARTMENT/ACTIVITY	1993	1994	1995	1996	1997	1998	1999	Ultimate
	Fiscal Year							
PUBLIC WORKS								
Street Maintenance	$0	$0	$2,246	$2,246	$6,194	$12,342	$12,342	$12,342
Street Sweeping	0	0	24	24	69	183	183	183
Street Tree Maintenance	0	0	50	50	141	375	375	375
T.S./St. Lt. Maintenance	0	0	83	83	233	619	619	619
Traffic Operations	0	0	787	787	2,171	4,326	4,326	4,326
SUB-TOTAL PUBLIC WORKS	$0	$0	$3,190	$3,190	$8,809	$17,846	$17,846	$17,846
POLICE AND ANIMAL REGULATION	0	0	11,431	11,431	25,108	56,567	56,567	56,567
FFE	0	0	4,652	4,592	10,322	23,336	23,336	23,336
TOTAL	$0	$0	$19,272	$19,213	$44,239	$97,749	$97,749	$97,749
CUMULATIVE TOTAL	$0	$0	$19,272	$38,486	$82,725	$180,474	$278,222	

Medical Center Uses

DEPARTMENT/ACTIVITY	1993	1994	1995	1996	1997	1998	1999	Ultimate
	Fiscal Year							
PUBLIC WORKS								
Street Maintenance	$0	$366	$366	$6,013	$6,013	$16,575	$16,575	$27,660
Street Sweeping	0	136	136	136	136	136	136	136
Street Tree Maintenance	0	279	279	279	279	279	279	279
T.S./St. Lt. Maintenance	0	459	459	459	459	459	459	459
Traffic Operations	0	128	128	2,108	2,108	5,810	5,810	9,696
SUB-TOTAL PUBLIC WORKS	$0	$1,369	$1,369	$8,995	$8,995	$23,260	$23,260	$38,230
POLICE AND ANIMAL REGULATION	0	0	0	0	5,178	5,178	26,391	52,817
FFE	0	28,479	30,285	29,899	29,520	29,147	29,147	29,147
TOTAL	$0	$29,848	$31,654	$38,895	$43,693	$57,584	$78,797	$120,194
CUMULATIVE TOTAL	$0	$29,848	$61,502	$100,396	$144,090	$201,674	$280,471	

Combined Uses

DEPARTMENT/ACTIVITY	1993	1994	1995	1996	1997	1998	1999	Ultimate
	Fiscal Year							
PUBLIC WORKS								
Street Maintenance	$0	$366	$2,612	$8,259	$12,207	$28,917	$28,917	$40,002
Street Sweeping	0	136	161	161	205	320	320	320
Street Tree Maintenance	0	279	329	329	420	654	654	654
T.S./St. Lt. Maintenance	0	459	542	542	692	1,078	1,078	1,078
Traffic Operations	0	128	916	2,895	4,279	10,137	10,137	14,022
SUB-TOTAL PUBLIC WORKS	$0	$1,369	$4,559	$12,185	$17,804	$41,105	$41,105	$56,076
POLICE AND ANIMAL REGULATION	0	0	11,431	11,431	30,286	61,745	82,958	109,383
FFE	0	28,479	34,936	34,492	39,842	52,483	52,483	52,483
TOTAL	$0	$29,848	$50,926	$58,108	$87,933	$155,333	$176,546	$217,942
CUMULATIVE TOTAL	$0	$29,848	$80,774	$138,882	$226,814	$382,148	$558,694	

EastLake Activity Center
Fiscal Impact Analysis

Summary of Projected City Operating Revenue

Non-Medical Center Uses

Revenue Source	Fiscal Year 1993	1994	1995	1996	1997	1998	1999	Ultimate
GENERAL FUND								
Property Taxes	$2,379	$2,379	$11,991	$11,991	$23,575	$57,251	$57,251	$57,251
Sales & Use	0	0	13,388	13,388	31,858	55,869	55,869	55,869
Franchise Taxes	0	0	1,622	1,622	3,392	5,693	5,693	5,693
Property Transfer	0	0	3,752	94	4,689	13,494	541	541
Utility Users	0	0	7,891	7,891	11,804	33,021	33,021	33,021
Business Licenses	0	0	2,073	2,073	4,334	7,274	7,274	7,274
Investment Earnings	155	155	1,394	1,160	2,302	4,865	4,023	4,023
GENERAL FUND TOTAL	$2,533	$2,533	$42,111	$38,219	$81,955	$177,467	$163,672	$163,672
CUMULATIVE - OPERATING	$2,533	$5,066	$47,177	$85,396	$167,351	$344,818	$508,490	

Medical Center Uses

Revenue Source	Fiscal Year 1993	1994	1995	1996	1997	1998	1999	Ultimate
GENERAL FUND								
Property Taxes	$1,767	$24,017	$24,017	$24,017	$21,662	$21,662	$12,016	$0
Sales & Use	0	0	6,167	6,167	24,297	24,297	40,516	40,516
Franchise Taxes	0	0	0	0	885	885	4,510	9,026
Property Transfer	0	9,075	0	0	0	0	0	0
Utility Users	0	0	19,805	27,618	78,353	101,790	101,790	180,458
Business Licenses	0	0	16,562	16,562	44,980	44,980	44,980	75,250
Investment Earnings	115	211	2,268	2,305	8,221	8,842	8,126	12,029
GENERAL FUND TOTAL	$1,881	$33,303	$68,819	$76,668	$178,398	$202,456	$202,456	$317,279
CUMULATIVE - OPERATING	$1,881	$35,184	$104,003	$180,671	$359,069	$561,526	$763,982	

Combined Uses

Revenue Source	Fiscal Year 1993	1994	1995	1996	1997	1998	1999	Ultimate
GENERAL FUND								
Property Taxes	$4,145	$26,395	$36,008	$36,008	$45,238	$78,913	$69,267	$57,251
Sales & Use	0	0	19,554	19,554	56,155	80,165	96,385	96,385
Franchise Taxes	0	0	1,622	1,622	4,277	6,578	10,203	14,719
Property Transfer	0	9,075	3,752	94	4,689	13,494	541	541
Utility Users	0	0	27,696	35,509	90,157	134,811	134,811	213,479
Business Licenses	0	0	18,635	18,635	49,314	52,254	52,254	82,524
Investment Earnings	269	365	3,662	3,465	10,523	13,707	12,150	16,052
GENERAL FUND TOTAL	$4,415	$35,836	$110,930	$114,887	$260,353	$379,924	$379,924	$480,951
CUMULATIVE - OPERATING	$4,415	$40,250	$151,180	$266,067	$526,420	$906,344	$1,286,267	

EastLake Activity Center Fiscal Impact Analysis
Non-Residential Assessed Valuations

Assumptions:

Appreciation Rate:	0.00%
Turnover Rate:	5.00%
1992 A.V./Ac.	$39,663
1992 Market Value/Ac.:	
Retail	$1,392,570
Industrial	$973,994
Office	$2,215,537
Medical Land (non-ex	$539,216

YEAR.....	1993	1994	1995	1996	1997	1998	1999	Ultimate
Retail	0.00	0.00	3.50	0.00	6.00	7.80	0.00	0.00
Industrial	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
Office	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00
Medical (non-exempt)	0.00	30.60	0.00	0.00	-3.00	0.00	-12.29	-15.31
Medical (exempt)	0.00	0.00	0.00	0.00	3.00	0.00	12.29	15.31
Community Purpose Facility	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
Open Space	0.00	0.00	0.00	0.00	0.00	11.90	0.00	0.00
Annual Totals	0.00	30.60	5.50	0.00	10.00	25.70	0.00	0.00
Cumulative Acres	0.00	30.60	36.10	36.10	46.10	71.80	71.80	0.00
Market Values in 1992 $:								
Retail	$0	$0	$4,873,995	$0	$8,355,420	$10,862,046	$0	$0
Industrial	$0	$0	$1,947,987	$0	$0	$0	$0	$0
Office	$0	$0	$0	$0	$0	$13,293,220	$0	$0
Medical (non-exempt)	$0	$16,500,010	$0	$0	($1,617,648)	$0	($6,626,965)	($8,255,397)
Apprec. New Values:								
Retail	$0	$0	$4,873,995	$0	$8,355,420	$10,862,046	$0	$0
Industrial	$0	$0	$1,947,987	$0	$0	$0	$0	$0
Office	$0	$0	$0	$0	$0	$13,293,220	$0	$0
Medical (non-exempt)	$0	$16,500,010	$0	$0	($1,617,648)	$0	($6,626,965)	($8,255,397)

EastLake Activity Center Fiscal Impact Analysis
Non-Medical Center Assessed Valuation

Assumptions:

Assumed Appreciation:	0.00%
Assummed Turnover Rate	5.00%
Base A.V. per Acre:	$39,663

YEAR.....	1993	1994	1995	1996	1997	1998	1999	Ultimate
Base Land Value	1,634,105	1,634,105	1,634,105	1,415,960	1,415,960	1,019,332	0	0
Less Absorbed Land	0	0	(218,145)	0	(396,627)	(1,019,332)	0	0
Remaining Base	1,634,105	1,634,105	1,415,960	1,415,960	1,019,332	0	0	0
Base Inflation Adj.	0	0	0	0	0	0	0	0
New Base Valuation	1,634,105	1,634,105	1,415,960	1,415,960	1,019,332	0	0	0
Cum. New Value	0	0	0	6,821,982	6,821,982	15,177,403	39,332,669	39,332,669
Less Turnover Value	0	0	0	(341,099)	(341,099)	(758,870)	(1,966,633)	(1,966,633)
Adj. Cumulative Value	0	0	0	6,480,883	6,480,883	14,418,532	37,366,036	37,366,036
Inflation Adjustment	0	0	0	0	0	0	0	0
Annual New Value	0	0	6,821,982	0	8,355,420	24,155,267	0	0
New Turnover Value	0	0	0	341,099	341,099	758,870	1,966,633	1,966,633
New Cumulative Value	0	0	6,821,982	6,821,982	15,177,403	39,332,669	39,332,669	39,332,669
Total Valuation	1,634,105	1,634,105	8,237,942	8,237,942	16,196,735	39,332,669	39,332,669	39,332,669

EastLake Activity Center Fiscal Impact Analysis
Medical Center Assessed Valuation

Assumptions:
Assumed Appreciation: 0.00%
Assummed Turnover Rate 0.00%
Base A.V. per Acre: $39,663

YEAR.....	1993	1994	1995	1996	1997	1998	1999	Ultimate
Base Land Value	1,213,680	1,213,680	0	0	0	0	0	0
Less Absorbed Land	0	(1,213,680)	0	0	0	0	0	0
Remaining Base	1,213,680	0	0	0	0	0	0	0
Base Inflation Adj.	0	0	0	0	0	0	0	0
New Base Valuation	1,213,680	0	0	0	0	0	0	0
Cum. New Value	0	0	16,500,010	16,500,010	16,500,010	14,882,362	14,882,362	8,255,397
Less Turnover Value	0	0	0	0	0	0	0	0
Adj. Cumulative Value	0	0	16,500,010	16,500,010	16,500,010	14,882,362	14,882,362	8,255,397
Inflation Adjustment	0	0	0	0	0	0	0	0
Annual New Value	0	16,500,010	0	0	(1,617,648)	0	(6,626,965)	(8,255,397)
New Turnover Value	0	0	0	0	0	0	0	0
New Cumulative Value	0	16,500,010	16,500,010	16,500,010	14,882,362	14,882,362	8,255,397	0
Total Valuation	1,213,680	16,500,010	16,500,010	16,500,010	14,882,362	14,882,362	8,255,397	0

EastLake Activity Center Fiscal Impact Analysis
City Property Tax Projections

0.00% Apprec. Rate
City Tax Rate: 0.13746985

	1993	1994	1995	1996	1997	1998	1999	Ultimate
Secured Assessed Value (in $1,000)								
Non-Medical Center	$1,634.1	$1,634.1	$8,237.9	$8,237.9	$16,196.7	$39,332.7	$39,332.7	$39,332.7
Medical Center	$1,213.7	$16,500.0	$16,500.0	$16,500.0	$14,882.4	$14,882.4	$8,255.4	$0.0
Total	$2,847.8	$18,134.1	$24,738.0	$24,738.0	$31,079.1	$54,215.0	$47,588.1	$39,332.7
Unsecured Assessed Value (in $1,000)								
Non-Medical Center	$96.1	$96.1	$484.6	$484.6	$952.7	$2,313.7	$2,313.7	$2,313.7
Medical Center	$71.4	$970.6	$970.6	$970.6	$875.4	$875.4	$485.6	$0.0
Total	$167.5	$1,066.7	$1,455.2	$1,455.2	$1,828.2	$3,189.1	$2,799.3	$2,313.7
City Property Tax								
Non-Medical Center	$2,379	$2,379	$11,991	$11,991	$23,575	$57,251	$57,251	$57,251
Medical Center	$1,767	$24,017	$24,017	$24,017	$21,662	$21,662	$12,016	$0
Total	$4,145	$26,395	$36,008	$36,008	$45,238	$78,913	$69,267	$57,251
Non-Medical								
Annual New Value	$0	$0	$6,821,982	$0	$8,355,420	$24,155,267	$0	$0
New Turnover Value	$0	$0	$0	$341,099	$341,099	$758,870	$1,966,633	$1,966,633
Medical								
Annual New Value	$0	$16,500,010	$0	$0	($1,617,648)	$0	($6,626,965)	($8,255,397)
New Turnover Value	$0	$0	$0	$0	$0	$0	$0	$0
Base for Property Transfer Tax								
Non-Medical Center	$0	$0	$6,821,982	$170,550	$8,525,970	$24,534,702	$983,317	$983,317
Medical Center	$0	$16,500,010	$0	$0	$0	$0	$0	$0
Total	$0	$16,500,010	$6,821,982	$170,550	$8,525,970	$24,534,702	$983,317	$983,317

SERVICE LETTERS

APPENDIX J

RECEIVED 3-5-92

...Dedicated to Community Service
10595 JAMACHA BOULEVARD, SPRING VALLEY, CALIFORNIA 91977
TELEPHONE: 670-2222, AREA CODE 619

March 4, 1992

Ms. Mary May
Lettieri - McIntyre & Associates, Inc.
533 F Street, Suite 209
San Diego, CA 92101

Re: Eastlake Activity Center/Kaiser Hospital-Medical Center

Dear Ms. May:

The above mentioned project is in the Otay Water District. Facilities will be served through our 980 pressure zone. Kaiser Hospital will be required to design off-site and on-site water infrastructure to meet potable and fire flow demands.

However, we are not able to estimate the volume of water that would be necessary to adequately serve the project. The mechanical engineer should have some kind of idea of their water needs. Perhaps by comparison with other Kaiser facilities that have been built. They need to tell us what their estimated usage will be.

Should you have any questions, please feel free to call me at 670-2249.

Very truly yours,

Carole Barnes

Carole Barnes
Engineering/Public Services

CITY OF
CHULA VISTA

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

RECEIVED 2-27-92

February 25, 1992
File: KY-043

Lettieri-McIntyre and Associates, Inc.
533 F Street, Suite 209
San Diego, CA 92101

Attention: M. Bruce McIntyre, Principal

SEWER INFORMATION REQUESTED FOR EASTLAKE ACTIVITY CENTER AND KAISER HOSPITAL-MEDICAL CENTER

We received your letter of February 5, 1992, requesting information from the City on the location of the project's sewer service area, the ability of the City system to accommodate the project's sewage discharge and improvements necessary to serve the project.

The enclosed reference map Figure 1 illustrates the sewer service basin for your project. The map shows that the project location is within the Telegraph Canyon Sewer Basin. The City of Chula Vista maintains and operates the public sewer system within the basin. The map and following information were referenced from the Willdan Associates draft study, Telegraph Canyon Sewer Basin Improvement and Financing Plan.

The main sewer line on Telegraph Canyon Road closest to the proposed project is a 15 inch diameter PVC pipe. According to the results of sewage flow metering performed by ADS Services in September-October, 1990, the existing Telegraph Canyon Sewer line and downstream sewer facilities are flowing under capacity. The attached table lists the location and the percent pipe capacity used during peak flow hours for each of the five downstream metering stations.

Any on-site improvements necessary to serve the project adequately should be provided by the developer. The developer must also provide the estimates on the amount of sewage that the project will generate. The City will then comment on this estimate.

Off-site relief facilities will be required in order to provide sewer capacity for all proposed developments in the Telegraph Canyon Basin. The Telegraph Canyon Basin Plan is being prepared to determine the required facilities and to establish a fee payable by all new developments in the basin. The fee assessed to each development will be in proportion to its estimated wastewater flow.

If you have any other questions, please contact Ben Herrera at 691-5117.

Roger L. Daoust

ROGER L. DAOUST
SENIOR CIVIL ENGINEER

Encl. (2)
BVH:RLD:DV

(BVH\SWRKAIS.LTR)

TABLE - FLOW METER RESULTS

Station	Location	Size	Percent Pipe Cap. Used At Peak Flow
CV1	East of intersection of Otay Lakes Road and Telegraph Canyon Road	15" VCP	30.0
CV2	West of Medical Center Drive	15" VCP	44.6
CV3	West of median on Telegraph Canyon Rd., north of I-805 off ramp	18" VCP	38.3
CV4	In front of 428 J Street	18" VCP	45.0
CV5	In front of 436 J Street	12" VCP	21.6

CHULA VISTA ELEMENTARY SCHOOL DISTRICT

84 EAST "J" STREET • CHULA VISTA, CALIFORNIA 91910 • 619 425-9600

EACH CHILD IS AN INDIVIDUAL OF GREAT WORTH

RECEIVED 2-28-92

BOARD OF EDUCATION

JOSEPH D. CUMMINGS, Ph.D.
LARRY CUNNINGHAM
SHARON GILES
PATRICK A. JUDD
GREG R. SANDOVAL

SUPERINTENDENT

JOHN F. VUGRIN, Ph.D.

February 27, 1992

Ms. Mary May
Lettieri-McIntyre & Associates
533 "F" Street, Suite 209
San Diego, CA 92101

RE: EastLake Activity Center/Kaiser Hospital project

Dear Ms. May:

Thank you for the opportunity to comment on the above project.

The EastLake Planned Community has formed a community facilities district to provide financing for all elementary facilities required to serve the project. Since this subdivision is a part of EastLake, school mitigation has been satisfied through participation in the community facilities district.

Sincerely,

Kate Shurson

Kate Shurson
Director of Planning & Facilities

KS:dp

RECEIVED
3-11-92

Sweetwater Union High School District

ADMINISTRATION CENTER
1130 Fifth Avenue
Chula Vista, California 91911-2896
(619) 691-5500

Division of Planning and Facilities

March 9, 1992

Ms. Mary May
Leitterie & McIntyre & Associates
533 "F" Street, Suite 209
San Diego, CA 92101

Dear Mary:

Re: Kaiser Hospital - EIR 92-01

This correspondence is sent pursuant to your request relative to the above subject project's anticipated impact to schools. As we discussed, the site is located in the EastLake Development Project, and the impacts to schools have been mitigated via the establishment of Community Facilities District No. 1. I have enclosed for your records, a copy of the Notice of Special Tax Lien which has been recorded on the property. The Notice provides specific information about the tax rate levy.

If you require additional information, please do not hesitate to give me a call at 691-5553.

Sincerely,

Thomas Silva
Assistant Director of Planning

TS/ml
Enclosure

WHEN RECORDED, RETURN TO:

Planning Department
SWEETWATER UNION HIGH SCHOOL DISTRICT
1130 FIFTH AVENUE
CHULA VISTA, CA 92011

NOTICE OF SPECIAL TAX LIEN

Pursuant to the requirements of Section 3114.5 of the Streets and Highways Code and Section 53328.3 of the Government Code, the undersigned secretary of the legislative body of the SWEETWATER UNION HIGH SCHOOL DISTRICT, STATE OF CALIFORNIA, HEREBY GIVES NOTICE that a lien to secure payment of a special tax which the Board of Trustees of the Sweetwater Union High School District, County of San Diego, State of California, is authorized to annually levy for the following purpose:

> To pay for certain public capital facilities, including the payment of principal and interest on bonds, said facilities generally described as the construction of certain capital school facilities, consisting of a middle school or increments thereof, and a high school or increments thereof, having a total capacity of approximately 3,200 students, including equipment and appurtenances, all facilities to be consistent with the building area and cost standards established by the State Allocation Board.

The special tax is authorized to be levied within [redacted] No. [redacted] and the lien of the special tax is a [redacted] continuing lien which shall secure each annual levy of the special tax and which shall continue in force and effect until the special tax obligation is prepaid, permanently satisfied and cancelled in accordance with law or until the special tax ceases to be levied and a notice of cessation of special tax is recorded in accordance with Section 53330.5 of the Government Code.

The rate and method of apportionment of the authorized special tax is as shown on the attached, referenced and incorporated Exhibit "A", and the special tax shall be collected in the same manner as ordinary ad valorem property taxes are collected and shall be subject to the same penalties and the same procedure, sale and lien priority in case of delinquency as is provided for ad valorem taxes. Conditions under which the obligation to pay the special tax may be prepaid and permanently satisfied and the lien of the special tax cancelled are as follows:

> Any special tax may be prepaid and satisfied by the payment of the maximum present value of the special tax obligation.

Notice is further given that upon the recording of this notice in the Office of the County Recorder, the obligation to pay the special tax levy shall become a lien upon all non-exempt real property within the District in accordance with Section 3115.5 of the Streets and Highways Code.

The names of the owner(s) of the real property included within this Community Facilities District as they appear on the last secured assessment roll as of the date of recording of this Notice and the Assessor's tax parcel(s) numbers of all parcels or any portion thereof which are included within this Community Facilities District are as set forth on the attached, referenced and incorporated Exhibit "B".

Reference is made to the boundary map of the Community Facilities District recorded at Book 20, Page 47, Document No. 86-518222, of Maps of Assessment and Community Facilities Districts in the Office of the County Recorder for the County of San Diego, State of California, which map is now the final boundary map of the Community Facilities District.

For further information concerning the current and estimated future tax liability of owners or purchasers of real property subject to this special tax lien, interested persons should contact the following designated person:

ANDREW B. CAMPBELL
ADMINISTRATOR OF PLANNING
SWEETWATER UNION HIGH SCHOOL DISTRICT
1130 FIFTH AVENUE
CHULA VISTA, CA 92011
TELEPHONE: (619) 691-5500

DATED: April 13, 1989

SECRETARY OF THE BOARD OF TRUSTEES OF THE
SWEETWATER UNION HIGH SCHOOL DISTRICT

SWEETWATER UNION HIGH SCHOOL DISTRICT

COMMUNITY FACILITIES DISTRICT NO. 1

EXHIBIT "A"

RATE AND METHOD OF APPORTIONMENT OF SPECIAL TAX

The Resolution of Intention refers to this Exhibit thereto for an explanation of the rate and apportionment of the special tax so as to allow each landowner or resident within the proposed district to estimate the annual maximum amount that would be required for payment.

[redacted]

TAX RATES

Tax rates shall be based upon and not exceed the annual base tax adjusted by the tax factor for each tax category as set forth below as determined on June 30th of each year. All taxable property shall be subject to a single rate of special tax levied in the following order of priority.

TAX CATEGORIES AND TAX FACTORS

CATEGORY I. FINAL LAND USE RATE: The maximum annual special tax for taxable property in one of the following tax categories shall be levied and applicable upon the issuance of a building permit for such property, and shall be paid for a period not to exceed 25 years or until all bonds have been discharged, whichever is earlier.

RESIDENTIAL [Developed Square Foot]	FACTOR (% of Base Tax)
400 - 950	55%
951 - 1,100	80%
1,101 - 1,350	95%
1,351 - 1,500	110%
1,501 - 1,650	125%
1,651 - 2,000	150%
2,000+	180%

COMMERCIAL [Developed Square Foot]	
Per square foot of developed space	.15%

INDUSTRIAL	
Per acre of land	500%

CATEGORY II. APPROVED LAND USE RATE: The maximum annual special tax for all taxable property in the following category shall be levied and applicable at the time of approval of any final subdivision tract and/or parcel map, and said tax shall be levied as long as needed to pay for facilities and/or pay debt service on the bonds.

ALL LAND	BASE TAX
Per acre or pro-rata portion thereof	250%

CATEGORY III. ACREAGE RATE: To the extent that the special tax revenues collected from Category I and Category II are insufficient to meet the annual payment for debt service on the bonds, all other taxable property not subject to one of the above taxing categories shall be subject to a tax rate not to exceed $1,000 per acre, or pro-rata portion thereof.

DEFINITIONS

"Developed square foot" shall be the square footage of the development as set forth in any building plan for which a building permit has been issued.

"Commercial" shall include all retail and office use.

"Industrial" shall include all properties not within a residential or commercial use, which properties are subject to tax under these proceedings.

"Acre or parcel" shall be the area of the lots or parcels as shown on any final approved subdivision and/or parcel map, or if not subject to any final approved subdivision and/or parcel map, shall be the acreage as shown on the last County Assessor's maps for each year any tax is to be levied.

The "Building Cost Index" shall be the Building Cost Index for the City of Los Angeles adjusted annually based upon the last available data as of June 30th of each year, as set forth in the ENGINEERING NEWS-RECORD (ENR), McGraw-Hill Construction Weekly.

* * *

NOTICE OF SPECIAL TAX LIEN
EXHIBIT "B" - OWNERS/PARCEL LIST

SWEETWATER UNION HIGH SCHOOL DISTRICT
COMMUNITY FACILITIES DISTRICT NUMBER 1

List of Authorized Voters	Parcel Numbers
1. Scott W. Parker Vice President/Project Manager McKeller Development of La Jolla	595-222-12
2. Steve Tate Senior Vice President Brehm Communities	595-193-01 thru 18 595-193-23 thru 57 595-193-59 thru 62
3. Michael Pattinson Senior Vice President Barratt American Incorporated	595-221-03 thru 10 595-221-12 thru 25
4. Ted R. Hale Vice President Henry L. Hunte c/o Western Salt Company	643-020-10
5. Wayne A. Condict Vice President and Counsel	595-193-58 595-201-27 595-222-06

List of Authorized Voters	Parcel Numbers
6. Ted R. Hale Vice President Western Salt Company	595-050-17 643-020-16 595-070-08 643-020-17 595-080-05 643-030-02 595-080-10 643-030-03 595-090-01 643-040-01 595-090-09 643-040-04 595-090-10
7. Michael Armstrong Counsel, Barratt American, Inc. Home Equity, Inc.	595-221-02
8. Thomas E. Heggi Vice President Century American Corporation	595-222-01 thru 05
9. Don McKay Vice President Pacific Scene, Inc.	595-201-01 thru 26 595-202-15 thru 59
10. Robert L. Santos Senior Vice President David IV, Inc	595-204-01,02,03,05 595-030-0[illegible] 595-202-01 thru 04 595-070-07 595-202-06 thru 14 595-070-1[illegible] 595-202-60 595-070-11 595-010-03 595-223-01 595-060-01 595-080-09 595-030-08 595-222-06 595-214-51 595-223-02
11. Robert L. Santos Senior Vice President David V, Inc	595-222-06 & 09 595-214-4[illegible] 595-222-06 & 09 595-215-42 595-203-56 thru 58

List of Authorized Voters	Parcel Numbers
12. Jim Hansen Assistant Regional Manager The Fieldstone Company	595-216-01 thru 43 595-214-01 thru 50 595-215-01 thru 41 595-203-01 thru 54

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CITY OF
CHULA VISTA
POLICE DEPARTMENT

RECEIVED 3-6-92

March 4, 1992

Lettieri-McIntyre and Associates, Inc.
533 F Street, Suite 209
San Diego, CA
92101

Mr. McIntyre:

In response to your inquiries of February 5, 1992 related to the Eastlake Activity Center/Kaiser Hospital-Medical Center.

The project is still in Beat 32, whether or not it will remain in a beat so designated is unknown. As noted a work study is underway, however, such a designation is largely irrelevant from a service provision standpoint. For purposes of your review, the use of Beat 32 is appropriate.

Estimating the improvements or additional personnel necessary to adequately serve the project is more problematic. I will be reviewing the Eastlake I SPA EIR and related documents to determine if this issue has been addressed previously.

Sincerely,

Kevin M. Hardy

Kevin M. Hardy

276 FOURTH AVE/CHULA VISTA, CALIFORNIA 91910

CITY OF
CHULA VISTA

FIRE DEPARTMENT

RECEIVED 3-6-92

March 4, 1992

Lettieri - McIntyre & Associates, Inc.
533 "F" Street, Suite 209
San Diego, CA 92101

Dear Sir:

In regards to your letter dated February 5, 1992, the Chula Vista Fire Department needs for the Kaiser Hospital Project are as follows:

1. Without the addition of Station #6, the response time will be unacceptable. Station #6 approval will go to City Council in late March.

2. An additional Fire Inspector will be needed for additional plan review, inspection, etc.

3. Required fire flow is 8,000 G.P.M. This requirement maybe reduced to 4,000 G.P.M. if all structures are provided with a fire sprinkler system.

4. Commercial fire hydrants will be required at some locations. Locations will be determined when plans are reviewed.

5. A fire alarm system will be required.

6. Please contact Otay Water Authority (670-2222) to determine what fire flows are available at this time.

7. Project will require 20 feet access for fire apparatus.

8. Unimpaired vertical clearance for fire apparatus, minimum 13'6".

If you have any questions, please call 691-5057.

Thank you.

Sam Schreck
Fire Inspector

SS/1

0203-03.L

RECEIVED
2-21-92

SDGE San Diego Gas & Electric
P.O. BOX 1831 • SAN DIEGO, CA 92112-4150 • 619/696-2000

February 20, 1992

FILE NO.

Lettieri-McIntyre & Assoc. Inc.
533 F Street, Suite 209
San Diego, CA 92101

Attn: M. Bruce McIntyre

RE: EastLake Activity Center/Kaiser Hospital - Medical Center

Dear Mr. McIntyre:

Thank you for allowing San Diego Gas & Electric to comment on the preparation of the EIR for this project.

At this time, there is an adequate supply of gas and electric distribution facilities to serve the Activity Center and Kaiser Hospital-Medical Center. However, there is no way to estimate how much capacity will be available at the time the project is built due to other projects in the area that may be constructed before it.

You may also wish to contact Doug Collins of our Marketing Division at 480-7765 and he will be able to furnish you with information on our various energy saving programs available to commercial customers.

If I can be of any further assistance, please feel free to call me.

Sincerely,

Kathy Babcock

Kathy Babcock
Land Assistant
696-2151

KB:km

March 19, 1992

Mrs. Bebe Wright
Kaiser Permanente
Property Acquisition
393 E. Walnut St., 5th Floor
Pasadena, CA 91188

JOB NO. 2688 - PROPOSED WATER USE - PHASES 1, 2 AND 3
KAISER PERMANENTE CHULA VISTA MEDICAL CENTER

The following is an analysis of the estimated water use for the Kaiser Permanente Chula Vista Medical Center, broken down by phase.

We are utilizing phasing information provided by Mr. Leonard Metcalf with The HMC Group and Mr. Robert Lujan with J.L. Hengstler and Associates. We have also added patient count information for the MOB which was provided by Mr. Jeff Lambert. Employee counts have been revised based on additional conversations with Mr. Vance Furukawa.

Part 1 of this report contains the analysis of the Phase 1 water use. Parts 2 and 3 contain the analysis of the Phase 2 and 3 water uses respectively.

The conclusion of our analysis is as follows:

	Potable Water Use Gal/Day	Reclaimed Water Use Gal/Day	Total Water Use Gal/Day	Sewage Generation Gal/Day
Phase 1	51,400	75,900	127,300	37,900
Phase 2	132,600	73,300	205,900	98,000
Phase 3	227,600	68,400	296,000	166,200

THOMAS C. CARMODY
TCC/jw

PART ONE

KAISER PERMANENTE CHULA VISTA MEDICAL CENTER WATER USE QUESTIONNAIRE
PHASE 1

1) Number of MOB patients - 1,600/day

2) Number of staff - 1,000 employees on a typical weekday
500 employees on a typical weekend day

3) Number of visitors - 1 visitor per 4 patients

4) Water flow rate for:

A. Lavatory - 1.5 GPM

B. Sink - 2.0 GPM

C. Shower - 2.5 GPM

D. Toilet - 3.0 Gal/Flush

E. Urinal - 1.0 Gal/Flush

5) Sterilizers and Autoclaves

A. Type - Vacuum steam castle 4233

Quantity - 1

Flow Rate = 1 @ 16 GPM

Frequency of Use - 370 min/day/machine

B. Type - Gravity Castle 3522

Quantity - 1

Flow Rate - 6 GPM

Frequency of Use - 320 min/day/machine

C. Type - Washer castle 6900

Quantity - 1

Flow Rate - 15 GPM

Frequency of Use - 300 min/day/machine

D. Type - Cart washer

Not in Phase 1

6) X-Ray Processors

Quantity - 2

Flow Rate - 2 GPM

Frequency of Use - 100 min/day/machine

7) Operating Room

Not in Phase 1

8) Physical Therapy

Quantity of Pools - 1

Capacity - 300 Gallons: (Full Body)

Frequency of Use - 3 times/day

9) Kitchen - Are there any items such as steam cookers that would use a constant flow of water, excluding dishwashers and ice makers? NO . If yes, describe machines (quantity, flow rate, frequency of use etc.)

10) Laundry - Will there be onsite laundry facilities? NO . If yes, describe machines (quantity, flow rate, frequency of use etc.)

11) Type of air compressors - air cooled, zero flow

12) Type of vacuum pumps - water sealed, ½ gpm @ 6 hrs/day

13) Boilers - Describe water use.

Make up and blow down as follows:

Sterilizers	200 GPH, 5 hours/day
Blow down	200 gallons/day
Kitchen	65 GPH, 10 hours/day

14) Cooling towers

Total cooling capacity - 750 tons

Average cooling demand - 30% = 225 tons

Cycles of concentration - 5.0

15) Other

None

Based on the questionnaire, we have estimated the Phase 1 water use as follows:

A. Domestic Use

ITEM	MOB PATIENTS	STAFF	VISITORS
Toilet Flushes:			
Volume per flush, gal	(2) 2.0	(2) 2.0	(2) 2.0
(1) Flushes per day/person	0.5	4.0	1.0
Volume per day/person, gal	1.0	8.0	2.0
Faucets:			
Average flow rate, gal/min	1.5	1.5	1.5
(1) Minutes per day/person	0.4	5.5	0.4
Volume per day/person, gal	0.6	8.25	0.6
Showers:			
Average flow rate, gal/min.			
(1) Minutes per day/person	N/A	N/A	N/A
Volume per day/person, gal			
TOTAL, gallons per day/person	1.6	16.25	2.6
Number of persons	1,600	1,000	400
Use Per day (GAL)	2,560	16,250	1,040
Total Use Per Day (GAL)			**19,850**

NOTES

1. Reference Black & Veatch Report contained in our initial report dated October 2, 1991.

2. Average of 50% urinal use and 50% toilet use.

Please note that in our analysis of the domestic water use, we have not used low flow or ultra-low flow toilets. According to Bob Lujan, low flow toilets are a constant maintenance problem and he would recommend the use of standard toilets.

B. Kitchen

Based on previous studies of other Kaiser Hospitals, we estimate an efficient kitchen to use approximately 3% of the total potable water used in the Model Hospital.

Volume = 0.03 x 51,400 gpd

Volume = 1,500 gpd

C. Central Supply

1. Vacuum steam Castle 4233

   Volume = (1 unit) (16 gpm) (370 min/day/unit)

   Volume = 5,920 gpd

2. Gravity castle 3522

   Volume = (1 unit) (6 gpm) (320 min/day/unit)

   Volume = 1,920 gpd

3. Washer castle 6900

   Volume = (1 unit) (15 gpm) (300 min/day/unit)

   Volume = 4,500 gpd

4. Cart washer

   Not in Phase 1

   Total Volume = 12,340 gpd

D. X-Ray Processors

Volume = (2 units) (2 gpm) (100 min/day/unit)

Volume = 400 gpd

E. Operating Room

Not in Phase 1

F. Physical Therapy

Volume = (300 gallons) (3 times/day)

Volume = 900 gpd

G. Central Plant

1. Air Compressors - air cooled, oil free pumps requiring no water

   Volume = 0 gpd

2. Vacuum Pumps -

   a. Water Sealed

      Volume = (0.5 gpm) (360 min/day)

   Volume = 180 gpd

3. Boilers

   a. Sterilizers

      Volume = (200 gph) (5 hrs/day)

      Volume = 1,000 gpd

   b. Humidifiers

      Not in Phase 1

   c. Blow Down

      Volume = 200 gpd

   d. Kitchen

      Volume = (65 gph) (10 hrs/day)

      Volume = 650 gpd

4. Cooling Towers

Total cooling capacity = 750 tons

Average cooling demand = 30% = 225 tons

Of the 225 tons, 150 tons are from the centrifugal chillers and 75 tons are from the absorption chillers.

a. Evaporation

Volume = (150 tons) (1.8 gal/ton-hr) (24 hrs) + (75 tons) (2.8 gal/ton-hr) (24 hrs)

Volume = 11,520 gpd

b. Bleed Off

Volume = 25% of evaporation = (11,520 gpd) (0.25)

Volume = 2,880 gpd

TOTAL VOLUME = 16,430 gpd

Bob Lujan is continuing his research of possible ways to reduce the bleed off. He feels that an ozone generator may be used which would reduce bleed off by 80%. This would reduce cooling tower consumption by 2,300 gpd.

H. Landscape

Based on the estimated consumption provided by The HMC Group:

Shrub	= 62.04 AF/yr x 893 gpd/AF/yr =	55,400 gpd
Turf	= 11.3 AF/yr x 893 gpd/AF/yr =	10,100 gpd
Temporary	= 11.62 AF/yr x 893 gpd/AF/yr =	10,400 gpd
	TOTAL VOLUME	**75,900 gpd**

According to HMC's estimate, the maximum daily site irrigation consumption is 240 gpm. The irrigation operation occurs between 10:00 P.M. and 6:00 A.M.

KAISER PERMANENTE CHULA VISTA MEDICAL CENTER WATER USE ESTIMATE - PHASE 1

Beds Used = 0

Staff = 1,000

Cooling Tower Average = 225 tons

	Use (GPD)	% of Total Use
A. Domestic Use		
MOB Patients	2,560	
Staff	16,250	
Visitors	1,040	
Total Domestic	19,850	16
B. Kitchen	1,500	1
C. Central Supply		
Vacuum Steam Castle 4233	5,920	
Gravity Castle 3522	1,920	
Washer Castle 6900	4,500	
Cart Washer	N/A	
Total Central Supply	12,340	10
D. X-Ray Processors	400	<1
E. Operating Room	N/A	0
F. Physical Therapy	900	<1
G. Central Plant		
1. Air Compressors	0	
2. Vacuum Pumps	180	
3. Boiler		
a. Sterilizers	1,000	
b. Humidifiers	N/A	
c. Blow Down	200	
d. Kitchen	650	
4. Cooling Tower		
a. Evaporation	11,520	
b. Bleed Off	2,880	
Total Central Plant	16,430	13
H. Landscape	75,900	60
GRAND TOTAL GAL/DAY	127,300	100
TOTAL MIL. GAL/YR (1)	39.7	

NOTES

(1) Annual use was figured by using 50% of weekday consumption for Saturday and Sunday.

The chart on the previous page provides a breakdown of the total Phase 1 water use. Of this total, the landscape portion could be satisfied with reclaimed water. In addition, only a portion of the potable water will end up as sewage.

The following chart breaks down the potable water demand, reclaimed water demand, and sewage generated. Potable water use includes all uses except landscaping. Sewage generated is defined at potable water use minus cooling tower evaporation.

Potable Water Use (GPD)	51,400
Reclaimed Water Use (GPD)	75,900
Total Water Use (GPD)	127,300
Sewage Generated (GPD)	40,200

KAISER PERMANENTE CHULA VISTA MEDICAL CENTER WATER USE QUESTIONNAIRE
PHASE 2

1) Number of beds - 227 (max. occupancy = 80% of total beds = 182)
Number of MOB patients = 1600/day

2) Number of staff - 2,000 employees on a typical weekday
1,000 employees on a typical weekend day

3) Number of hospital visitors - 2 visitors per bed = 2 x 182 = 364/day
Number of MOB visitors - 1 visitor per 4 patients = ¼ x 1600 = 400/day

4) Water flow rate for:

A. Lavatory - 1.5 GPM

B. Sink - 2.0 GPM

C. Shower - 2.5 GPM

D. Toilet - 3.0 Gal/Flush

E. Urinal - 1.0 Gal/Flush

5) Sterilizers and Autoclaves

A. Type - Vacuum steam castle 4233

Quantity - 2

Flow Rate = 2 @ 16 GPM

Frequency of Use - 370 min/day/machine

B. Type - Gravity Castle 3522

Quantity - 4

Flow Rate - 6 GPM

Frequency of Use - 320 min/day/machine

C. Type - Washer castle 6900

Quantity - 2

Flow Rate - 15 GPM

Frequency of Use - 300 min/day/machine

D. Type - Cart washer

Quantity - 1

Flow Rate - 16 GPM

Frequency of Use - 300 min/day/machine

6) X-Ray Processors

Quantity - 6

Flow Rate - 2 GPM

Frequency of Use - 100 min/day/machine

7) Operating Room

Quantity of Sinks - 11

Flow Rate - 2.5 gal/min each

Frequency of Use - 90 min/day sink

8) Physical Therapy

Quantity of Pools - 3

Capacity - 430 Gallons: 1-Body =300 gal.
1-Arm/Foot = 50 gal.
1-Leg = 80 gal.

Frequency of Use - 3 times/day

9) Kitchen - Are there any items such as steam cookers that would use a constant flow of water, excluding dishwashers and ice makers? NO . If yes, describe machines (quantity, flow rate, frequency of use etc.)

10) Laundry - Will there be onsite laundry facilities? NO . If yes, describe machines (quantity, flow rate, frequency of use etc.)

11) Type of air compressors - air cooled, zero flow

12) Type of vacuum pumps - water sealed, ½ gpm @ 6 hrs/day

13) Boilers - Describe water use.

Make up and blow down as follows:

Sterilizers	500 GPH, 5 hours/day
Humidifiers	22 GPH, 5 hours/day average
Blow down	400 gallons/day
Kitchen	130 GPH, 10 hours/day

14) Cooling towers

Total cooling capacity - 2,250 tons

Average cooling demand - 30% = 675 tons

Cycles of concentration - 5.0

15) Other

None

Based on the questionnaire, we have estimated the Phase 2 water use as follows:

A. Domestic Use

ITEM	HOSPITAL PATIENTS	MOB PATIENTS	STAFF	VISITOR
Toilet Flushes:				
Volume per flush, gal	3.0	(2) 2.0	(2) 2.0	(2) 2.0
(1) Flushes per day/person	4.0	0.5	4.0	1.0
Volume per day/person, gal	12.0	1.0	8.0	2.0
Faucets:				
Average flow rate, gal/min	1.5	1.5	1.5	1.5
(1) Minutes per day/person	3.0	0.4	5.5	0.75
Volume per day/person, gal	4.5	0.6	8.25	1.12
Showers:				
Average flow rate, gal/min.	2.5			
(1) Minutes per day/person	5.0	N/A	N/A	N/A
Volume per day/person, gal	12.5			
TOTAL, gallons per day/person	29.0	1.6	16.25	3.12
Number of Persons	182	1,600	2,000	764
Use Per Day (GAL)	5,278	2,560	32,500	2,384
Total Use Per Day (GAL)				**42,722**

NOTES

1. Reference Black & Veatch Report contained in our initial report dated October 2, 1991.

2. Average of 50% urinal use and 50% toilet use.

Please note that in our analysis of the domestic water use, we have not used low flow or ultra-low flow toilets. According to Bob Lujan, low flow toilets are a constant maintenance problem and he would recommend the use of standard toilets.

B. Kitchen

Based on our previous studies of other Kaiser Hospitals, we estimate an efficient kitchen to use approximately 3% of the total potable water used in the Model Hospital.

Volume = 0.03 x 132,600 gpd

Volume = 3,900 gpd

C. Central Supply

1. Vacuum steam Castle 4233

   Volume = (2 unit) (16 gpm) (370 min/day/unit)

   Volume = 11,840 gpd

2. Gravity castle 3522

   Volume = (4 units) (6 gpm) (320 min/day/unit)

   Volume = 7,680 gpd

3. Washer castle 6900

   Volume = (2 units) (15 gpd) (300 min/day/unit)

   Volume = 9,000 gpd

4. Cart washer

   Volume = (1 unit) (16 gpm) (300 min/day/unit)

   Volume = 4,800 gpd

   TOTAL VOLUME = 33,320 gpd

D. X-Ray Processors

Volume = (6 units) (2 gpm) (100 min/day/unit)

Volume = 1200 gpd

E. Operating Room

Volume = (11 sinks) (2.5 gpm) (90 min/day/sink)

Volume = 2,475

F. Physical Therapy

Volume = (430 gallons) (3 times/day)

Volume = 1,290 gpd

G. Central Plant

1. Air Compressors - air cooled, oil free pumps requiring no water

   Volume = 0 gpd

2. Vacuum Pumps

   a. Water Sealed

      Volume = (0.5 gpm) (360 min/day)

   Volume = 180 gpd

3. Boilers

   a. Sterilizers

      Volume = (500 gph) (5 hrs/day)

      Volume = 2500 gpd

   b. Humidifiers

      Volume = (22 gph) (5 hrs/day)

      Volume = 110 gpd

   c. Blow Down

      Volume = 400 gpd

   d. Kitchen

      Volume = (130 gph) (10 hrs/day)

      Volume = 1,300 gpd

4. Cooling Towers

Total cooling capacity = 2250 tons

Average cooling demand = 30% = 675 tons

Of the 675 tons, 450 tons are from the centrifugal chillers and 225 are from the absorption chillers.

a. Evaporation

Volume = (450 tons) (1.8 gal/ton-hr) (24 hrs)
+ (225 tons) (2.8 gal/ton-hr) (24 hrs)

Volume = 34,560 gpd

b. Bleed Off

Volume = 25% of evaporation = (0.25)

Volume = 8,640 gpd

TOTAL VOLUME = 47,700 gpd

Please note that Bob Lujan is continuing his research of possible ways to reduce the bleed off. He feels that an ozone generator may be used which would reduce bleed off by 80%. This would reduce cooling tower consumption by 6,900 gpd.

H. Landscape

Based on the estimated provided by The HMC Group:

Shrub	= 71.37 AF/yr x 893 gpd/AF/yr =	63,730 gpd
Turf	= 10.68 AF/yr x 893 gpd/AF/yr =	9,540 gpd
Temporary =	-0-	= -0-
	TOTAL VOLUME	**73,300 gpd**

KAISER PERMANENTE CHULA VISTA MEDICAL CENTER WATER USE ESTIMATE - PHASE 2

Beds Used = 182

Staff = 2,000

Cooling Tower Average = 675 tons

	Use (GPD)	%
A. Domestic Use		
Hospital Patients	5,278	
MOB Patients	2,560	
Staff	32,500	
Visitors	2,384	
Total Domestic	42,722	21
B. Kitchen	3,900	2
C. Central Supply		
Vacuum Steam Castle 4233	11,840	
Gravity Castle 3522	7,680	
Washer Castle 6900	9,000	
Cart Washer	4,800	
Total Central Supply	33,320	16
D. X-Ray Processors	1,200	<1
E. Operating Room	2,475	1
F. Physical Therapy	1,290	<1
G. Central Plant		
1. Air Compressors	0	
2. Vacuum Pumps	180	
3. Boiler		
a. Sterilizers	2,500	
b. Humidifiers	110	
c. Blow Down	400	
D. Kitchen	1,300	
4. Cooling Tower		
a. Evaporation	34,560	
B. Bleed Off	8,640	
Total Central Plant	47,690	23
H. Landscape	73,300	36
GRAND TOTAL GAL/DAY	205,900	100
TOTAL MIL. GAL/YR (1)	64.2	

NOTES

(1) Annual use was figured by using 50% of weekday consumption for

The chart on the previous page provides a breakdown of the total Phase 2 water use. Of this total, the landscape portion could be satisfied with reclaimed water. In addition, only a portion of the potable water will end up as sewage.

The following chart further breaks the number down to potable water demand, reclaimed water demand and sewage generated. Potable water use includes all uses except landscaping. Sewage generated is defined as potable water use minus cooling tower evaporation.

Potable Water Use (GPD)	132,600
Reclaimed Water Use (GPD)	73,300
Total Water Use (GPD)	205,900
Sewage Generated (GPD)	98,000

KAISER PERMANENTE CHULA VISTA MEDICAL CENTER WATER USE QUESTIONNAIRE
PHASE 3 ULTIMATE BUILDOUT

1) Number of beds - 439 (max. occupancy = 80% of total beds = 351)
Number of MOB patients = 2800/day

2) Number of staff - 4,000 employees on a typical weekday
2,000 employees on a typical weekend day

3) Number of hospital visitors - 2 visitors per bed = 2 x 351 = 702
Number of MOB visitors - 1 visitor per 4 patients = ¼ x 2800 = 700/day

4) Water flow rate for:

A. Lavatory - 1.5 GPM

B. Sink - 2.0 GPM

C. Shower - 2.5 GPM

D. Toilet - 3.0 Gal/Flush

E. Urinal - 1.0 Gal/Flush

5) Sterilizers and Autoclaves

A. Type - Vacuum steam castle 4233

Quantity - 3

Flow Rate = 2 @ 16 GPM, 1 @ 9 GPM

Frequency of Use - 370 min/day/machine

B. Type - Gravity Castle 3522

Quantity - 6

Flow Rate - 6 GPM

Frequency of Use - 320 min/day/machine

C. Type - Washer castle 6900

Quantity - 3

Flow Rate - 15 GPM

Frequency of Use - 300 min/day/machine

D. Type - Cart washer

Quantity - 1

Flow Rate - 16 GPM

Frequency of Use - 300 min/day/machine

6) X-Ray Processors

Quantity - 8

Flow Rate - 2 GPM

Frequency of Use - 100 min/day/machine

7) Operating Room

Quantity of Sinks - 22

Flow Rate - 2.5 gal/min each

Frequency of Use - 90 min/day sink

8) Physical Therapy

Quantity of Pools - 5

Capacity - 560 Gallons: 1-Body = 300 gal.
2-Arm/Foot = 100 gal.
2-Leg = 160 gal.

Frequency of Use - 3 times/day

9) Kitchen - Are there any items such as steam cookers that would use a constant flow of water, excluding dishwashers and ice makers? NO . If yes, describe machines (quantity, flow rate, frequency of use etc.)

10) Laundry - Will there be onsite laundry facilities? NO .
If yes, describe machines (quantity, flow rate, frequency of use etc.)

11) Type of air compressors - air cooled, zero flow

12) Type of vacuum pumps - water sealed, ½ gpm @ 6 hrs/day

13) Boilers - Describe water use.

Make up and blow down as follows:

Sterilizers	750 GPH, 5 hours/day
Humidifiers	44 GPH, 5 hours/day average
Blow down	600 gallons/day
Kitchen	198 GPH, 10 hours/day

14) Cooling towers

Total cooling capacity - 4,000 tons

Average cooling demand - 30% = 1200 tons

Cycles of concentration - 5.0

15) Other

None

Based on the questionnaire, we have estimated the Phase 3 water use as follows:

A. Domestic Use

ITEM	HOSPITAL PATIENTS	MOB PATIENTS	STAFF	VISITORS
Toilet Flushes:				
Volume per flush, gal	3.0	(2) 2.0	(2) 2.0	(2) 2.0
(1) Flushes per day/person	4.0	0.5	4.0	1.0
Volume per day/person, gal	12.0	1.0	8.0	2.0
Faucets:				
Average flow rate, gal/min	1.5	1.5	1.5	1.5
(1) Minutes per day/person	3.0	0.4	5.5	0.75
Volume per day/person, gal	4.5	0.6	8.25	1.12
Showers:				
Average flow rate, gal/min.	2.5			
(1) Minutes per day/person	5.0	N/A	N/A	N/A
Volume per day/person, gal	12.5			
TOTAL, gallons per day/person	29.0	1.6	16.25	3.12
Number of Persons	351	2,800	4,000	1,402
Use Per Day (GAL)	10,179	4,480	65,000	4,374
Total Use Per Day (GAL)				**84,033**

NOTES

1. Reference Black & Veatch Report contained in our initial report dated October 2, 1991.

2. Average of 50% urinal use and 50% toilet use.

Please note that in our analysis of the domestic water use, we have not used low flow or ultra-low flow toilets. According to Bob Lujan, low flow toilets are a constant maintenance problem and he would recommend the use of standard toilets.

B. Kitchen

Based on studies of other Kaiser Hospitals, we estimate an efficient kitchen to use approximately 3% of the total potable water used in the Model Hospital.

Volume = 0.03 x 227,600 gpd

Volume = 6,800 gpd

C. Central Supply

1. Vacuum steam Castle 4233

   Volume = (2 unit) (16 gpm) (370 min/day/unit)

   + (1 unit) (9 gpm) (370 min/day/unit)

   Volume = 15,170 gpd

2. Gravity castle 3522

   Volume = (6 units) (6 gpm) (320 min/day/unit)

   Volume = 11,520 gpd

3. Washer castle 6900

   Volume = (3 units) (15 gpm) (300 min/day/unit)

   Volume = 13,500 gpd

4. Cart washer

   Volume = (1 unit) (16 gpm) (300 min/day/unit)

   Volume = 4,990 gpd

   TOTAL VOLUME = 44,990 gpd

D. X-Ray Processors

Volume = (8 units) (2 gpm) (100 min/day/unit)

Volume = 1600 gpd

E. Operating Room

Volume = (22 sinks) (2.5 gpm) (90 min/day/sink)

Volume = 4,950 gpd

F. Physical Therapy

Volume = (560 gallons) (3 times/day)

Volume = 1,680 gpd

G. Central Plant

1. Air Compressors - air cooled, oil free pumps requiring no water

   Volume = 0 gpd

2. Vacuum Pumps

   a. Water Sealed

      Volume = (0.5 gpm) (360 min/day)

      Volume = 180 gpd

3. Boilers

   a. Sterilizers

      Volume = (750 gph) (5 hrs/day)

      Volume = 3750 gpd

   b. Humidifiers

      Volume = (44 gph) (5 hrs/day)

      Volume = 220 gpd

c. Blow Down

Volume = 600 gpd

d. Kitchen

Volume = (198 gph) (10 hrs/day)

Volume = 1,980 gpd

4. Cooling Towers

Total cooling capacity = 4000 tons

Average cooling demand = 30% = 1200 tons

Of the 1200 tons, 800 tons are from the centrifugal chillers and 400 are from the absorption chillers.

a. Evaporation

Volume = (800 tons) (1.8 gal/ton-hr) (24 hrs)
+ (400 tons) (2.8 gal/ton-hr) (24 hrs)

Volume = 61,440 gpd

b. Bleed Off

Volume = 25% of evaporation = (61,440 gpd) (0.25)

Volume = 15,360 gpd

TOTAL VOLUME = 83,530 gpd

Please note that Bob Lujan is continuing his research of possible ways to reduce the bleed off. He feels that an ozone generator may be used which would reduce bleed off by 80%. This would reduce cooling tower consumption by 12,300 gpd.

H. Landscape

Based on the estimated consumption provided by The HMC Group:

Shrub	= 65.95 AF/yr x 893 gpd/AF/yr =	58,900 gpd
Turf	= 10.68 AF/yr x 893 gpd/AF/yr =	9,500 gpd
	TOTAL VOLUME	**68,400 gpd**

KAISER PERMANENTE CHULA VISTA MEDICAL CENTER WATER USE ESTIMATE - PHASE 3

Beds Used = 351

Staff = 5,000

Cooling Tower Average = 1200 tons

	Use (GPD)	%
A. Domestic Use		
Hospital Patients	10,179	
MOD Patients	4,480	
Staff	65,000	
Visitors	4,374	
Total Domestic	84,033	28
B. Kitchen	6,800	2
C. Central Supply		
Vacuum Steam Castle 4233	15,170	
Gravity Castle 3522	11,520	
Washer Castle 6900	13,500	
Cart Washer	4,800	
Total Central Supply	44,990	15
D. X-Ray Processors	1,600	<1
E. Operating Room	4,950	2
F. Physical Therapy	1,680	<1
G. Central Plant		
1. Air Compressors	0	
2. Vacuum Pumps	180	
3. Boiler		
a. Sterilizers	3,750	
b. Humidifiers	220	
c. Blow Down	600	
D. Kitchen	1,980	
4. Cooling Tower		
a. Evaporation	61,440	
B. Bleed Off	15,360	
Total Central Plant	83,530	28
H. Landscape	68,400	23
GRAND TOTAL GAL/DAY	296,000	100
TOTAL MIL. GAL/YR (1)	92.3	

NOTES

(1) Annual use was figured by using 50% of weekday consumption for

The chart on the previous page provides a breakdown of the total Phase 3 water use. Of this total, the landscape portion could be satisfied with reclaimed water. In addition, only a portion of the potable water will end up as sewage.

The following chart further breaks the number down to potable water demand, reclaimed water demand and sewage generated. Potable water use includes all uses except landscaping. Sewage generated is defined as potable water use minus cooling tower evaporation.

Potable Water Use (GPD)	227,600
Reclaimed Water Use (GPD)	68,400
Total Water Use (GPD)	296,000
Sewage Generated (GPD)	166,200

TECHNICAL APPENDICES TO THE FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR THE EASTLAKE I SECTIONAL PLANNING AREA (SPA) PLAN AMENDMENT/ KAISER PERMANENTE CHULA VISTA MEDICAL CENTER

TRAFFIC REPORT: APPENDIX B

EIR #92-01
SCH #92031049

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June 12, 1992

CITY OF
CHULA VISTA

VOLUME I

TRAFFIC REPORT

APPENDIX B

FINAL REPORT

EASTLAKE I SPA AMENDMENT TRAFFIC ANALYSIS

PROJECT DESCRIPTION, METHODOLOGY, AND INTERIM PRE-SR 125 CIRCULATION SYSTEM IMPACTS

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Revised: April 20, 1992

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1. INTRODUCTION

This report documents the findings of the Eastlake I SPA Amendment Traffic Analysis Project conducted by JHK & Associates (JHK). The Eastlake I SPA Amendment consists of a modification of the land use locations and mix of land uses in the Activity Center portion of the previously adopted SPA plan. This report will document the project-only and cumulative impact of this land use modification to study area roadways and intersections in addition to discussing critical site access issues. Three separate traffic analysis timeframes were reviewed in this project; Existing (Year 1991), Interim (Pre-SR 125, with Approved Development Projects), and General Plan Buildout. For the future conditions analysis four separate land use scenarios are analyzed: Interim (Pre-SR 125) TPP Approved Projects without Modified Project, Interim (Pre-SR 125) TPP Approved Projects with Proposed Project, General Plan Buildout without Modified Project, and General Plan Buildout with Proposed Project. The Interim (Pre-SR 125) TPP Approved Projects analysis without Modified Project, and the General Plan Buildout analysis without Modified Project provide the basis for determining project-only and cumulative impacts of the Proposed Project.

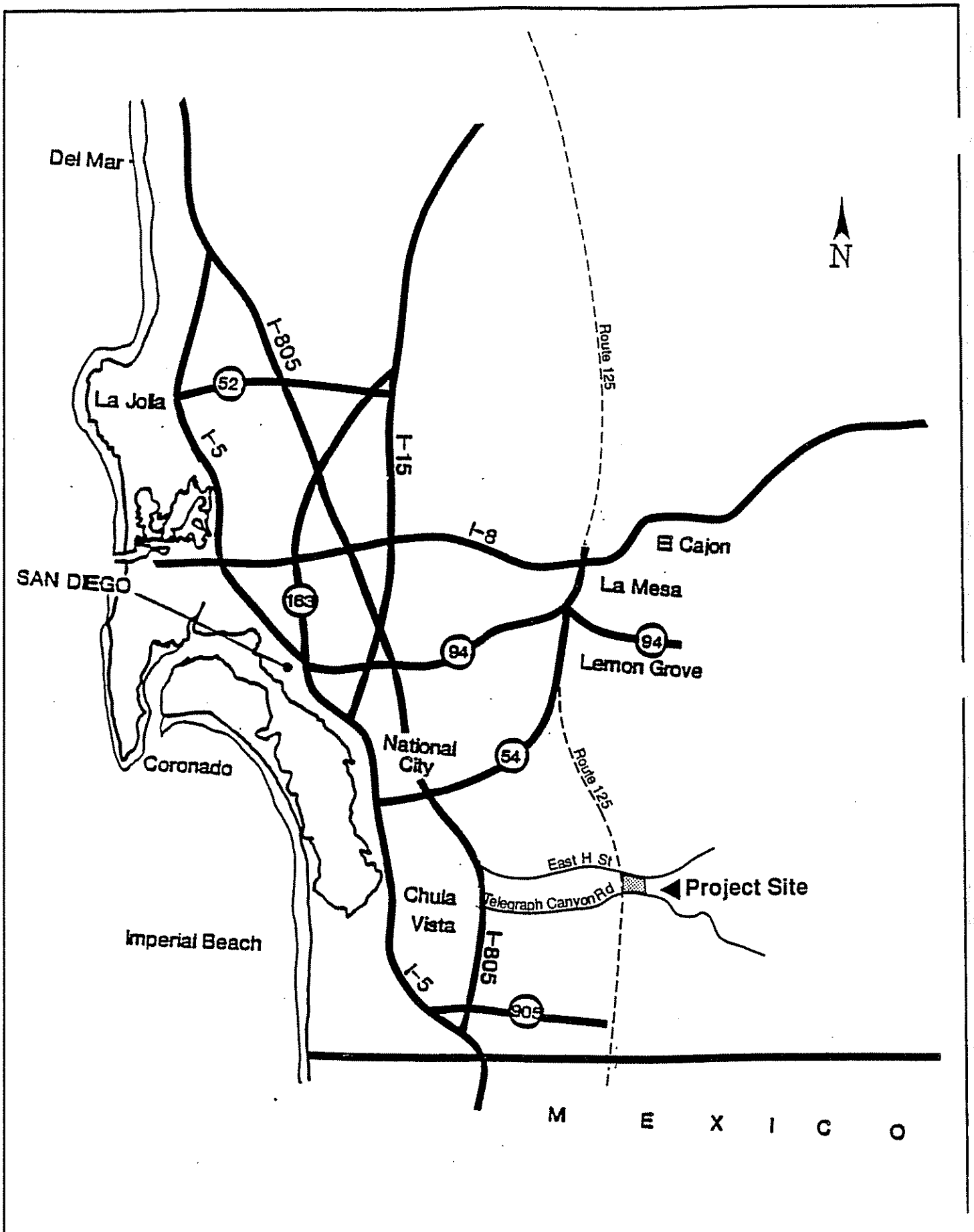
As shown on Figure 1-1 (Vicinity Map) the Proposed Project is located in the easternmost portion of the City of Chula Vista. The Proposed Project is situated immediately east of the future alignment of the State Route 125 facility as described in the Adopted General Plan Circulation Element.

The study area for this project, shown in Figure 1-2, is bordered by Interstate 805 (I-805) to the west, Hunte Parkway to the east, State Route 54 (SR 54) to the north and Otay Valley Road to the south.

Purpose

As mentioned above, a primary purpose of this report is to define the TPP Approved Projects Base Condition and to show the impact of the proposed project over the TPP base. The Eastern Chula Vista Transportation Phasing Plan (TPP) Update (Willdan Associates, January 1991) contains land use assumptions for the following developments under the heading "Approved Project Forecast with Rancho Del Rey SPA's I, II, and III".

- Rancho Del Rey
- Eastlake
- Eastlake Greens
- Olympic Training Center
- Sunbow
- Salt Creek I
- Montillo
- Canyon View
- Woodcrest S.W.
- Ladera Villas
- Terra Nova



EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Figure 1-1

VICINITY MAP

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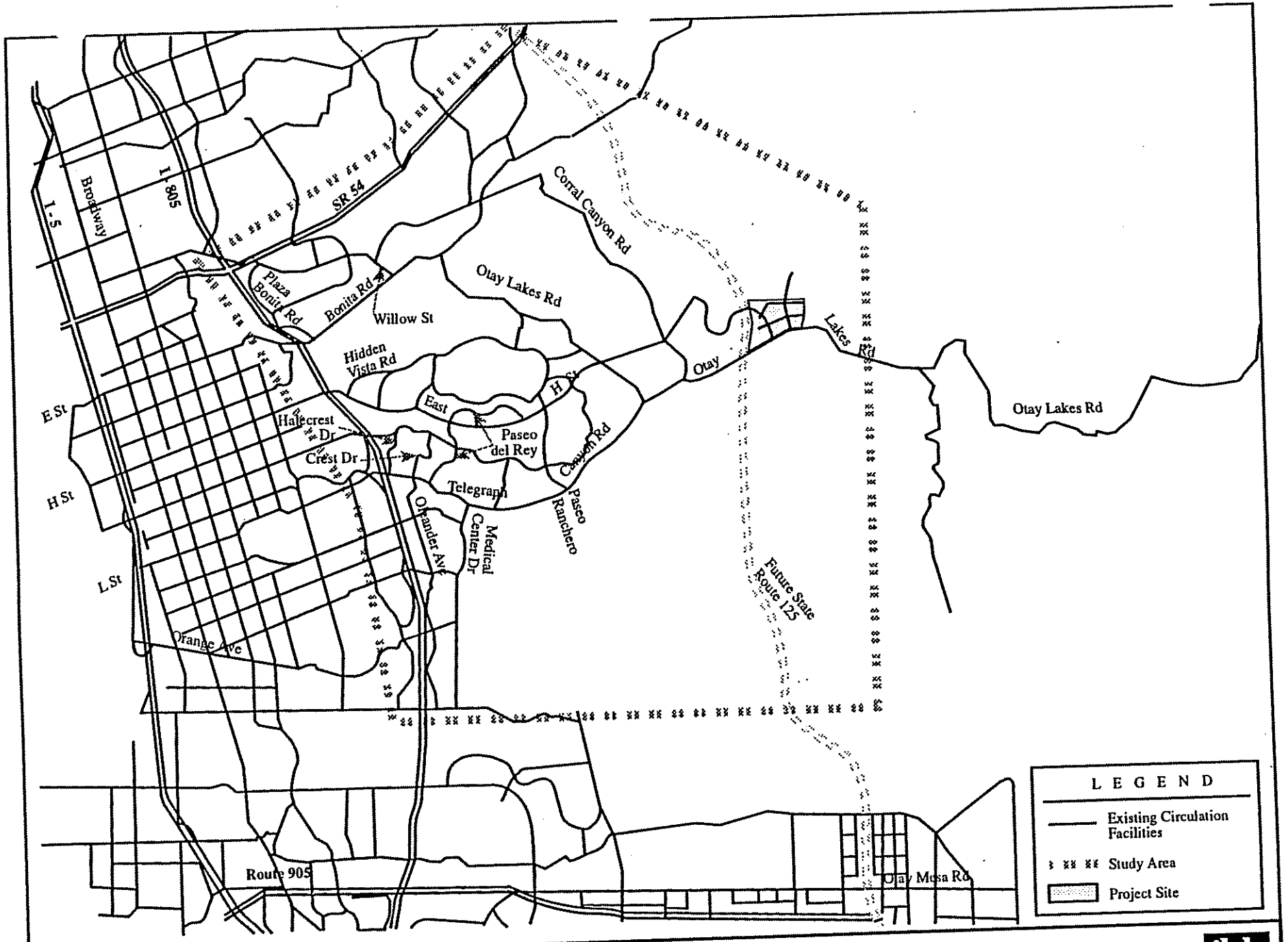


EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Figure 1-2

STUDY AREA MAP AND EXISTING YEAR 1991 TRANSPORTATION NETWORK

jhk & associates

The TPP report was prepared to determine the carrying capacity of the road system before SR 125 and report on the adequary of the system to accommodate the cumulative traffic generated by anticipated development projects which have been approved by the City. The TPP provides information to assess the impacts of new development and determine the appropriate phasing of necessary circulation facilities. This process also identifies the amount of new development which can be allowed to occur prior to the construction of a facility within the SR 125 Corridor. It should be noted that development of the subject property was included in the TPP estimates but under the land use designations currently in place.

As shown, the original Eastlake SPA was included in this analysis; however, a substantial modification in land use has been proposed (detailed in Chapter 5), which will necessarily create additional impacts over this TPP Base Condition. Chapter 6 of this report documents these impacts.

A second primary purpose of this document is to define the land uses in the General Plan to be replaced with the Proposed Project and to determine the additional impacts over the General Plan Buildout Condition. Chapters 9 and 10 of this report documents these impacts.

Background

The original Eastlake I SPA Plan was adopted in February 1985. The original project included two residential neighborhoods, a business center, and a mixed use area identified as the Village Center containing the retail/activity center for the Eastlake I Community. The subsequent approval of the Eastlake Greens SPA extended these types of uses south of Telegraph Canyon Road, creating the Activity Corridor which will serve the the entire Eastlake Project and surrounding properties.

This role as a more intense community core area was confirmed in the adoption of the Chula Vista General Plan update in 1989. The Plan identified the Eastlake Village Center as the "Community Activity Center" where mixed uses and higher intensity development are appropriate.

This original Proposed Project was analyzed in both the TPP and Chula Vista General Plan Buildout analysis. Subsequent to the approval of the original Eastlake SPA Plan, further refinements have been made to the Activity Center portion of the Eastlake I project including the incorporation of a Medical Center in the northern portion of the site; a reduction in the amount of office/retail, open space and public facility uses; an increase in employment uses; and the removal of residential uses from the Activity Center area entirely. The precise land uses statistics are detailed in Chapter 5 of this document.

The primary sources for the base condition analysis are the following documents:

- Existing Conditions
  - Traffic Flow Summary Report, City of Chula Vista, 1991.
  - Year 1990, Traffic Monitoring Program Growth Management Plan - Final Technical Report, JHK & Associates, 1991.

- Interim (Pre-SR 125) Conditions
  - Final Eastern Chula Vista Transportation Phasing Plan Update (TPP), Willdan Associates, January 1991.

- General Plan Buildout Conditions
  - Chula Vista General Plan Circulation Element results using the Combined Southbay Transportation Model provided by SANDAG.

The modelling of Interim (Pre-SR 125) conditions was conducted utilizing a micro computer version of TRANPLAN by JHK staff. For General Plan Buildout Conditions, SANDAG provided modelling support based on Land Use and Network coding information developed by JHK.

Organization of Report

This report is organized to provide a clear progression in the understanding of the Proposed Project and the surrounding area which will experience traffic impacts. The first chapter provides an introduction to the project and defines critical assumptions on which the subsequent analysis is based.

Chapter 2 defines the analysis methodologies and guidelines used on both study area arterial and freeway segments and major signalized intersections.

Chapter 3 defines the Existing Conditions of the study area circulation network and identifies areas of deficiencies. This analysis is primarily for information purposes, given the time-frame of construction of the Eastlake I SPA Amendment Project which will occur as part of the phased implementation of land uses included in the current Transportation Phasing Plan.

Chapter 4 defines future Interim (Pre-SR 125) Conditions under the TPP Approved Projects (including the original Eastlake I SPA land use assumption). Chapter 4 also details the minimum required circulation network improvements to improve roadway segment and intersection operating conditions to acceptable levels as defined in Chapter 2. The remainder of the report assumes that these mitigation measures are in place. This analysis defines the Interim (Pre-SR 125) Base Condition.

Chapter 5 provides a full description of the Proposed Project and trip generation assumptions for both the Interim and Buildout timeframes of analysis. This chapter defines

the amount of expected traffic activity which is associated with the SPA Amendment site for both the Interim and Buildout phases of development.

Chapter 6 contains a detailed traffic analysis of future Interim (Pre-SR 125) conditions with the Proposed Project. A comparison of the analysis results of this chapter with the analysis results of Chapter 4 specifically defines the project-only and cumulative transportation impacts to the study area circulation network.

Chapter 7 contains a site access review based on traffic activity expected under the Interim (Pre-SR 125) with Project Condition. The peak hour operating conditions at four critical intersections at or near the project site along with preliminary access analysis at a critical mid-block location is provided in this chapter.

Chapter 8 defines the General Plan Buildout Condition without the Modified Project land uses. Critical high volume roadway segments and intersections are identified and the Buildout Base Condition is defined.

Chapter 9 includes a transportation impact analysis of the General Plan Buildout Scenario with the Proposed Project. The same methodologies used for the Chapter 8 analysis are used in this chapter. Through a comparison with the analysis results contained in this chapter with the analysis results of Chapter 8, project-only and cumulative transportation impacts are specifically defined.

Chapter 10 contains an analysis of a network alternative under General Plan Buildout Conditions. This network alternative involves a change to the Adopted General Plan Circulation Element. This network modification was recommended by the Project Applicant as a potential mitigation measure to be analyzed in the traffic analysis. Specifically the following network alternative is analyzed:

- Half-Diamond Interchange at Eastlake Parkway and SR-125 with ramps to and from the North

Chapter 11 contains a site access review based on the traffic activity expected under the General Plan Buildout with the Proposed Project condition under the General Plan base network and the network alternatives. The peak hour operating conditions at critical intersections at or near the project site, along with a final access analysis at the critical mid-block location is provided in this chapter.

Chapter 12 provides recommendations for improvements to both roadway segments and intersections for both the Interim and Buildout timeframes. These mitigation measures are required to achieve acceptable operating conditions as defined in the following chapter of this document.

The final chapter of this report, Chapter 13, details additional traffic engineering analyses conducted at the request of the City staff. These studies include a project site internal circulation review, an analysis of the future parking supply and demand for the project site, a signal timing progression and arterial analysis for the segment of Otay Lakes Road adjacent to the site, and a queueing analysis to determine storage lengths for left turning vehicles from Otay Lakes Road to the project site.

2. TRAFFIC IMPACT ANALYSIS METHODOLOGY AND GUIDELINES

This chapter defines the methodologies, guidelines, and threshold standards used for each analysis phase of this project. For Existing Conditions, existing Year 1991 Average Daily Traffic (ADT) and peak hour turning movement volumes were analyzed based on available data collected by the City of Chula Vista and JHK. For future conditions (Interim Pre SR 125, with Approved Development Projects & Buildout), modelled ADT and turning movement volumes as provided by JHK and SANDAG were used. The following section details the methodology used to analyze Existing Conditions.

TRAFFIC ANALYSIS METHODOLOGIES AND GUIDELINES

The City of Chula Vista Traffic Engineering Division recommends that traffic analyses performed to determine impacts of proposed developments utilize the following guidelines for each timeframe of analysis:

Existing Conditions

To define the current status of the existing circulation system it is recommended that segment and intersection performance be documented. The tables listed below detail the methodology for conducting the analysis of Existing Conditions.

- Table 2-1 - Segment Capacity and Level of Service Standards Average Daily Traffic Volumes
- Table 2-2 - Highway Capacity Manual Levels of Service Criteria Signalized Intersections Operational Method

The City of Chula Vista General Plan Circulation Element recommends that arterial segments maintain Levels of Service (LOS) C or better. For freeways the California State Department of Transportation (Caltrans) recommends LOS E or better as acceptable. Table 2-1 lists the LOS guidelines for the various functional roadway classifications. The values shown are not an exact description of the actual operating level of service. The actual functional capacity of roadway facilities are based on the ability of arterial intersections to accommodate peak hour volumes. Special designs of intersections to achieve acceptable levels of service could result in higher capacities and thus higher volumes may occur on arterial segments than those shown in Table 2-1. Thus, for arterial segment capacity analysis under Existing Conditions, it is recommended that all study area segments be reviewed to determine if the segment operates under or over the recommended LOS

Table 2-1

CITY OF CHULA VISTA AND CALTRANS SEGMENT CAPACITY AND LEVEL OF SERVICE STANDARDS AVERAGE DAILY TRAFFIC VOLUMES(1)

Functional Class(2)	Level of Service A	B	C	D	E
Freeway (10-Lane)	120,000	140,000	160,000	180,000	**200,000**
Freeway (8-Lane)	96,000	112,000	128,000	144,000	**160,000**
Freeway (6-Lane)	72,000	84,000	96,000	108,000	**120,000**
Freeway (4-Lane)	48,000	56,000	64,000	72,000	**80,000**
Expressway (6-Lane)	52,500	61,300	**70,000**	78,800	87,500
Prime Arterial (8-Lane)	50,000	58,300	**66,700**	75,000	83,300
Prime Arterial (6-Lane)	37,500	43,800	**50,000**	56,300	62,500
Major Street (6-Lane)	30,000	35,000	**40,000**	45,000	50,000
Major Street (4-Lane)	22,500	26,300	**30,000**	33,800	37,500
Class I Collector (4-Lane)	16,500	19,300	**22,000**	24,800	27,500
Class II Collector (3-Lane)(3)	9,000	10,500	**12,000**	13,500	15,000
Class III Collector (2-Lane)(3)	5,600	6,600	**7,500**	8,400	9,400

Notes:

1. For long-range planning, the City of Chula Vista General Plan Circulation Element recommends LOS C or better as acceptable for Arterial Segment ADT volumes and Caltrans recommends LOS E or better as acceptable for Freeway Segment ADT volumes.

2. The volumes shown are intended as planning guidelines to determine the functional classification of roadways under investigation. The values shown are not an exact description of the anticipated operating level of service. The actual functional capacity of roadway facilities are based on the ability of arterial intersections to accommodate peak hour volumes. Special designs of intersections to achieve acceptable levels of service could result in higher capacities than those shown above.

3. Levels of Service standards for three and two-lane collectors (Class II and III Collectors) and Local Streets are not typically evaluated at the General Plan level.

Source: City of Chula Vista Street Design Standards Policy (July 1991), SANDAG Guidelines, JHK & Associates.

Table 2-2

CITY OF CHULA VISTA
HIGHWAY CAPACITY MANUAL LEVELS OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS OPERATIONAL METHOD

LEVEL OF SERVICE*	TYPE OF FLOW	AVERAGE STOPPED DELAY (SECONDS PER VEHICLE)
A	Free Flow	0 - 5.0
B	Stable Flow	5.1 - 15.0
C	Stable Flow	15.1 - 25.0
D	**Approaching Unstable Flow**	**25.1 - 40.0**
E	Unstable Flow	40.1 - 60.0
F	Forced Flow	> 60.0

Note: * The City of Chula Vista Traffic Engineering Division guideline for preparing Traffic Impact Studies recommends that future operating conditions at signalized intersections be maintained at LOS D or better during either AM or PM peak hours. An additional guideline provided by the City Traffic Engineer related to future cycle length restrictions. As directed, JHK utilized a 110 second common background cycle length for all signalized intersections in Eastern Chula Vista for all future conditions impact and mitigation analyses.

Source: Highway Capacity Manual 1985, Chapter 9 "Signalized Intersections".

threshold (Arterials - LOS C, Freeways - LOS E). This planning tool does, however, provide a guideline which indicates where further analysis is required. It also provides technical support for the sizing of Circulation Element Facilities in general terms. Peak hour intersection LOS provides the primary source of information on which actual circulation system performance is based under Existing Conditions.

For the analysis of major signalized intersections under Existing Conditions, the City of Chula Vista Traffic Engineering Division Guideline for Preparing Traffic Impact Studies recommends that existing operating conditions at signalized intersections be maintained at LOS D or better during either A.M. or P.M. peak hours, as shown on Table 2-2.

Levels of Service for the study area intersections, based on the respective volumes and capacities, were determined using the operational analysis procedure for signalized intersections as outlined in the 1985 Highway Capacity Manual (HCM). This technique uses 1800 vehicles per hour per lane (vphpl) as the maximum saturation volume of an intersection. This saturation volume is adjusted to account for lane width, on street parking, pedestrians, traffic composition (i.e. % trucks) and shared lane movements (i.e. through and right turn movements originating from the same lane).

Future Interim Conditions

To define the status of the future study are circulation system under Interim Conditions, it is recommended that the guidelines defined for "Existing Conditions" be followed. Interim Conditions typically include the implementation of the entire Proposed Project in a single year or over a series of years through a phased development program. Again, under this period of analysis segment performance should be reported in terms of its relationship to the threshold capacities of LOS C for arterials and LOS E for freeways. The volumes shown on Table 2-1 are intended to be used as a planning guideline to determine the functional classification of arterials under investigation. It is important to note that under Interim Conditions, estimated peak hour intersection LOS provides the most accurate gauge of circulation system performance. Thus, segment performance analysis is not considered a primary source of impact identification under Interim (Pre-SR 125) Conditions with the Proposed Project, and results of this analysis are provided for informational purposes.

For the analysis of major signalized intersections under Interim Conditions, the City of Chula Vista Traffic Engineering Division Guidelines for Preparing Traffic Impact Studies recommends that future operating conditions at signalized intersections be maintained at LOS D or better during either A.M. or P.M. peak hours, as shown on Table

2-2. An additional guideline provided by the City Traffic Engineer relating to future cycle length restrictions was incorporated into the analysis. As directed, JHK utilized a 110 second common background cycle length for all signalized intersections in Eastern Chula Vista for all future conditions impact and mitigation analyses. Appendix A contains a listing of a series of Intersection Capacity Analysis Guidelines and Directives developed by the City Traffic Engineer and JHK for application and throughout this project. Thus, peak hour intersection LOS is the primary source of circulation system performance and provides the basis for determining project related impacts under Interim (Pre-SR 125) Conditions.

Future Buildout Conditions

To define the status of the future study area circulation system under Buildout Conditions, it is recommended that the analysis of circulation system performance be conducted using the following guidelines for segments and signalized intersections.

- **Segment Capacity Analysis** - For long range forecasting under buildout conditions, segment capacity is considered the appropriate measure of impact because of uncertainties associated with calculating intersection LOS when looking at the large area picture. Detailed information on turning movements cannot be accurately forecasted in the buildout condition because, in the macroscopic view, insufficient future land use descriptions are not available. Therefore, in this case, intersection LOS is not considered reliable.

- **Intersection Capacity Analysis (Area-Wide)** - An additional transportation analysis tool used in the review of the Proposed Project land use and circulation network alternatives under Buildout Conditions was the identification of potential congestion at major roadway crossings at off-site locations based on total entering volumes. Entering volume threshold criteria as identified in the Adopted City of Chula Vista General Plan Circulation Element was utilized as a guideline for this screening process. The City of Chula Vista has established planning level limitations on the amount of traffic that may enter an intersection without requiring planning or implementation action. These daily entering volume thresholds are intended to provide an indication that special geometric design treatments

may be required. The thresholds on intersection entering volume are as follows:

Stage of Impact	Description of Mitigation Treatment
0	• 65,000 or fewer entering vehicles per day is considered tolerable and standard at-grade intersection design would be adequate to provide acceptable peak hour levels of service.
1	• 65,000-75,000 entering vehicles per day may require mitigation measures to enhance geometrics and increase capacity. These at-grade solutions may include unrestricted right turn lanes and/or additional through lanes where appropriate.
2	• 75,000-85,000 entering vehicles per day requires the design and implementation of mitigation measures to significantly enhance intersection geometrics and increase capacity. These intersection design treatments may include either the at-grade solutions described above or full grade separated solutions, described below.
3	• Over 85,000 entering vehicles per day requires the design and implementation of mitigation measures to allow the intersections to flow smoothly. Mitigation at this level typically includes partial grade separations and/or full grade separations to separate heavy through movements at different grades.

Impact levels for intersections are a degree of impact measured in terms of expected delay. In relation to level of service, impact level 0 relates to LOS D or better operating conditions, while impact levels 1, 2, and 3 relate to level of service E or F operating conditions.

By following these intersection screening guidelines, critical high volume locations within the study area will be defined as impacted and adequate mitigation measures developed. However, the analysis of peak hour intersection LOS for intersections which are critical for access to the site is also considered important.

- **Intersection Capacity Analysis (Site Vicinity)** - To determine peak hour LOS for major intersections in the vicinity of the site and to evaluate site access alternatives, it is crucial to perform HCM analyses under Buildout Conditions at selected locations. This detailed approach to intersection LOS at intersections adjacent to the site will produce a detailed

listing of anticipated impacts and allow the development of accurate intersection geometric mitigation measures under Buildout Conditions.

For the analysis of existing and future traffic impacts the implementation of the procedures and guidelines detailed above will result in a detailed report which fully defines traffic conditions and identifies appropriate mitigation measures.

RELATIONSHIP TO THRESHOLD STANDARDS

This section defines the current City of Chula Vista Threshold Standards relating to Traffic. In addition, a detailed discussion of the relationship of these Adopted Threshold Standards to long-range planning and the development of Traffic Impact Analysis Report is provided.

The following items represent City of Chula Vista traffic and circulation system goals:

- To provide and maintain a safe and efficient street system within the City of Chula Vista.
- To establish a performance measurement methodology enabling the City to accurately determine existing levels of service for motorists.
- To define a level of service value that represents a high quality of traffic flow under constrained operating conditions during peak periods of traffic activity.
- To establish a performance standard which is consistent with the Regional Growth Management Standards.
- To maintain consistency in terms of LOS ratings between the previous Intersection Capacity Utilization (ICU) methodology and the 1985 Highway Capacity Manual (HCM) methodology.

The applicable Threshold Standard to achieve these goals are:

- City-wide: Maintain LOS "C" or better as measured by observed average travel speed in all signalized arterial segments except that during peak hours a LOS of "D" can occur for no more than any two hours of the day.

The results of the traffic analysis documented in this report indicates that the LOS C segment capacity planning guideline (detailed previously in this chapter) on selected signalized arterial segments would be exceeded with the proposed project under both

Interim (Pre-SR 125) and Buildout conditions. However, the City-wide LOS threshold standard described above relates to a LOS based on "observed average travel speed".

Observed average travel speed is measured by driving the roads and measuring actual travel times. As such, the observed average travel speed cannot be calculated at this time. Furthermore, the observed average travel speed is primarily controlled by the LOS at intersections. An acceptable observed average travel speed (LOS C) would be maintained as long as intersections along the roadway are operating at LOS D or better.

As no intersection on the arterials in the project area would exceed LOS D, the Proposed Project would not conflict with the City-wide traffic threshold standard.

Furthermore, by following the City's long-range planning guideline of providing mitigation measures to achieve LOS D operations at all signalized intersections, future traffic levels will be in conformance with the requirements of the City's Threshold Standards conformance will be checked when Traffic Monitoring Programs are conducted as part of the Growth Management Plan Annual Updates.

3. EXISTING YEAR 1991 CONDITIONS

This chapter provides a detailed analysis of the Existing Conditions of the study area freeway and arterial segments and major signalized intersections. This analysis is provided to indicate existing circulation network deficiencies and areas requiring improvements.

Segment Capacity Analysis

To analyze Existing Conditions on study area freeway and arterial segments, average daily traffic (ADT) volume data were taken from the "Traffic Flow Summary Report" prepared by the City of Chula Vista in November 1991. Arterial levels of service (LOS) were calculated based on a comparison of the ADT values and the functional classification of the roadway and the recommended maximum ADT volumes as shown on Table 2-1. Figure 3-1 shows the existing study area roadway network operating conditions, and Table 3-1 provides a summary of the operating performance of each major study area roadway segment.

Table 3-1 shows that the following roadway segments exceed the maximum recommended ADT volume (using overall planning guidelines) for their functional classification at LOS D or worse:

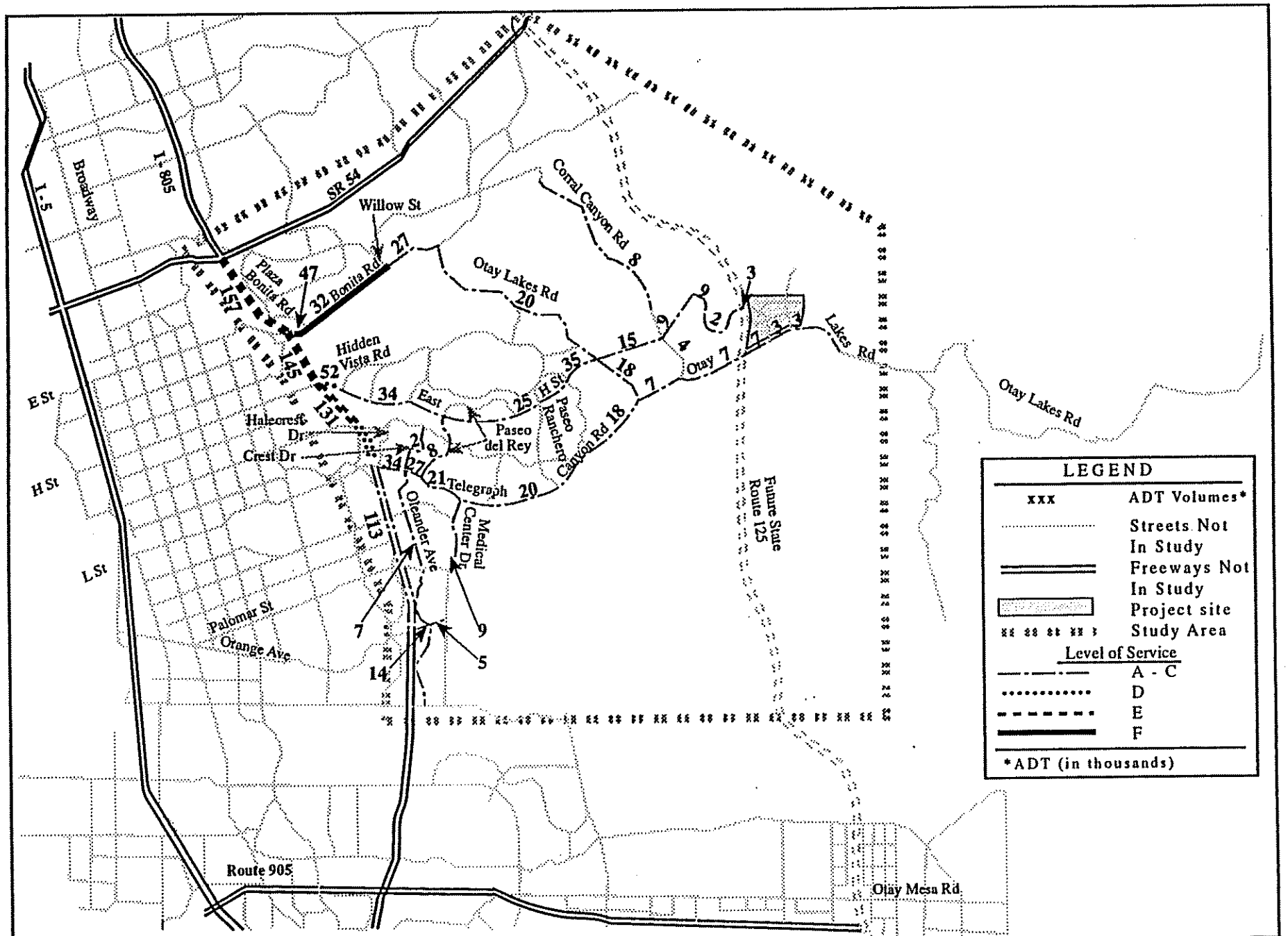
Roadway	From - To
Bonita Road	I-805 to Willow Street
East H Street	I-805 to Hidden Vista Drive

To more clearly define traffic operations and performance, the following analysis of study area signalized intersections is provided.

Signalized Intersection Capacity Analysis

To analyze the Existing Conditions of the critical signalized intersections within the study area, traffic volume counts from previous traffic studies completed in the study area were compiled. The A.M. and P.M. peak hour turning movements were provided by the following sources:

- Year 1990 Traffic Monitoring Program Growth Management Plan - Final Technical Report, JHK & Associates, 1991.
- I-805/Bonita Road Interchange Analysis, Caltrans District 11, 1990.



EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Figure 3-1

EXISTING YEAR 1991 STUDY AREA TRAFFIC CONDITIONS

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Table 3-1

EXISTING YEAR 1991 AVERAGE DAILY TRAFFIC VOLUMES AND SEGMENT PERFORMANCE SUMMARY

Segment	Class	ADT (vpd)	Relationship to Planning Level Capacity Guideline(1)
I-805			
State Route 54 to Bonita Road	Freeway (8 LN)	157,000	Under
Bonita Road to East H Street	Freeway (8 LN)	145,000	Under
East H Street to Telegraph Canyon Road	Freeway (8 LN)	131,000	Under
Telegraph Canyon Road to Orange Avenue	Freeway (8 LN)	113,000	Under
Bonita Road			
I-805 to Plaza Bonita Road	**Major (4 LN)**	**47,300**	**Over**
Plaza Bonita Road to Willow Street	**Major (4 LN)**	**32,400**	**Over**
Willow Street to Otay Lakes Road	Major (4 LN)	26,670	Under
H Street			
I-805 to Hidden Vista Drive	**Prime (6 LN)**	**52,000**	**Over**
Hidden Vista Drive to Paseo del Rey	Prime (6 LN)	33,700	Under
Paseo del Rey to Paseo Ranchero	Prime (6 LN)	25,000	Under
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	34,700	Under
Otay Lakes Road to Corral Canyon Road/Rutgers Avenue	Major (4 LN)	14,700	Under
Corral Canyon Road/Rutgers Avenue to Eastlake Drive	Major (4 LN)	9,400	Under
Telegraph Canyon Road			
I-805 to Crest Drive/Oleander Avenue	Prime (6 LN)	33,500	Under
Crest Drive/Oleander Avenue to Paseo del Rey	Major (4 LN)	26,600	Under
Paseo del Rey to Medical Center Drive	Major (4 LN)	20,800	Under
Medical Center Drive to Paseo Ranchero	Major (4 LN)	20,100	Under
Paseo Ranchero to Otay Lakes Road	Collector (3 LN)	18,100	Under
Orange Avenue			
I-805 to Oleander Avenue	Major (4 LN)	14,200	Under
Oleander Avenue to Brandywine Avenue	Major (4 LN)	4,900	Under
Plaza Bonita Road			
Sweetwater Road to Bonita Road	Major (4 LN)	13,300	Under
Corral Canyon Road/Rutgers Avenue			
Bonita Road to East H Street	Collector (3 LN)	7,900	Under
East H Street to Otay Lakes Road	Collector (3 LN)	4,400	Under

Table 3-1 (Continued)

EXISTING YEAR 1991 AVERAGE DAILY TRAFFIC VOLUMES AND SEGMENT PERFORMANCE SUMMARY

Segment	Class	ADT (vpd)	Relationship to Planning Level Capacity Guideline(1)
Eastlake Drive/Parkway			
East H Street to Lakeshore Drive	Collector (4 LN)	9,300	Under
Lakeshore Drive to Future SR 125	Collector (3 LN)	2,100	Under
Future SR 125 to Otay Lakes Road	Major (4 LN)	2,600	Under
Crest Drive/Oleander Avenue			
Douglas Street to Telegraph Canyon Road	Collector (3 LN)	2,180	Under
Telegraph Canyon Road to Orange Avenue	Collector (3 LN)	7,300	Under
Paseo del Rey			
East H Street to Telegraph Canyon Road	Collector (4 LN)	7,900	Under
Medical Center Drive			
Telegraph Canyon Road to Medical Center Court	Collector (4 LN)	8,600	Under
Otay Lakes Road			
Bonita Road to East H Street	Major (4 LN)	20,100	Under
East H Street to Telegraph Canyon Road	Major (4 LN)	17,500	Under
Telegraph Canyon Road to Rutgers Avenue	Collector (3 LN)	6,800	Under
Rutgers to Future SR 125	Collector (3 LN)	7,200	Under
Future SR 125 to Eastlake Parkway	Collector (3 LN)	6,500	Under
Eastlake Parkway to Lane Avenue	Collector (3 LN)	3,300	Under
Lane Avenue to Hunte Parkway	Collector (3 LN)	2,600	Under

Note: 1. Bold print indicates critical freeway and arterial segments which currently operate below the City of Chula Vista Traffic Engineering Division minimum ADT volume operating threshold values for long-range planning purposes (see Table 2-1).

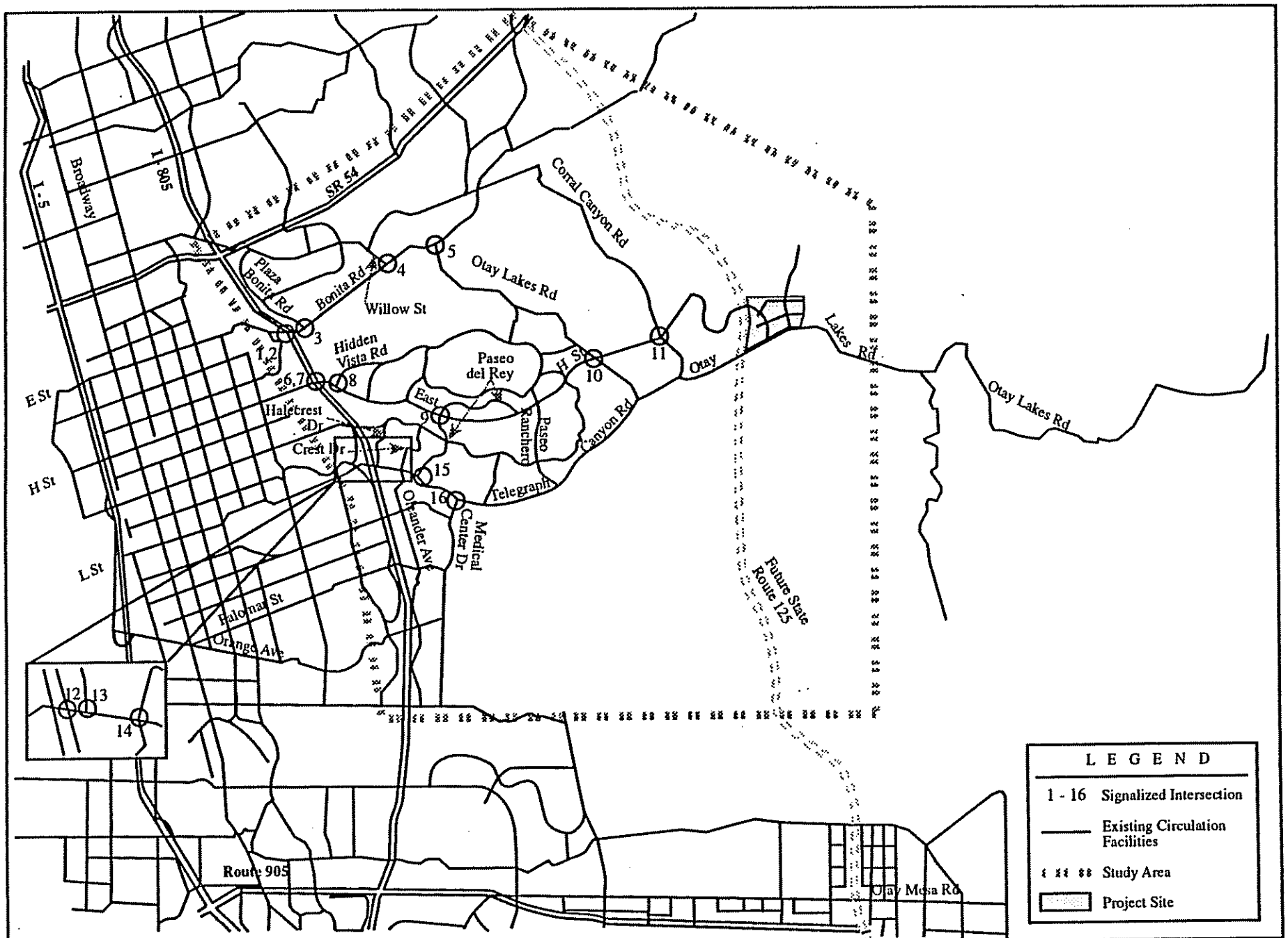
Source: City of Chula Vista "1991 Traffic Flow Summary" dated December 18, 1991.

Figure 3-2 shows the location of the major signalized intersections analyzed under this Existing Conditions analysis. The intersection geometrics are shown in Figure 3-3. The turning movement volumes and HCM worksheets for each intersection under analysis are included in Appendix B of this document. Table 3-2 summarizes the existing Year 1991 A.M. or P.M. peak hour operating conditions at the major signalized intersections in the study area. This table shows that the following intersections operate below the City of Chula Vista Traffic Engineering Division's minimum peak hour operating threshold value of LOS D during the P.M. peak hour. No intersections exceeded the minimum threshold value during the A.M. peak hour.

Intersection #	E/W Street P.M.Peak Hour	N/S Street	LOS
3	Bonita Road	Plaza Bonita Road	E
4	Bonita Road	Willow Street	F
8	East H Street	Hidden Vista Road	E

Conclusions

Based on the segment and intersection capacity analysis detailed in this chapter, the roadway segments and intersections located on Bonita Road between I-805 and Willow Street and East H Street between I-805 and Hidden Vista Drive will require some form of mitigation with or without the construction of any further development projects in Eastern Chula Vista.



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Traffic Analysis Project

Figure 3-2

EXISTING YEAR 1991 STUDY AREA SIGNALIZED INTERSECTION LOCATION MAP

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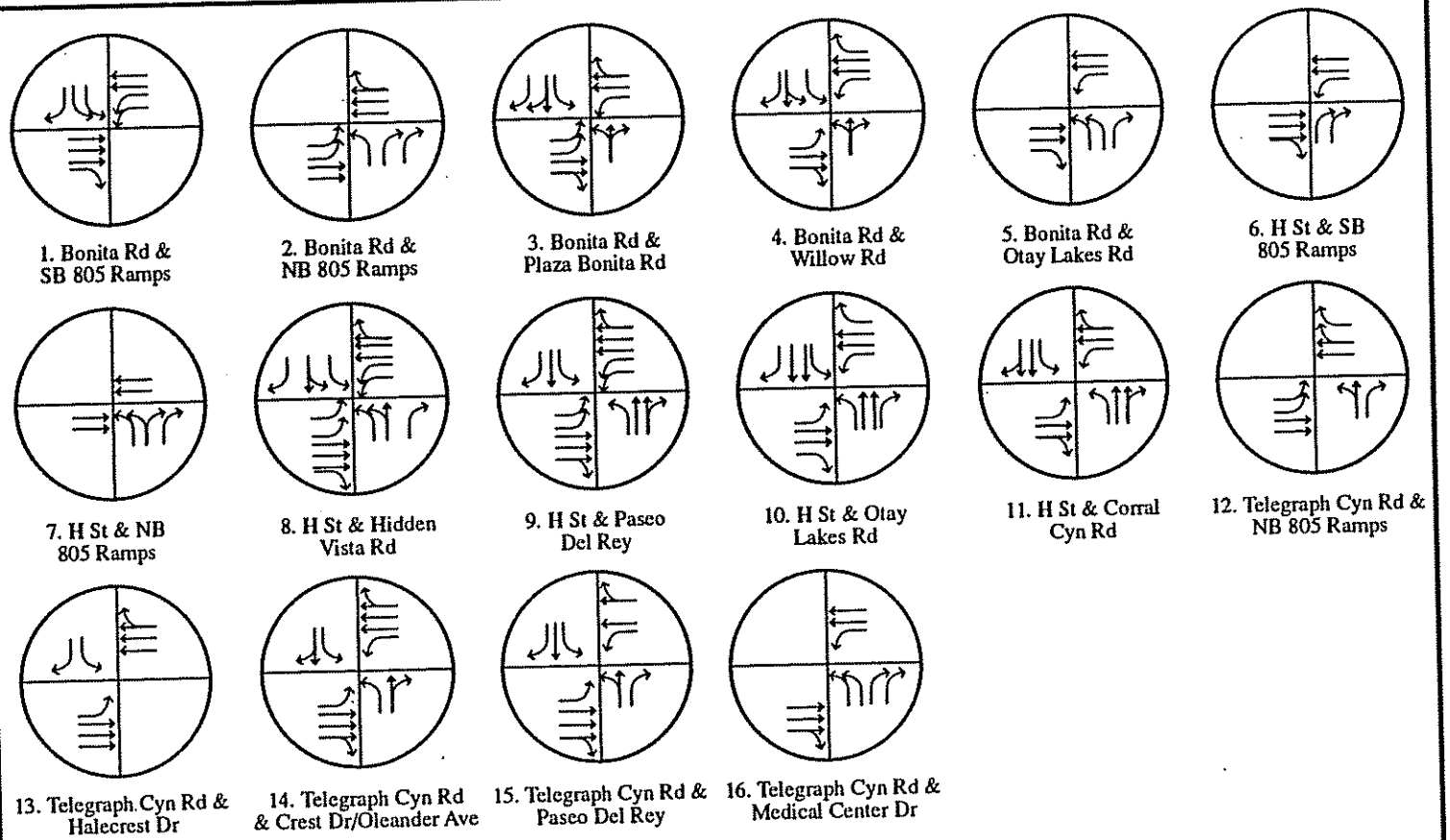

Figure 3-3

EXISTING INTERSECTION GEOMETRICS

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Traffic Analysis Project

Table 3-2

EXISTING YEAR 1991 SIGNALIZED INTERSECTION PERFORMANCE SUMMARY

	E/W Street	N/S Street	Intersection Delay (sec/veh)	Intersection LOS(2)
	AM PEAK HOUR			
1.	Bonita Road	SB I-805 Ramps	15.0	B
2.	Bonita Road	NB I-805 Ramps	20.6	C
3.	Bonita Road	Plaza Bonita Road	24.5	C
4.	Bonita Road	Willow Street	24.2	C
5.	Bonita Road	Otay Lakes Road	14.9	B
6.	East H Street	SB I-805 Ramps	6.8	B
7.	East H Street	NB I-805 Ramps	6.4	B
8.	East H Street	Hidden Vista Road	34.3	D
9.	East H Street	Paseo del Rey	16.5	C
10.	East H Street	Otay Lakes Road	25.7	D
11.	East H Street	Rutgers Avenue/Corral Canyon Road	24.4	C
12.	Telegraph Canyon Road	NB I-805 Ramps	34.2	D
13.	Telegraph Canyon Road	Halecrest	15.3	C
14.	Telegraph Canyon Road	Oleander Avenue/Crest Drive	26.8	D
15.	Telegraph Canyon Road	Paseo del Rey	10.7	B
16.	Telegraph Canyon Road	Medical Center Drive	17.6	C
	PM PEAK HOUR			
1.	Bonita Road	SB I-805 Ramps	22.2	C
2.	Bonita Road	NB I-805 Ramps	32.6	D
3.	**Bonita Road**	**Plaza Bonita Road**	**50.8**	**E**
4.	**Bonita Road**	**Willow Street**	**(1)**	**F**
5.	Bonita Road	Otay Lakes Road	16.9	C
6.	East H Street	SB I-805 Ramps	12.2	B
7.	East H Street	NB I-805 Ramps	9.7	B
8.	**East H Street**	**Hidden Vista Road**	**43.6**	**E**
9.	East H Street	Paseo del Rey	29.0	D
10.	East H Street	Otay Lakes Road	28.2	D
11.	East H Street	Rutgers Avenue/Corral Canyon Road	37.3	D
12.	Telegraph Canyon Road	NB I-805 Ramps	17.0	C
13.	Telegraph Canyon Road	Halecrest	15.8	C
14.	Telegraph Canyon Road	Oleander Avenue/Crest Drive	19.8	C
15.	Telegraph Canyon Road	Paseo del Rey	9.6	B
16.	Telegraph Canyon Road	Medical Center Drive	18.9	C

Notes: 1. When the volume to capacity ratio > 1.20, delay equation is invalid.

2. Bold print indicates critical signalized intersections which currently operate below (LOS E or F) the City of Chula Vista Traffic Engineering Division's minimum peak hour operating threshold value of Level of Service D .

Source: JHK & Associates.

4. INTERIM (PRE-SR 125) BASE CONDITION

For the accurate determination of impacts resulting from the approval of the Proposed Eastlake I SPA Amendment, it was necessary to establish the future "No Project" condition. In essence there is no true "No Project" (i.e. No-Build) condition due to the fact that the entire Eastlake I SPA including the SPA Amendment Area has an approved level of development and trip generation value as described in Chapter 5. The recently completed Final Eastern Chula Vista Transportation Phasing Plan Update (TPP) developed by Willdan Associates (January 1991) was utilized to establish the future Interim (Pre-SR 125) Conditions in the study area. This development scenario represents approximately 193,230 additional daily trips in Eastern Chula Vista. As detailed in Chapter 5, the original land use of this proposed project area comprises approximately 20,916 daily trips or 11 percent of the entire TPP Trip Generation Forecast under the current land use assumption for this site. The Approved Projects scenario travel forecast model formed the future base condition and all project impacts resulting from the Proposed Eastlake I SPA Amendment are documented in Chapters 6 and 7. It is assumed that circulation improvements which are necessary to accommodate the Approved Projects volume conditions would be provided with or without the Proposed Eastlake I SPA Amendment Project. Thus, any deterioration in the performance of the future circulation system beyond the levels reported in this chapter are considered project related impacts.

Segment Capacity Analysis

To analyze the Interim (Pre-SR 125) Conditions on study area freeway and arterial segments, ADT volume data were taken from the TPP report. Arterial levels of service (LOS) were calculated based on a comparison of the ADT values and the functional classification of the roadway and the maximum recommended ADT volumes as shown on Table 2-1. Figure 4-1 shows the planned TPP network alignments and functional classification of roadways analyzed under this condition. Figure 4-2 shows the Interim (Pre-SR 125) ADT volumes on study area freeway and arterial segments. Table 4-1 summarizes the results of the TPP Segment Capacity Analysis.

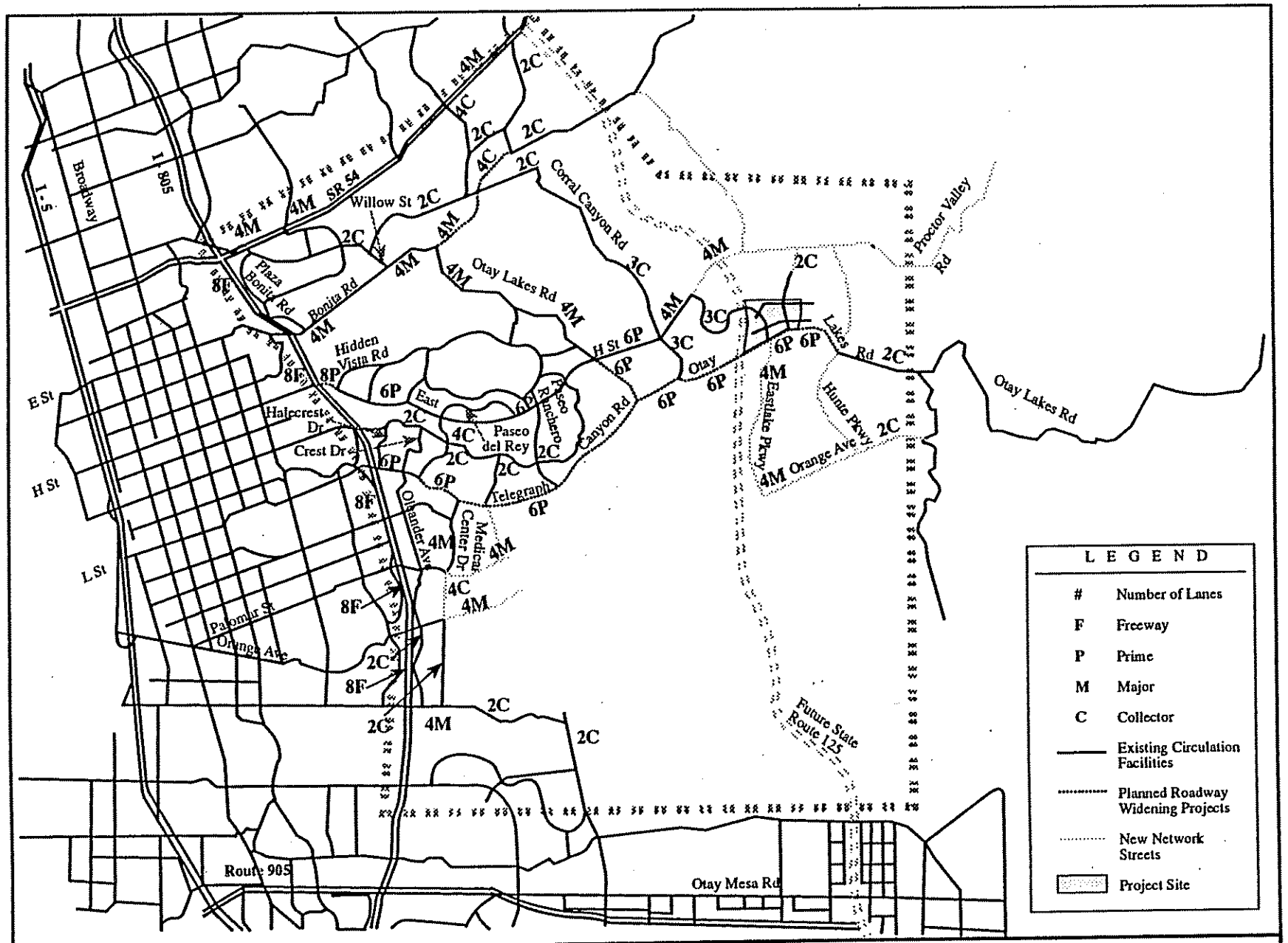

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Figure 4-1

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" NETWORK CLASSIFICATION MAP

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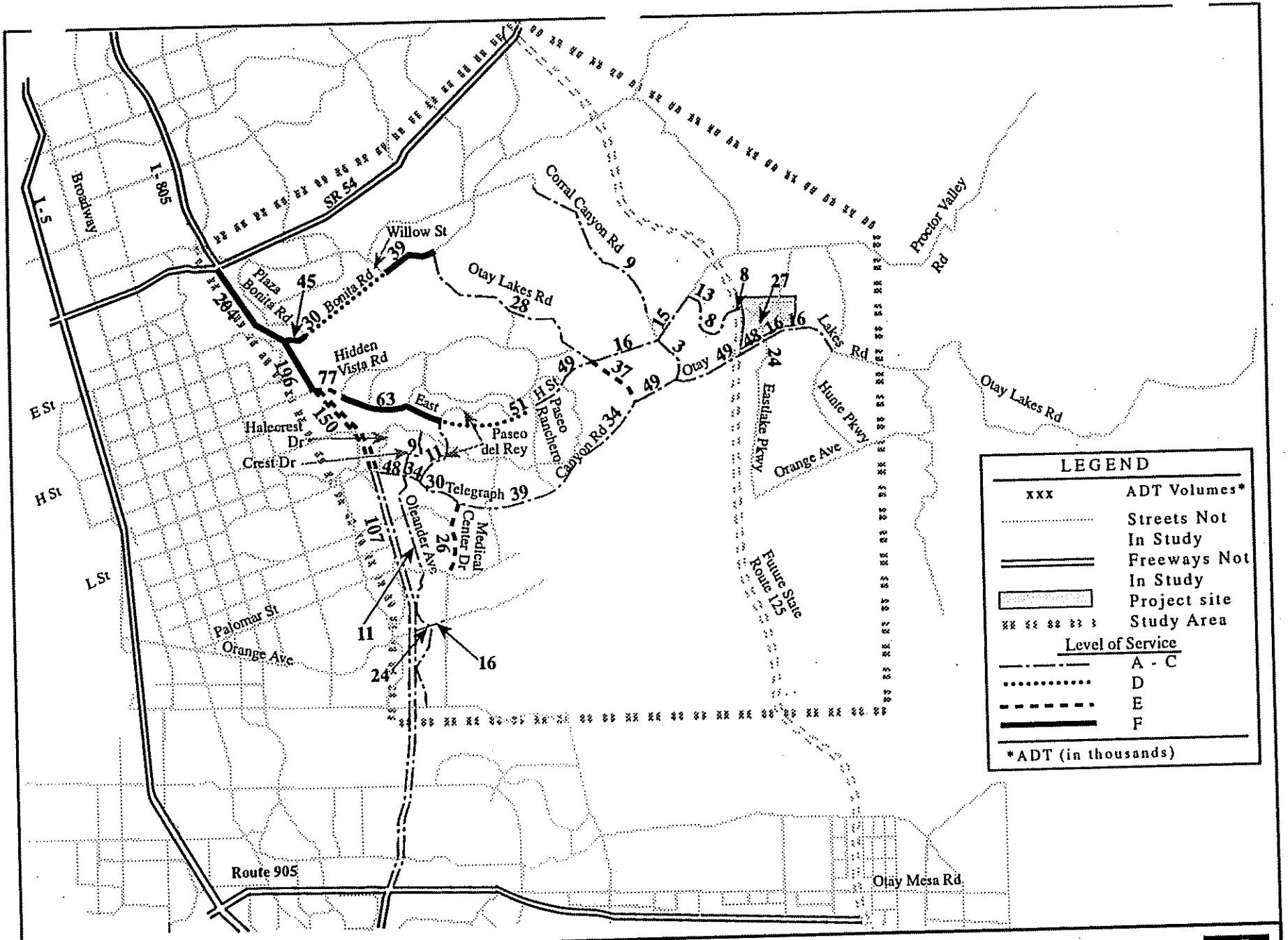

Figure 4-2

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT"(PRE-SR 125) STUDY AREA BASE TRAFFIC CONDITIONS

EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

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Table 4-1

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE-SR 125) SEGMENT PERFORMANCE SUMMARY
WITH ADOPTED SPA AMENDMENT AREA DAILY TRIP CONTRIBUTION

Segment	Class	ADT (vpd)	Relationship to Planning Level Capacity Guidelines(1)	SPA Amendment Area ADT(2)	% Contribution to Link Volume
I-805					
State Route 54 to Bonita Road	**Freeway (8LN)**	**204,000**	**Over**	**1,673**	**1%**
Bonita Road to East H Street	**Freeway (8 LN)**	**195,900**	**Over**	**1,673**	**1%**
East H Street to Telegraph Canyon Road	Freeway (8 LN)	149,800	Under	1,673	1%
Telegraph Canyon Road to Orange Avenue	Freeway (8 LN)	107,100	Under	0	0
Bonita Road					
I-805 to Plaza Bonita Road	**Major (4LN)**	**44,700**	**Over**	**----**	**----**
Plaza Bonita Road to Willow Street	**Major (4 LN)**	**30,100**	**Over**	**----**	**----**
Willow Street to Otay Lakes Road	**Major (4 LN)**	**38,700**	**Over**	**627**	**2%**
H Street					
I-805 to Hidden Vista Drive	**Prime (8 LN)**	**76,600**	**Over**	**2,510**	**3%**
Hidden Vista Drive to Paseo del Rey	**Prime (6 LN)**	**63,000**	**Over**	**2,510**	**4%**
Paseo del Rey to Paseo Ranchero	**Prime (6 LN)**	**50,800**	**Over**	**3,556**	**7%**
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	48,900	Under	3,974	8%
Otay Lakes Road to Corral Canyon Road/ Rutgers Avenue	Major (4 LN)	16,000	Under	418	3%
Corral Canyon Road/Rutgers Avenue to Eastlake Drive	Major (4 LN)	15,000	Under	1,673	11%
Telegraph Canyon Road					
I-805 to Crest Drive/Oleander Avenue	Prime (6 LN)	48,000	Under	2,510	5%
Crest Drive/Oleander Avenue to Paseo del Rey	Prime (6 LN)	33,700	Under	2,719	8%
Paseo del Rey to Medical Center Drive	Prime (6 LN)	29,500	Under	2,928	10%
Medical Center Drive to Paseo Ranchero	Prime (6 LN)	38,600	Under	4,811	12%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	33,800	Under	6,066	18%

Table 4-1 (Continued)

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE-SR 125) SEGMENT PERFORMANCE SUMMARY
WITH ADOPTED SPA AMENDMENT AREA DAILY TRIP CONTRIBUTION

Segment	Class	ADT (vpd)	Relationship to Planning Level Capacity Guidelines(1)	SPA Amendment Area ADT(2)	% Contribution to Link Volume
Orange Avenue					
I-805 to Oleander Avenue	Major (4 LN)	24,100	Under	----	----
Oleander Avenue to Brandywine Avenue	Major (4 LN)	15,700	Under	----	----
Plaza Bonita Road					
Sweetwater Road to Bonita Road	Major (4 LN)	17,400	Under	----	----
Corral Canyon Road/Rutgers Avenue					
Bonita Road to East H Street	Collector (3 LN)	8,500	Under	1,673	20%
East H Street to Otay Lakes Road	Collector (3 LN)	2,900	Under	209	7%
Eastlake Drive/Parkway					
East H Street to Lakeshore Drive	Collector (4 LN)	12,500	Under	2,301	18%
Lakeshore Drive to Future SR 125	Collector (3 LN)	7,600	Under	2,301	30%
Future SR 125 to Otay Lakes Road	Major (4 LN)	26,500	Under	3,556	13%
Crest Drive/Oleander Avenue					
Douglas Street to Telegraph Canyon Road	Collector (3 LN)	8,500	Under	209	2%
Telegraph Canyon Road to Orange Avenue	Collector (3 LN)	11,100	Under	209	2%
Paseo del Rey					
East H Street to Telegraph Canyon Road	Collector (4 LN)	10,800	Under	----	----
Medical Center Drive					
Telegraph Canyon Road to Medical Center Court	**Collector (4 LN)**	**25,800**	**Over**	**1,882**	**7%**

Table 4-1 (Continued)

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE-SR 125) SEGMENT PERFORMANCE SUMMARY
WITH ADOPTED SPA AMENDMENT AREA DAILY TRIP CONTRIBUTION

Segment	Class	ADT (vpd)	Relationship to Planning Level Capacity Guidelines(1)	SPA Amendment Area ADT(2)	% Contribution to Link Volume
Otay Lakes Road					
Bonita Road to East H Street	Major (4 LN)	28,200	Under	1,673	6%
East H Street to Telegraph Canyon Road	Prime (6 LN)	37,000	Under	6,275	17%
Telegraph Canyon Road to Rutgers Avenue	Prime (6 LN)	49,400	Under	12,340	25%
Rutgers to Future SR 125	Prime (6 LN)	49,000	Under	12,550	26%
Future SR 125 to Eastlake Parkway	Prime (6 LN)	47,500	Under	12,550	26%
Eastlake Parkway to Lane Avenue	Prime (6 LN)	15,900	Under	627	4%
Lane Avenue to Hunte Parkway	Prime (6 LN)	16,400	Under	418	3%

Note: 1. Bold print indicates critical freeway and arterial segments which currently operate below the City of Chula Vista Traffic Engineering Division minimum ADT volume operating threshold values for long-range planning purposes (see Table 2-1).

2. This Link ADT Value is based on the contribution of Project Site traffic under the TPP Base Condition without the Modified SPA Amendment Project.

Source: City of Chula Vista "Eastern Chula Vista Transportation Phasing Plan" (TPP, January 1991) Approved Projects Base 1995 Growth Management Travel Forecasting (July 29, 1991) - Willdan Associates.

Table 4-1 shows that the following roadway segments exceed the maximum recommended ADT volume for their functional classification:

TPP Base Condition Segment Impacts

Segment	From - To
Interstate 805	State Route 54 to East H Street
Bonita Road	I-805 to Otay Lakes Road
East H Street	I-805 to Paseo Ranchero
Medical Center Drive	Telegraph Canyon Road to Medical Center Court

As mentioned in Chapter 2, the analysis of segment performance and impacts is only provided for review purposes under Interim Conditions. To precisely define circulation system impacts under Interim Conditions, the following analysis of study area signalized intersections is provided.

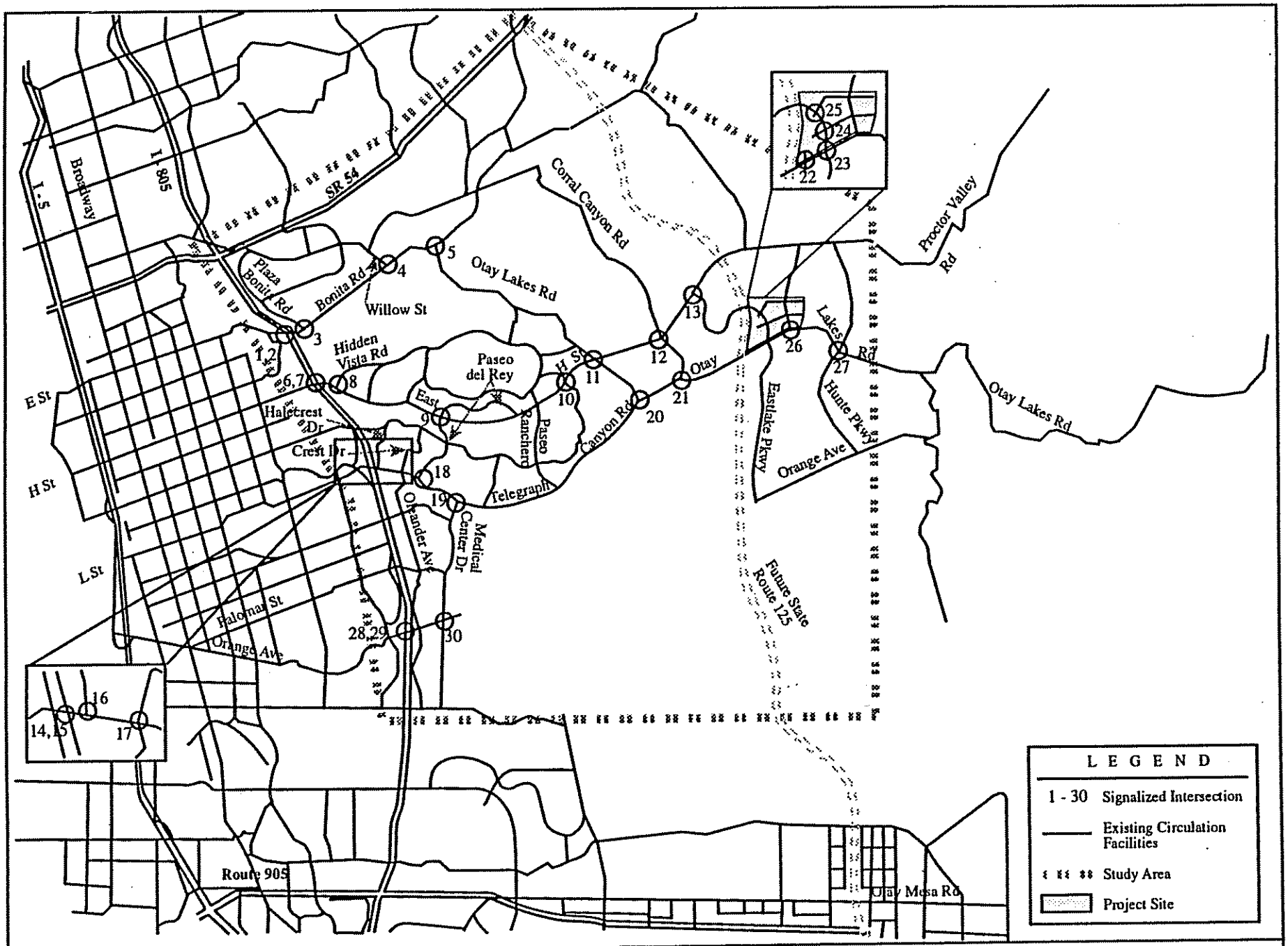
Signalized Intersection Capacity Analysis

To analyze the Interim (Pre-SR 125) conditions of the critical signalized intersections within the study area, A.M. and P.M. peak hour traffic volume counts from the TPP report were used. Figure 4-3 shows the location of the major signalized intersections analyzed under the Interim (Pre-SR 125) Condition analysis. The intersection geometrics are shown in Figure 4-4. The turning movement volumes and HCM worksheets for each intersection under analysis are included in Appendix C of this document. Tables 4-2a and 4-2b summarize the Interim (Pre-SR 125) A.M. and P.M. peak hour operating conditions at the major signalized intersections in the study area. This table shows that the following intersections exceed the City of Chula Vista's Traffic Engineering Division's minimum peak hour operating threshold value of LOS D:

TPP Base Condition Intersection Impacts

Intersection #	E/W Street	N/S Street	LOS
A.M. Peak Hour			
*			
P.M. Peak Hour			
*			

Note: * Under Interim (Pre-SR 125) Conditions the network classifications and intersection geometrics recommended by the TPP result in acceptable peak hour levels of service at all study area intersections.



EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Figure 4-3

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE - 125) STUDY AREA SIGNALIZED INTERSECTION LOCATION MAP

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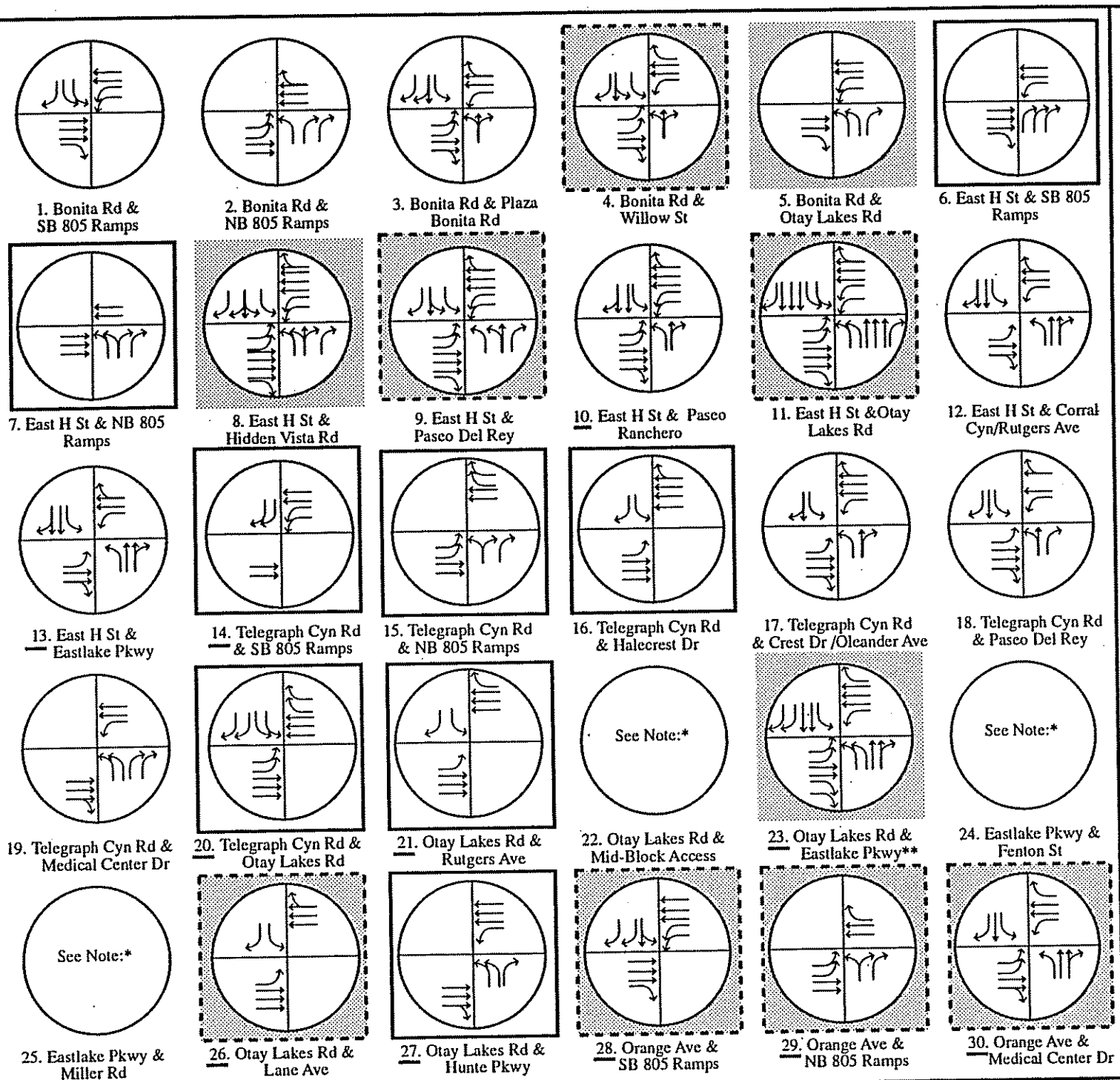


LEGEND

No modification for existing geometrics is required or anticipated.

Intersection geometric modification resulting from impacts associated with TPP Approved Projects scenario (as documented in the Salt Creek Ranch Traffic Impact Study).

Intersection geometric modification associated with planned roadway widening project.

Intersection geometric modification resulting from impacts associated with TPP Approved Projects scenario (as recommended by JHK upon review of TPP forecasted peak hour turn movement data).

XX. New signalized intersection.

Note: * These site access intersections which are located immediately adjacent to the site will be analyzed in detail in Chapters 7, 11, and 12.

** Otay Lakes Road & Eastlake Parkway - This location will also be analyzed in detail under various site access alternatives for the Eastlake I SPA Amendment Project.

Figure 4-4

PLANNED TPP (PRE-SR 125) INTERSECTION GEOMETRICS

EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Table 4-2a

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE-SR 125) BASE CONDITION INTERSECTION PERFORMANCE SUMMARY (AM PEAK HOUR)

	E/W Street	N/S Street	Intersection Delay (sec/veh)(1)	Intersection LOS(2)
1.	Bonita Road	SB I-805 Ramps	14.2	B
2.	Bonita Road	NB I-805 Ramps	16.6	C
3.	Bonita Road	Plaza Bonita Road	15.9	C
4.	Bonita Road	Willow Street	21.3	C
5.	Bonita Road	Otay Lakes Road	15.3	C
6.	East H Street	SB I-805 Ramps	13.0	B
7.	East H Street	NB I-805 Ramps	11.0	B
8.	East H Street	Hidden Vista Road	14.4	B
9.	East H Street	Paseo del Rey	19.7	C
10.	East H Street	Paseo Ranchero	12.7	B
11.	East H Street	Otay Lakes Road	36.8	D
12.	East H Street	Corral Canyon Road/Rutgers Avenue	17.6	C
13.	East H Street	Eastlake Parkway	21.9	C
14.	Telegraph Canyon Road	SB I-805 Ramps	19.6	C
15.	Telegraph Canyon Road	NB I-805 Ramps	28.6	D
16.	Telegraph Canyon Road	Halecrest Drive	7.9	B
17.	Telegraph Canyon Road	Crest Drive/Oleander Avenue	19.6	C
18.	Telegraph Canyon Road	Paseo del Rey	15.7	C
19.	Telegraph Canyon Road	Medical Center Drive	14.2	B
20.	Telegraph Canyon Road	Otay Lakes Road	15.1	C
21.	Otay Lakes Road	Rutgers Avenue	11.1	B
22.	Otay Lakes Road	Mid-Block Eastlake Access Point	*	*
23.	Otay Lakes Road	Eastlake Parkway	20.6	C
24.	Eastlake Parkway	Fenton Street (Southern Access Point)	*	*
25.	Eastlake Parkway	Millar Road (Northern Access Point)	*	*
26.	Otay Lakes Road	Lane Avenue	3.3	A
27.	Otay Lakes Road	Hunte Parkway	11.1	B
28.	Orange Avenue	SB I-805 Ramps	20.2	C
29.	Orange Avenue	NB I-805 Ramps	16.6	C
30.	Orange Avenue	Medical Center Drive	16.6	C

Notes: 1. When the volume to capacity ratio > 1.20, delay equation is invalid.

2. Bold print indicates critical signalized intersections which currently operate below (LOS E or F) the City of Chula Vista Traffic Engineering Division's minimum peak hour operating threshold value of Level of Service D.

* Under Future "Approved Projects" conditions detailed intersection LOS calculations were not performed at these proposed Eastlake I access point locations.

Source: JHK & Associates.

Table 4-2b

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE-SR 125) BASE CONDITION INTERSECTION PERFORMANCE SUMMARY (PM PEAK HOUR)

	E/W Street	N/S Street	Intersection Delay (sec/veh)(1)	Intersection LOS(2)
1.	Bonita Road	SB I-805 Ramps	27.5	D
2.	Bonita Road	NB I-805 Ramps	34.5	D
3.	Bonita Road	Plaza Bonita Road	24.9	C
4.	Bonita Road	Willow Street	33.5	D
5.	Bonita Road	Otay Lakes Road	16.7	C
6.	East H Street	SB I-805 Ramps	23.5	C
7.	East H Street	NB I-805 Ramps	28.6	D
8.	East H Street	Hidden Vista Road	34.2	D
9.	East H Street	Paseo del Rey	26.8	D
10.	East H Street	Paseo Ranchero	20.5	C
11.	East H Street	Otay Lakes Road	18.7	C
12.	East H Street	Corral Canyon Road/Rutgers Avenue	16.3	C
13.	East H Street	Eastlake Parkway	19.9	C
14.	Telegraph Canyon Road	SB I-805 Ramps	22.7	C
15.	Telegraph Canyon Road	NB I-805 Ramps	25.1	D
16.	Telegraph Canyon Road	Halecrest Drive	13.6	B
17	Telegraph Canyon Road	Crest Drive/Oleander Avenue	28.3	D
18.	Telegraph Canyon Road	Paseo del Rey	23.7	C
19.	Telegraph Canyon Road	Medical Center Drive	17.3	C
20.	Telegraph Canyon Road	Otay Lakes Road	13.2	B
21.	Otay Lakes Road	Rutgers Avenue	12.8	B
22.	Otay Lakes Road	Mid-Block Eastlake Access Point	*	*
23	Otay Lakes Road	Eastlake Parkway	24.4	C
24.	Eastlake Parkway	Fenton Street (Southern Access Point)	*	*
25.	Eastlake Parkway	Miller Road (Northern Access Point)	*	*
26.	Otay Lakes Road	Lane Avenue	3.5	A
27.	Otay Lakes Road	Hunte Parkway	11.6	B
28.	Orange Avenue	SB I-805 Ramps	35.6	D
29	Orange Avenue	NB I-805 Ramps	31.0	D
30.	Orange Avenue	Medical Center Drive	22.9	C

Notes: 1. When the volume to capacity ratio > 1.20, delay equation is invalid.

2. Bold print indicates critical signalized intersections which currently operate below (LOS E or F) the City of Chula Vista Traffic Engineering Division's minimum peak hour operating threshold value of Level of Service D.

* Under Future "Approved Projects" conditions detailed intersection LOS calculations were not performed at these proposed Eastlake I access point locations.

Source: JHK & Associates.

Conclusions

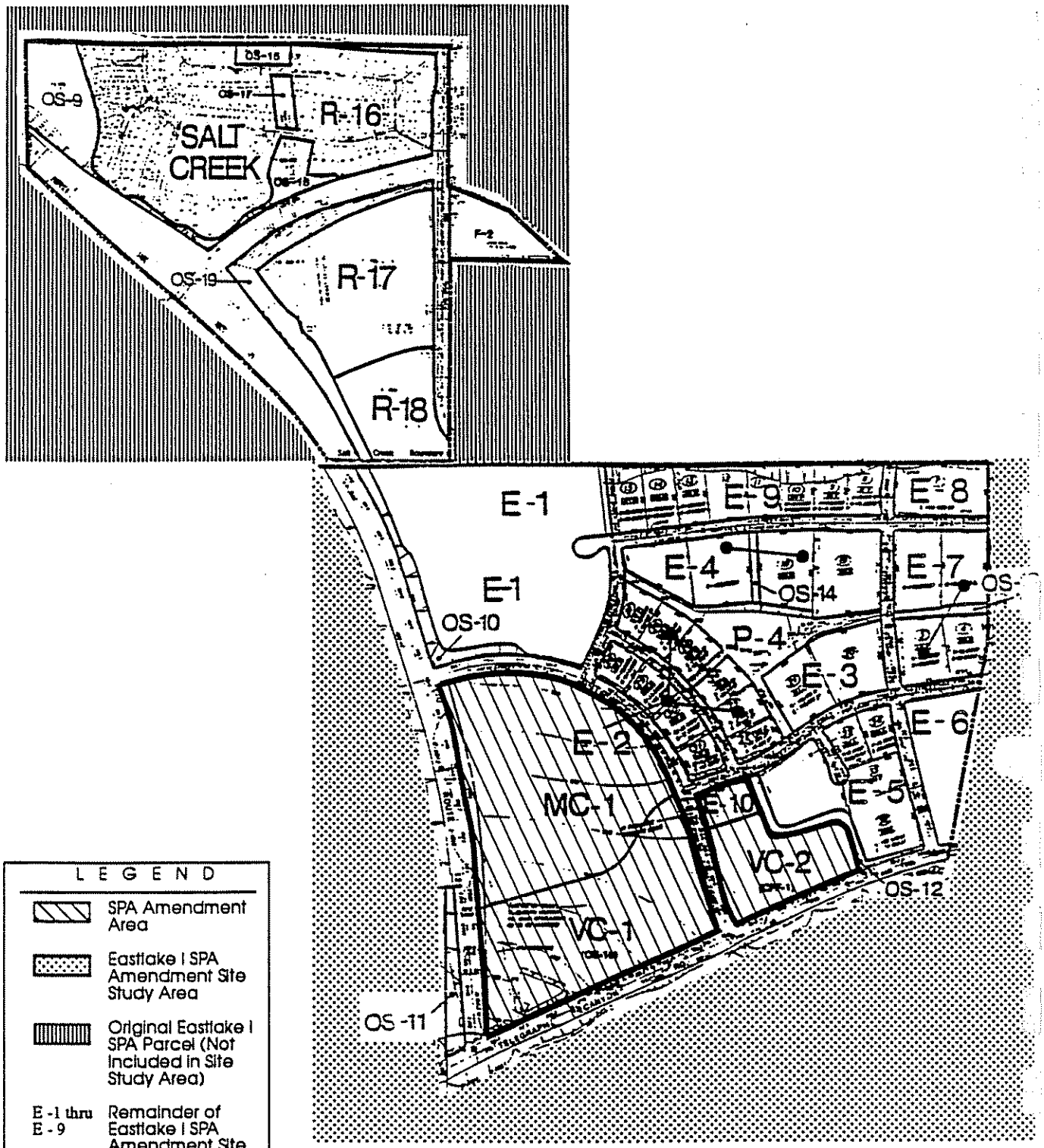
These analyses revealed that the geometric requirements shown on Figure 4-4 are necessary to fully mitigate the cumulative peak hour volume loadings associated with the TPP. The remainder of this Interim traffic analysis assumes that these intersection improvements will be in place prior to the construction of the Proposed Project.

5. PROPOSED PROJECT DESCRIPTION AND TRIP GENERATION

In order to clearly understand and document the impact of this proposed SPA Amendment, it was necessary to determine the trip generation rate that would be utilized for the various uses which are proposed for the new Eastlake I SPA Amendment Project. Figure 5-1 graphically illustrates the location of the land use types which are proposed for this project. This figure shows the entire SPA as well as the SPA Amendment Area which is the subject of this traffic analysis project. Table 5-1 presents a summary of the proposed land uses for the SPA Amendment Project along with a detailed listing of the acres, square footage, and hospital beds which are associated with each of the individual uses.

As a result of a series of technical workshops held between October 1991 and February 1992, the City of Chula Vista, in conjunction with the JHK Project Team, arrived at a recommended trip generation rate for all uses which are proposed as part of the SPA Amendment. A series of trip generation related tables are included in this section to define the amount of traffic activity which is anticipated to be associated with this SPA Amendment site. Table 5-2 presents a summary of the recommended trip generation rates which will be applied to each of the uses which have been shown on Table 5-1. The primary source of these trip generation rates is the San Diego Association of Governments (SANDAG) Traffic Generators Manual dated June 1991. However, this table also contains a separate trip generation rate for combined Medical Center uses including Hospital and Medical Office facilities.

The detailed analysis followed by JHK in developing the Combined Use Medical Center trip generation rate is documented in a technical memorandum prepared by JHK on February 28, 1992. Appendix D contains a copy of this memorandum to document data base sources and the analysis process. The values shown on Table 5-2 reflect a consensus of City staff and JHK Project Team based on research conducted at existing hospital sites in Southern California. The City has directed JHK to utilize these rates when analyzing the impact of trip generation for the proposed land uses for the Eastlake I SPA Amendment Project. Finally, the land use types and units of measurement as shown on Table 5-1, combined with the trip generation rate values shown on Table 5-2, enabled JHK to calculate the estimated trip generation potential for this Proposed Project. Table 5-3 documents the estimated trip generation for the site and this recommended trip generation value to be used as the basis for determining Interim (Pre-SR 125) and Buildout traffic impacts resulting from this project. Additionally, Table 5-3 documents the peak hour level of traffic activity which is estimated for this site. These peak hour values of trips destined to or originating from this project site will be used to determine peak hour traffic impacts at



LEGEND	
	SPA Amendment Area
	Eastlake I SPA Amendment Site Study Area
	Original Eastlake I SPA Parcel (Not Included in Site Study Area)
E -1 thru E - 9	Remainder of Eastlake I SPA Amendment Site Study Area

Source: Cinti & Associates, November 25, 1991.

Note: The Site Study Area for the Project is defined as the parcels south of the Salt Creek Boundry and referred to as the SPA Amendment Area and the remainder of Eastlake I SPA (E-1 thru E-9). Thus, the Salt Creek portion of the SPA is not referred to in this technical report.

EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Figure 5-1

PROPOSED PROJECT LAND USE

Table 5-1

PROPOSED SPA AMENDMENT AREA PROJECT LAND USES *

Activity Center (East of Eastlake Parkway)

Area/Parcel	Land Use Type	Land Use Intensity
VC-2	Office/Commercial	6.0 AC
VC-2	CPF-1 (Church with Daycare)	4.0 AC
E-10	Employment (Ind./Business Park)	2.0 AC
	Sub Total	**12.0 AC**

Village Center (West of Eastlake Parkway)

Area/Parcel	Land Use Type	Land Use Intensity
VC-1	Retail/Commercial	17.3 AC
OS-16	Library	1.0 AC
OS-16	Open Space	10.9 AC
	Sub Total	**29.2 AC**

Medical Center (West of Eastlake Parkway)

Area/Parcel		Land Use Type	Land Use Intensity	
			Acres	Sq. Ft. (SF)
Phase I	MC-1	Medical Office		215,000 SF
		Administrative Office		55,000 SF
		Central Plant		20,000 SF
Phase II	MC-1	Hospital(227 Beds)		505,000 SF
Phase III	MC-1	Hospital(212 Beds)		315,000 SF
		Medical Office		135,000 SF
		Administrative Office		80,000 SF
		Central Plant		10,000 SF
		Sub Total	**30.6 AC**	**1,335,000 SF**

TOTAL PROJECT **71.8 AC**

Note: * The Interim (Pre-SR 125) Condition includes Phases I and II of the Kaiser Medical Center facility along with the remainder of the entire Eastlake I SPA Amendment Project. Phase III of the Medical Center facility will be constructed after the completion of a transportation facility within the SR 125 Corridor.

Source: Eastlake Development Company.

Table 5-2

RECOMMENDED TRIP GENERATION RATES

NON-MEDICAL CENTER USES

Land Use Type	Daily Trip Rate	AM Peak Hour %	AM Peak Hour (In:Out) Ratio	PM Peak Hour %	PM Peak Hour (In:Out) Ratio
Industrial/Business Park	130/AC	12%	(8:2)	12%	(2:8)
Office	300/AC	14%	(9:1)	13%	(2:8)
Retail	700/AC	3%	(6:4)	10%	(5:5)
Church	40/AC	4%	(8:2)	8%	(5:5)
Library	400/AC	2%	(8:2)	10%	(5:5)

Source: San Diego Traffic Generators Manual, SANDAG, January 1990.

MEDICAL CENTER USES

Land Use Type	Daily Trip Rate	AM Peak Hour %	AM Peak Hour (In:Out) Ratio	PM Peak Hour %	PM Peak Hour (In:Out) Ratio
Medical Office & Hospital Complex	26/1000SF*	5.30%*	(8:2)**	7.57%*	(3:7)**

Source: * Technical Memorandum entitled "Eastlake I EIR Transportation Analysis - Recommended Medical Center Trip Generation Rate" by JHK & Associates, dated February 28, 1992.

** Source: San Diego Traffic Generators Manual, SANDAG, January 1990.

Table 5-3
TRIP GENERATION

Activity Center (East of Eastlake Parkway)

Area/Parcel	Land Use Type	Daily Trip Rate	Land Use Intensity	Total Daily Trips	AM Peak Hour Trips Total	AM In	AM Out	PM Peak Hour Trips Total	PM In	PM Out
VC-2	Office	300/AC	6.0 AC	1,800	252	227	25	234	47	187
E-10	Ind./Business Park	130/AC	2.0 AC	260	31	25	6	31	6	25
VC-2	CPF-1 (Church w/ Day Care)	40/AC	4.0 AC	160	6	5	1	12	6	6
	Subtotal		**12.0 AC**	**2,220**	**289**	**257**	**32**	**277**	**59**	**218**

Village Center (West of Eastlake Parkway)

Area/Parcel	Land Use Type	Daily Trip Rate	Land Use Intensity	Total Daily Trips	AM Peak Hour Trips Total	AM In	AM Out	PM Peak Hour Trips Total	PM In	PM Out
VC-1	Retail	700/AC	17.3 AC	12,110	363	218	145	1,211	605	606
OS-16	Library	400/AC	1.0 AC	400	8	6	2	40	20	20
OS-16	Open Space	0/AC	10.9 AC	0	0	0	0	0	0	0
	Subtotal		**29.2 AC**	**12,510**	**371**	**224**	**147**	**1,251**	**625**	**626**
Subtotal Eastlake Activity and Village Centers			**41.2 AC**	**14,730**	**660**	**481**	**179**	**1,528**	**684**	**844**

Medical Center (West of Eastlake Parkway)

Area/Parcel	Land Use Type	Daily Trip Rate	Land Use Intensity	Total Daily Trips	AM Peak Hour Trips Total	AM In	AM Out	PM Peak Hour Trips Total	PM In	PM Out
Phase I										
MC-1	Medical Office	26/1000SF	215,000 SF	5,590	645	515	130	1,075	325	750
Phase II										
MC-1	Hospital	26/1000SF	580,000 SF	15,080	410	285	125	455	135	320
Phase III										
MC-1	Hospital	26/1000SF	405,000 SF	10,530	380	265	115	425	125	300
MC-1	Medical Office	26/1000SF	135,000 SF	3,510	405	325	80	675	200	475
	Subtotal		**1,335,000SF***	**34,710**	**1,840**	**1,390**	**450**	**2,630**	**785**	**1,845**
	TOTAL		**71.8 AC**	**49,440****	**2,500**	**1,871**	**629**	**4,158**	**1,469**	**2,689**

Notes: * The total acreage of MC-1 equals approximately 30.6 acres.

** For the analysis of Interim (Pre-SR 125) or Buildout traffic conditions for the Proposed Project, the remainder of the SPA, under its Adopted Development Plan,will generate approximately 16,354 daily trips based on a land use figure of 125.80 acres of Industrial/Business Park at a trip generation rate of 130 trips per acre. Thus, the total trip generation value for the entire Eastlake I SPA under the Proposed Project condition is approximately 65,794 daily trips (49,440 + 16,354).

Source: JHK & Associates

critical signalized intersections adjacent to the project site in Eastern Chula Vista. The extent of the traffic analysis to be conducted for this project was discussed with City staff and critical intersections to be analyzed under Interim (Pre-SR 125) Conditions are presented in Chapters 4 and 6. For each phase of the Traffic Analysis, it is anticipated that the list of critical intersections to be analyzed will be modified based on project traffic contribution at each location.

Comparison of Trip Generation Values for Different Land Use Assumptions

This section presents a comparison of the Proposed Project trip generation potential to the trip generation value for the site under the following development scenarios which have been previously considered and/or approved by the City of Chula Vista:

- Original Eastlake I SPA Land Use Assumption
- "Approved Projects" Scenario (Transportation Phasing Plan - Interim (Pre-SR 125) Condition Land Use Assumption)
- Adopted General Plan (Buildout Land Use Assumption)

It is important to recognize that the Land Use Development Scenarios for this site (as defined above) which are analyzed in this section of the report, form the basis for determining the impact of the Proposed Project. Thus, the Approved Projects Scenario Land Use Assumption and the Adopted General Plan Buildout Land Use Assumption represent base conditions for identifying project impacts and ultimately recommending project related mitigation measures. The following sections present the trip generation values associated with each of the Land Use Assumptions defined above. This discussion is followed by a comparison of the trip generating potential for the SPA Amendment site and the remainder of the Eastlake I SPA under all alternative development scenarios including the Proposed Project.

Original Eastlake I SPA Land Use Assumption

It was also considered important to verify the level of trip generation proposed for the Amendment portion of the Eastlake I SPA under the Original Eastlake I SPA Project. This task was completed by checking the land uses which were approved by the City of Chula Vista during the review of the Original Eastlake I SPA Project. Appendix E Table 1 presents the land use types and resulting trip generation value for this development scenario. As shown on this table, the Original Eastlake I SPA Project (within the SPA Amendment Area) was estimated to generate approximately 22,780 daily trips, while the

remainder of the SPA (125.80 acres of Industrial Business Park @ 130 trips/acre) would generate an additional 16,354 daily trips. The total amount of approved trip generation for the entire SPA is approximately 39,134 daily trips.

"Approved Projects" Scenario (Transportation Phasing Plan - Interim (Pre-SR 125) Condition Land Use Assumption)

The next land use development scenario which was reviewed by the JHK Project Team, was the "Approved Projects" Scenario as developed by the City of Chula Vista Planning Department and utilized in the TPP Interim (Pre-SR 125) condition. To complete this review, the JHK Project Team utilized the Final Eastern Chula Vista Transportation Phasing Plan Update developed by Willdan Associates (January 1991). For this TPP analysis the Approved Projects version of projected land use for the Eastlake I Site was coded into two (No. 313 and No. 317) transportation analysis zones (TAZ) in the TPP travel forecast model. Appendix E Table 2 summarizes the trip generation value (20,916 daily trips) utilized in the TPP analysis for the Amendment portion of the Eastlake I SPA. The remainder of the SPA was coded for 66 acres of Industrial Business Park at 200 trips/acre or 13,200 daily trips. This resulted in a total of 34,116 daily trips utilized by the TPP Interim (Pre-SR 125) model for the entire Eastlake I SPA.

Adopted General Plan (Buildout Land Use Assumption)

For comparison purposes, it was considered important to check the level of trip generation proposed for the Amendment portion of the Eastlake I SPA in the Adopted General Plan. This task was completed by checking the land use which was coded in the travel forecasting model for the Adopted General Plan Transportation Analysis. Because the zone boundaries in the model do not correspond directly to the boundaries of the project site, estimates were made of the amount of land use in each traffic analysis zone which would be considered within the Amendment Area project site. Table 3 in Appendix E summarizes this analysis and it is estimated that the project site represented a trip generation value of 16,700 daily trips in the Adopted General Plan.

Upon further review, JHK was able to determine the amount of trip generation for the remainder of the SPA that was coded into the Travel Forecast Model for the Adopted General Plan. Based on land uses consisting of Research/Manufacturing (185 acres @ 130 trips/acre = 24,050 daily trips), and Commercial/Retail (6 acres @ 500 trips/acre = 3,000 daily trips), a total of 27,050 daily trips were estimated for this area. Thus, the entire Eastlake I SPA was estimated to generate approximately 43,750 daily trips at Buildout of the Adopted General Plan.

Comparison of Trip Generation Assumptions

Table 5-4 presents a comparison of the Proposed Project SPA Amendment Area trip generation value with the estimated trip generation values calculated for the three other development scenarios for the site. It is important to recognize that the Proposed Project SPA Amendment Area trip generation value of 49,440 daily trips exceeds the Adopted General Plan value of 16,700 by 32,740 daily trips, or 196 percent. Similarly, the Proposed SPA Amendment Project value of 49,440 exceeds the Original Eastlake I SPA Project Scenario value of 22,780 by 26,660 daily trips or 117 percent. Finally, the Proposed SPA Amendment Project value of 49,440 exceeds the Approved Projects Scenario value of 20,916 by 28,524 daily trips or 136 percent.

When comparing the projections/assumptions of trip generation shown on Table 5-4 from the entire Eastlake I SPA it is important to recognize that the Adopted Eastlake I SPA generates approximately 39,134 daily trips. This value is slightly less than the value for the Adopted General Plan of 43,750 daily trips. However, the Approved Projects value of 34,116 daily trips used in the Interim (Pre-SR 125) TPP Model is some 5,018 daily trips less than the approved value of 39,134 for the Adopted Eastlake I SPA. Furthermore, all of these trip generation scenarios are far less than the projected value of 65,794 daily trips for the total Eastlake I SPA with the Proposed SPA Amendment Project included.

The trip generation of the project site was utilized by JHK in producing a travel forecast model run to predict the distribution and assignment of trips originating from or destined to the Eastlake I site under Interim (Pre-SR 125) conditions. It is important to note that under Interim Conditions, this traffic analysis will focus on the impacts of the 17,638 (51,754 minus 34,116) additional daily trips which are planned for the site. For the analysis of Buildout traffic impacts the additional 22,044 (65,794 minus 43,750) daily trips will be documented and adequate mitigation measures developed. Under both Interim and Buildout analysis scenarios the subregional transportation model will incorporate these additional daily trips as well as providing an indication of the impacts at major signalized intersections during the peak hours based on the new land uses peaking characteristics which are proposed for this SPA Amendment project.

The following chapter presents the anticipated impacts to the study area circulation network under the Interim (Pre-SR 125) condition with the Proposed Project.

Table 5-4

COMPARISON OF TRIP GENERATION ASSUMPTIONS

	(1) Original Eastlake I SPA	(2) TPP	(3) Proposed Project with Medical Center Phases I & II (Pre-SR 125)	(4) Adopted General Plan	(5) Proposed Project (Buildout)
Eastlake I SPA Amendment Area Daily Trips	22,780	20,916	35,400**	16,700	49,440**
Remainder of Eastlake I SPA Area	16,354*	13,200*	16,354	27,050	16,354
Entire Eastlake I SPA Total Daily Trips	**39,134**	**34,116**	**51,754**	**43,750**	**65,794**

Notes:

(1) See Appendix E Table 1.

(2) See Appendix E Table 2 (Transportation Phasing Plan).

(3) See Table 5-3 for trip generation data for the Proposed SPA Amendment Project. For the Interim (Pre-SR 125) development scenario Phase III of MC-1 will not be constructed. Thus, 14,040 daily trips from MC-1 will not be included in the travel forecast modelling of the Interim (Pre-SR 125) condition.

(4) See Appendix E Table 3.

(5) See Table 5-3 for trip generation data for the Proposed SPA Amendment Project. For the Buildout Condition, Phase III of MC -1 (An Additional 14,040 Daily Trips) will be constructed to complete the Project.

* The TPP project did not include some 3,154 daily trips (16,354 - 13,200) in the forecast model for the Industrial/Business Park referenced as "Remainder of SPA Area". This trip generation correction was incorporated into all phases of the Traffic Analysis for this SPA Amendment Project as described below.

** For the analysis of Interim (Pre-SR 125) or Buildout Conditions for the Proposed Project, the remainder of the SPA, under its Adopted development condition, will generate approximately 16,354 daily trips based on a land use figure of 125.80 acres of Industrial/Business Park at a trip generation rate of 130 trips per acre. Thus, this figure of 16,354 will be considered a cumulative project impact in addition to the 35,400 daily trips and 49,440 daily trips under the Interim (Pre-SR 125) and Buildout scenarios, respectively.

Source: JHK & Associates

6. INTERIM (PRE-SR 125) IMPACT ANALYSIS WITH PROPOSED PROJECT

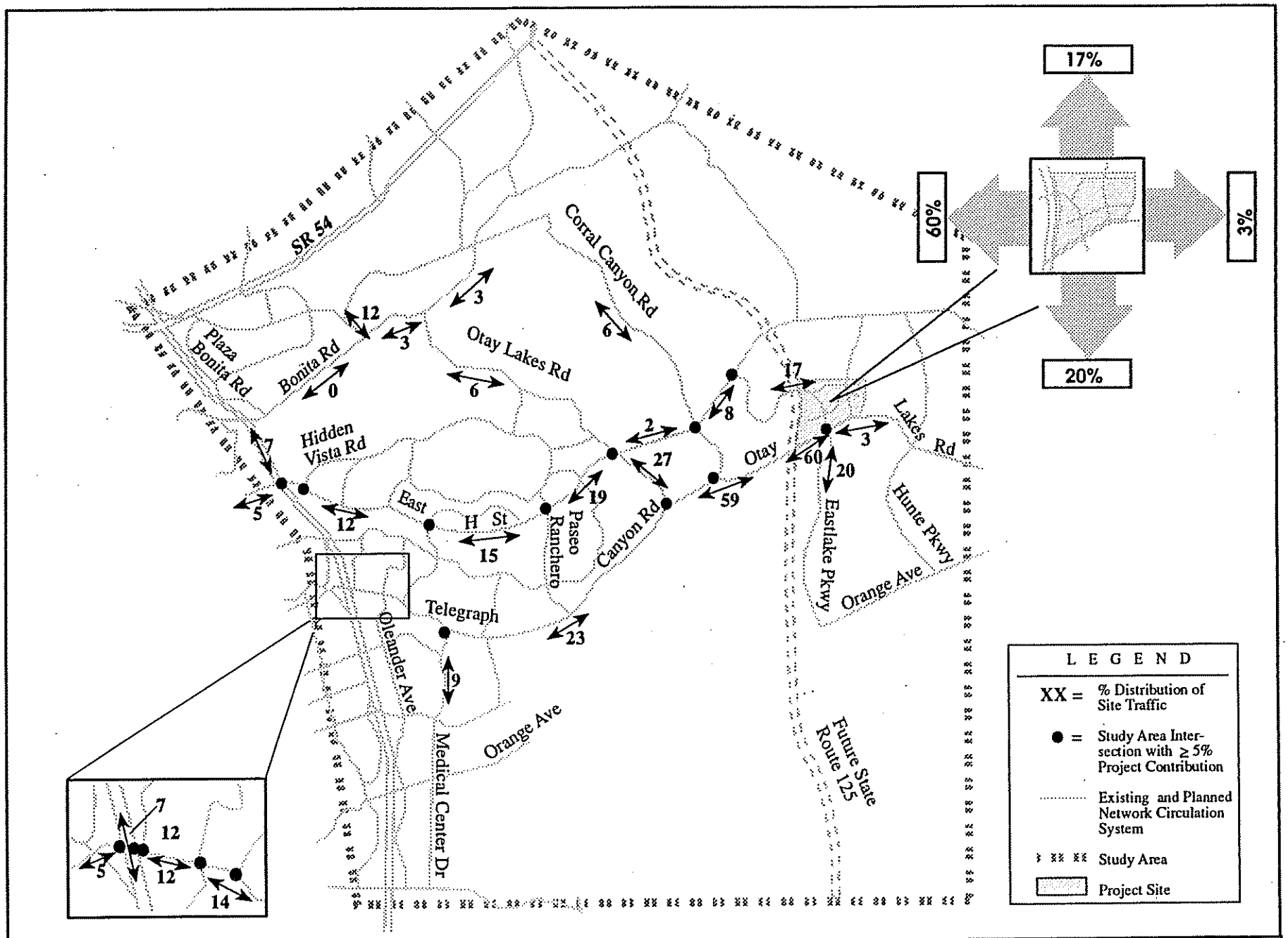
As stated in Chapter 4, the planned geometric configuration of the circulation system and signalized intersections within the study area for this Eastlake I SPA Amendment Traffic Analysis, resulting from the implementation of the "Approved Projects" in Eastern Chula Vista, formed the basis for determining project impacts. The following sections have been prepared to document the impact of the increase in trip generation from the SPA Amendment Area and the remainder of the Eastlake I SPA as documented in the previous chapter.

Segment Capacity Analysis

To analyze the Interim (Pre-SR 125) with the Proposed Project Conditions on study area freeway and arterial segments, ADT volume data were taken from the TPP report and modified to include project trips. Arterial levels of service were calculated based on a comparison of the ADT values and functional classification of the roadway and the recommended maximum ADT volumes as shown on Table 2-1. This analysis was based on the planned TPP network alignments and functional classifications shown on Figure 4-1. Figure 6-1 shows the projected SPA Amendment Area site traffic distribution percentages of project generated traffic that was added to the TPP base condition. Figure 6-2 shows the Interim (Pre-SR 125) with project operating conditions, and Table 6-1 provides a summary of the operating performance of each major study area freeway and arterial segment and a comparison with the TPP base. As shown on Table 6-1 the following roadway segments are expected to exceed the maximum recommended ADT volume for their functional classifications as a result of the TPP Base Conditions or impacts related to the increased level of traffic activity associated with the Proposed Project.

TPP Base Condition Segment Impacts

Segment	From - To
Interstate 805	SR 54 to East H Street
Bonita Road	I-805 to Otay Lakes Road
East H Street	I-805 to Paseo Ranchero
Medical Center Drive	Telegraph Canyon Road to Medical Center Court



EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Figure 6-1

INTERIM (PRE-SR 125) CONDITIONS SPA ADMENDMENT AREA SITE TRAFFIC DISTRIBUTION

jhk & associates

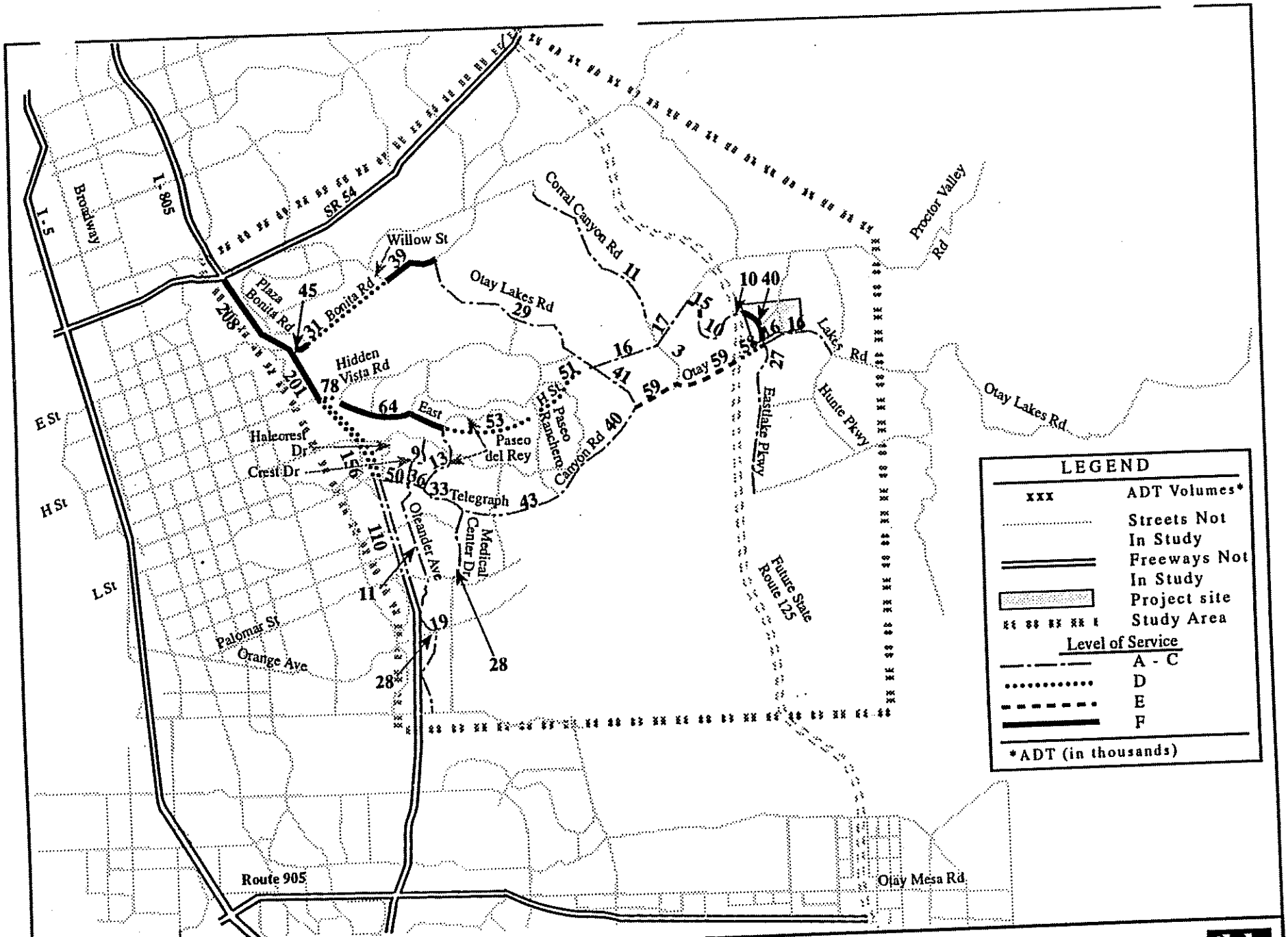


Figure 6-2

EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

FUTURE (PRE-SR 125) STUDY AREA TRAFFIC CONDITIONS WITH PROPOSED PROJECT

jhk & associates

Table 6-1

INTERIM (PRE-SR 125) SEGMENT PERFORMANCE WITH PROPOSED PROJECT

Segment	Class	TPP Base ADT(1)	TPP Base Relationship to Planning Level Capacity Guidelines	TPP Base w/ Proposed Project ADT(1)	TPP Base w/ Proposed Project Relationship to Planning Level Capacity Guidelines	% Increase in ADT Forecast	SPA Amendment Area ADT(2)	% Contribution to Link Volume
I-805								
State Route 54 to Bonita Road	**Freeway (8 LN)**	**204,000**	**Over**	**208,000**	**Over**	**2%**	**3965**	**2%**
Bonita Road to East H Street	**Freeway (8 LN)**	**195,900**	**Over**	**200,600**	**Over**	**2%**	**3965**	**2%**
East H Street to Telegraph Canyon Road	Freeway (8 LN)	149,800	Under	155,500	Under	4%	1650	1%
Telegraph Canyon Road to Orange Avenue	Freeway (8 LN)	107,100	Under	110,000	Under	3%	660	1%
Bonita Road								
I-805 to Plaza Bonita Road	**Major (4 LN)**	**44,700**	**Over**	**45,000**	**Over**	**1%**	**-**	**0%**
Plaza Bonita Road to Willow Street	**Major (4 LN)**	**30,100**	**Over**	**30,600**	**Over**	**2%**	**-**	**0%**
Willow Street to Otay Lakes Road	**Major (4 LN)**	**38,700**	**Over**	**38,800**	**Over**	**0%**	**990**	**3%**
H Street								
I-805 to Hidden Vista Drive	**Prime (8 LN)**	**76,600**	**Over**	**78,300**	**Over**	**2%**	**3960**	**5%**
Hidden Vista Drive to Paseo del Rey	**Prime (6 LN)**	**63,000**	**Over**	**64,200**	**Over**	**2%**	**3960**	**6%**
Paseo del Rey to Paseo Ranchero	**Prime (6 LN)**	**50,800**	**Over**	**52,700**	**Over**	**4%**	**4950**	**9%**
Paseo Ranchero to Otay Lakes Road	**Prime (6 LN)**	48,900	Under	**50,500**	**Over**	**3%**	**6270**	**12%**
Otay Lakes Road to Corral Canyon Road/ Rutgers Avenue	Major (4 LN)	16,000	Under	16,100	Under	1%	660	4%
Corral Canyon Road/Rutgers Avenue to Eastlake Drive	Major (4 LN)	15,000	Under	17,000	Under	13%	2640	16%
Telegraph Canyon Road								
I-805 to Crest Drive/Oleander Avenue	Prime (6 LN)	48,000	Under	49,800	Under	4%	3960	8%
Crest Drive/Oleander Avenue to Paseo del Rey	Prime (6 LN)	33,700	Under	35,900	Under	7%	4620	13%
Paseo del Rey to Medical Center Drive	Prime (6 LN)	29,500	Under	32,500	Under	10%	4620	14%
Medical Center Drive to Paseo Ranchero	Prime (6 LN)	38,600	Under	43,200	Under	12%	6270	15%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	33,800	Under	40,400	Under	20%	7590	19%

Table 6-1 (Continued)

INTERIM (PRE-SR 125) SEGMENT PERFORMANCE WITH PROPOSED PROJECT

Segment	Class	TPP Base ADT(1)	TPP Base Relationship to Planning Level Capacity Guidelines	TPP Base w/ Proposed Project ADT(1)	TPP Base w/ Proposed Project Relationship to Planning Level Capacity Guidelines	% Increase in ADT Forecast	SPA Amendment Area ADT(2)	% Contribution to Link Volume
Orange Avenue								
I-805 to Orange Avenue	Major (4 LN)	24,100	Under	28,200	Under	17%	-	0%
Oleander Avenue to Brandywine Avenue	Major (4 LN)	15,700	Under	18,900	Under	20%	-	0%
Plaza Bonita Road								
Sweetwater Road to Bonita Road	Major (4 LN)	17,400	Under	17,600	Under	1%	-	0%
Corral Canyon Road/Rutgers Avenue								
Bonita Road to East H Street	Collector (3 LN)	8,500	Under	10,600	Under	25%	1980	19%
East H Street to Otay Lakes Road	Collector (3 LN)	2,900	Under	3,000	Under	3%	250	8%
Eastlake Drive/Parkway								
East H Street to Lakeshore Drive	Collector (4 LN)	12,500	Under	14,900	Under	19%	3630	24%
Lakeshore Drive to Future SR 125	Collector (3 LN)	7,600	Under	9,700	Under	28%	5580	58%
Future SR 125 to Otay Lakes Road	**Major (4 LN)**	26,500	Under	**40,200**	**Over**	**52%**	**32000**	**80%**
Crest Drive/Oleander Avenue								
Douglas Street to Telegraph Canyon Road	Collector (3 LN)	8,500	Under	8,600	Under	1%	-	0%
Telegraph Canyon Road to Orange Avenue	Collector (3 LN)	11,100	Under	11,400	Under	3%	330	3%
Paseo Del Rey								
East H Street to Telegraph Canyon Road	Collector (4 LN)	10,800	Under	12,700	Under	18%	330	3%

Table 6-1 (Continued)

INTERIM (PRE-SR 125) SEGMENT PERFORMANCE WITH PROPOSED PROJECT

Segment	Class	TPP Base ADT(1)	TPP Base Relationship to Planning Level Capacity Guidelines	TPP Base w/ Proposed Project ADT(1)	TPP Base w/ Proposed Project Relationship to Planning Level Capacity Guidelines	% Increase in ADT Forecast	SPA Amendment Area ADT(2)	% Contribution to Link Volume
Orange Avenue								
I-805 to Orange Avenue	Major (4 LN)	24,100	Under	28,200	Under	17%	-	0%
Oleander Avenue to Brandywine Avenue	Major (4 LN)	15,700	Under	18,900	Under	20%	-	0%
Plaza Bonita Road								
Sweetwater Road to Bonita Road	Major (4 LN)	17,400	Under	17,600	Under	1%	-	0%
Corral Canyon Road/Rutgers Avenue								
Bonita Road to East H Street	Collector (3 LN)	8,500	Under	10,600	Under	25%	1980	19%
East H Street to Otay Lakes Road	Collector (3 LN)	2,900	Under	3,000	Under	3%	250	8%
Eastlake Drive/Parkway								
East H Street to Lakeshore Drive	Collector (4 LN)	12,500	Under	14,900	Under	19%	3630	24%
Lakeshore Drive to Future SR 125	Collector (3 LN)	7,600	Under	9,700	Under	28%	5580	58%
Future SR 125 to Otay Lakes Road	**Major (4 LN)**	26,500	Under	**40,200**	**Over**	**52%**	**32000**	**80%**
Crest Drive/Oleander Avenue								
Douglas Street to Telegraph Canyon Road	Collector (3 LN)	8,500	Under	8,600	Under	1%	-	0%
Telegraph Canyon Road to Orange Avenue	Collector (3 LN)	11,100	Under	11,400	Under	3%	330	3%
Paseo Del Rey								
East H Street to Telegraph Canyon Road	Collector (4 LN)	10,800	Under	12,700	Under	18%	330	3%

Table 6-1 (Continued)

INTERIM (PRE-SR 125) SEGMENT PERFORMANCE WITH PROPOSED PROJECT

Segment	Class	TPP Base ADT(1)	TPP Base Relationship to Planning Level Capacity Guidelines	TPP Base w/ Proposed Project ADT(1)	TPP Base w/ Proposed Project Relationship to Planning Level Capacity Guidelines	% Increase in ADT Forecast	SPA Amendment Area ADT(2)	% Contribution to Link Volume
Medical Center Drive								
Telegraph Canyon Road to Medical Center Court	**Collector (4 LN)**	**25,800**	**Over**	**28,200**	**Over**	**9%**	**2970**	**11%**
Otay Lakes Road								
Bonita Road to East H Street	Major (4 LN)	28,200	Under	28,500	Under	1%	1980	7%
East H Street to Telegraph Canyon Road	Prime (6 LN)	37,000	Under	41,100	Under	11%	9240	22%
Telegraph Canyon Road to Rutgers Avenue	**Prime (6 LN)**	49,400	Under	**58,900**	**Over**	**19%**	**19470**	**33%**
Rutgers Avenue to Future SR 125	**Prime (6 LN)**	49,000	Under	**58,500**	**Over**	**19%**	**19800**	**34%**
Future SR 125 to Eastlake Parkway	**Prime (6 LN)**	47,500	Under	**57,500**	**Over**	**21%**	**19800**	**34%**
Eastlake Parkway to Lane Avenue	Prime (6 LN)	15,900	Under	16,100	Under	1%	990	6%
Lane Avenue to Hunte Parkway	Prime (6 LN)	16,400	Under	16,500	Under	1%	660	4%

Note: 1. Bold print indicates critical freeway and arterial segments which currently operate below the City of Chula Vista Traffic Engineering Division minimum ADT volume operating threshold values for long-range planning purposes (see Table 2-1).

2. The Link ADT Value is based on the contribution of Project Site Traffic under the TPP Base with Proposed Project Condition.

Source: Eastlake I SPA Amendment Project, Approved Projects Base with Proposed Eastlake I Project Travel Forecast (December 14, 1991). JHK & Associates.

Additional Project - Related Segment Impacts

Segment	From - To
East H Street	Paseo Ranchero to Otay Lakes Road
Eastlake Parkway	Future SR 125 to Otay Lakes Road
Otay Lakes Road	Telegraph Canyon Road to Eastlake Parkway

As mentioned in Chapter 2, the analysis of segment performance and impacts is only provided for review purposes under Interim Conditions with the Proposed Project. To precisely define traffic operations circulation system impacts, the following analysis of study area signalized intersections is provided.

Signalized Intersection Capacity Analysis

To analyze the Interim (Pre-SR 125) with Proposed Project conditions of the critical signalized intersections within the study area, A.M. and P.M. peak hour traffic volume counts taken from the TPP report were modified to include project traffic. The same intersections that were analyzed under the Interim (Pre-SR 125) TPP Base Condition were reanalyzed with project traffic added to the network. Figures 4-3 and 4-4 show the intersection locations and geometrics used for this analysis. Appendix F of this document contains the turning movement volumes and HCM worksheets used for this analysis. Tables 6-2a and 6-2b summarize the Interim (Pre-SR 125) with Proposed Project A.M. and P.M. peak hour conditions at the major signalized intersections in the study area. Tables 6-2a and 6-2b also compare the with and without project conditions. These tables show that the following intersections exceed the City of Chula Vista Traffic Engineering Division's minimum peak hour operating threshold value of LOS D:

TPP Base Condition Intersection Impacts *

Additional Project Related Intersection Impacts *

Note: * Under Interim (Pre-SR 125) Conditions with the Proposed Project the intersection geometrics recommended for the TPP Base Condition (See Figure 4-4) provide adequate capacity to serve the increased traffic generation from the site and allow acceptable peak hour Levels of Service to all study area intersections.

Table 6-2a

INTERIM (PRE-SR 125) PROPOSED PROJECT CONDITION INTERSECTION PERFORMANCE SUMMARY (AM PEAK HOUR)

	E/W Street	N/S Street	TPP Base Intersection Delay (sec/veh)(1)	TPP Base Intersection LOS(2)	TPP Base With Proposed Project Intersection Delay (sec/veh)(1)	TPP Base With Proposed Project Intersection LOS(2)
1.	Bonita Road	SB I-805 Ramps	14.2	B	14.2	B
2.	Bonita Road	NB I-805 Ramps	16.6	C	16.6	C
3.	Bonita Road	Plaza Bonita Road	15.9	C	15.9	C
4.	Bonita Road	Willow Street	21.3	C	21.3	C
5.	Bonita Road	Otay Lakes Road	15.3	C	15.4	C
6.	East H Street	SB I-805 Ramps	13.0	B	13.4	B
7.	East H Street	NB I-805 Ramps	11.0	B	11.3	B
8.	East H Street	Hidden Vista Road	14.4	B	14.4	B
9.	East H Street	Paseo del Rey	19.7	C	19.8	C
10.	East H Street	Paseo Ranchero	12.7	B	13.8	B
11	East H Street	Otay Lakes Road	36.8	D	36.0	D
12.	East H Street	Corral Canyon Road/Rutgers Avenue	17.6	C	17.6	C
13.	East H Street	Eastlake Parkway	21.9	C	23.2	C
14.	Telegraph Canyon Road	SB I-805 Ramps	16.7	C	17.1	C
15.	Telegraph Canyon Road	NB I-805 Ramps	28.6	D	25.1	D
16.	Telegraph Canyon Road	Halecrest Drive	7.9	B	7.9	B
17.	Telegraph Canyon Road	Crest Drive/Oleander Avenue	19.6	C	19.8	C
18.	Telegraph Canyon Road	Paseo del Rey	15.7	C	16.5	C
19.	Telegraph Canyon Road	Medical Center Drive	14.2	B	14.7	B
20.	Telegraph Canyon Road	Otay Lakes Road	15.1	C	19.6	C
21.	Otay Lakes Road	Rutgers Avenue	11.1	B	11.3	B
22.	Otay Lakes Road	Mid-Block Eastlake Access Point	*	*	*	*
23.	Otay Lakes Road	Eastlake Parkway	20.6	C	25.8	D
24.	Eastlake Parkway	Fenton Street (Southern Access Point)	*		25.2	D
25.	Eastlake Parkway	Miller Road (Northern Access Point)	*	*	27.9	D
26.	Otay Lakes Road	Lane Avenue	3.3	A	3.4	A
27.	Otay Lakes Road	Hunte Parkway	11.1	B	11.1	B
28.	Orange Avenue	SB I-805 Ramps	20.2	C	20.2	C
29.	Orange Avenue	NB I-805 Ramps	16.6	C	16.6	C
30.	Orange Avenue	Medical Center Drive	16.6	C	16.8	C

Notes: 1. When the volume to capacity ratio > 1.20, delay equation is invalid.

2. Bold print indicates critical signalized intersections which currently operate below (LOS E or F) the City of Chula Vista Traffic Engineering Division's minimum peak hour operating threshold value of Level of Service D.

* The intersection LOS values shown on this table represent the Base access scenario for Eastlake I with no mid-block signal or access to the property directly from Otay Lakes Road west of Eastlake Parkway. A separate intersection capacity analysis has been performed for the four Eastlake I site access intersections under various alternative access scenarios (See Chapter 7).

Source: JHK & Associates.

Table 6-2b

INTERIM (PRE-SR 125) PROPOSED PROJECT CONDITION INTERSECTION PERFORMANCE SUMMARY (PM PEAK HOUR)

	E/W Street	N/S Street	TPP Base		TPP Base With Proposed Project	
			Intersection Delay (sec/veh)(1)	Intersection LOS(2)	Intersection Delay (sec/veh)(1)	Intersection LOS(2)
1.	Bonita Road	SB I-805 Ramps	27.5	D	27.5	D
2.	Bonita Road	NB I-805 Ramps	34.5	D	34.5	D
3.	Bonita Road	Plaza Bonita Road	24.9	C	24.9	C
4.	Bonita Road	Willow Street	33.5	D	33.4	D
5.	Bonita Road	Otay Lakes Road	16.7	C	16.7	C
6.	H Street	SB I-805 Ramps	23.5	C	23.7	C
7.	H Street	NB I-805 Ramps	28.6	D	30.5	D
8.	H Street	Hidden Vista Road	34.2	D	34.0	D
9.	H Street	Paseo del Rey	26.8	D	27.4	D
10.	H Street	Paseo Ranchero	20.5	C	20.8	C
11.	H Street	Otay Lakes Road	18.7	C	22.3	C
12.	H Street	Corral Canyon Road/ Rutgers Avenue	16.3	C	16.3	C
13.	H Street	Eastlake Parkway	19.9	C	20.6	C
14.	Telegraph Canyon Road	SB I-805 Ramps	22.7	C	22.8	C
15.	Telegraph Canyon Road	NB I-805 Ramps	25.1	D	28.7	D
16.	Telegraph Canyon Road	Halecrest	13.6	B	14.6	B
17.	Telegraph Canyon Road	Crest Drive/Oleander Avenue	28.3	D	29.1	D
18.	Telegraph Canyon Road	Paseo del Rey	23.7	C	31.7	D
19	Telegraph Canyon Road	Medical Center Drive	17.3	C	20.6	C
20.	Telegraph Canyon Road	Otay Lakes Road	13.2	B	14.4	B
21.	Otay Lakes Road	Rutgers Avenue	12.8	B	14.4	B
22.	Otay Lakes Road	Mid-Block Eastlake Access Point	*	*	*	*
23.	Otay Lakes Road	Eastlake Parkway	24.4	C	29.8	D
24.	Eastlake Parkway	Fenton Street (Southern Access Point)	*	*	38.2	D
25.	Eastlake Parkway	Miller Road (Northern Access Point)	*	*	38.0	D
26.	Otay Lakes Road	Lane Avenue	3.5	A	3.6	A
27.	Otay Lakes Road	Hunte Parkway	11.6	B	11.6	B
28.	Orange Avenue	SB I-805 Ramps	35.6	D	35.6	D
29.	Orange Avenue	NB I-805 Ramps	31.0	D	31.0	D
30.	Orange Avenue	Medical Center Drive	22.9	C	25.4	D

Notes: 1. When the volume to capacity ratio > 1.20, delay equation is invalid.

2. Bold print indicates critical signalized intersections which currently operate below (LOS E or F) the City of Chula Vista Traffic Engineering Division's minimum peak hour operating threshold value of Level of Service D.

* The intersection LOS values shown on this table represent the Base access scenario for Eastlake I with no mid-block signal or access to the property directly from Otay Lakes Road west of Eastlake Parkway. A separate intersection capacity analysis has been performed for the four Eastlake I site access intersections under various alternative access scenarios (See Chapter 7).

Source: JHK & Associates.

Conclusions

These analyses revealed that the geometric requirements shown on Figure 4-4 which will be provided by the TPP Base Condition are adequate to serve the increased traffic levels resulting from the implementation of the Proposed Project. Thus, no additional project related intersection impacts will occur under Interim (Pre-SR 125) Conditions with the Proposed Project. This finding assumes that the intersection improvements recommended for the TPP Base Conditions will be in place prior to construction of the Proposed Eastlake I SPA Amendment Project.

Critical Study Issues

As shown by this technical analysis of Interim (Pre-SR 125) Conditions it may be possible to fully accommodate the level of new traffic activity that will be associated with this Proposed Project. This conclusion assumes that the project could be allocated additional capacity beyond the capacity which is currently reserved for projects included in the TPP "Approved Projects" Base Condition. It is important to recognize, however, that other projects in Eastern Chula Vista (Salt Creek Ranch and Telegraph Canyon Road Development Projects) are currently being processed for approval by the City. Thus, these projects collectively are applying for the same excess capacity which will exist in the future TPP Circulation System upon the completion of all "Approved Projects". The City of Chula Vista must determine which project or projects will be allocated this additional circulation capacity prior to the approval of any of these competing projects.

During the completion of the analysis of Interim traffic conditions for the Eastlake I SPA Amendment Project, JHK reviewed the level of development which was coded into the Approved Project model run for the transportation analysis zone immediately south of Otay Lakes Road and west of Eastlake Parkway. This zone represents the south Eastlake Village Center. It appears that the external loading of trips from this zone (approximately 13,000 ADT) is far less than the trip generation that would be expected based on the trip generation prepared by Urban Systems Associates on December 31, 1991 which indicates 22,738 daily trips. This new trip generation data has been incorporated into the analysis of both Interim and Buildout Cumulative Impacts.

7. ANALYSIS OF SITE ACCESS ALTERNATIVES INTERIM (PRE-SR 125) CONDITIONS

Alternative access plans for the project site have been proposed. The proposed alternatives would allow full or partial access to the site along Otay Lakes Road between Future SR 125 and Eastlake Parkway. The lane geometry for the analysis of these alternative access plans is shown in Figures 7-1 and 7-2. As shown in Figure 7-2, the Mid-Block Access Point (Intersection No. 22) is evaluated under four separate geometric configurations which allow various levels of access directly to the southern edge of the Proposed Project site. Under each access scenario the other three site access intersections were re-evaluated to determine peak hour levels of service based on volume loading changes due to access opportunities at the Mid-Block Access Point on Otay Lakes Road. Table 7-1 summarizes the results of this Alternative Access Analysis at these four site access intersections. As expected Alternative 4 (Full Access) provides the best Levels of Service at the four site access intersections, with all locations projected to operate at LOS D or better. However, all of the alternatives, including the Base Condition with no access at the Mid-Block Access Point, operated at acceptable Levels of Service. It is important to recognize that full access at this Mid-Block Location is of critical concern to the City of Chula Vista in the future with the construction of SR 125 and increasing traffic volumes on Otay Lakes Road. The focus of this concern is the physical spacing of this Mid-Block signal between the existing intersection of Otay Lakes Road/Eastlake Parkway and the future intersection of Otay Lakes Road/SR 125 northbound ramps.

The following chapters describe the planned circulation network and anticipated operating conditions of the General Plan Buildout (Base Condition and with Proposed Project Condition). As part of the analysis of the Proposed Project at Buildout a separate review of this site access issue is provided. This buildout level of analysis will form the basis for a final recommendation concerning site access along Otay Lakes Road between Future SR 125 and Eastlake Parkway.

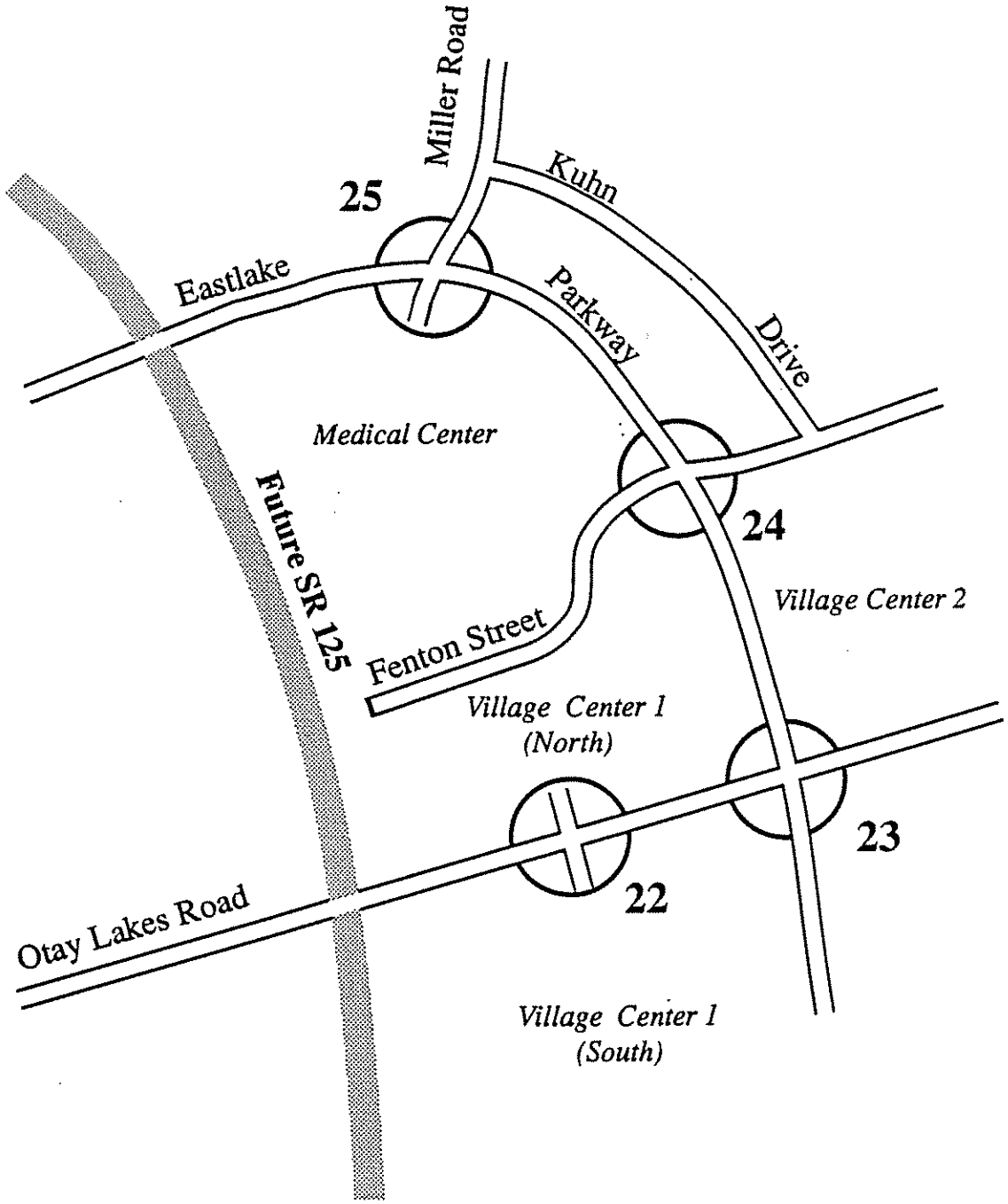


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Figure 7-1

ALTERNATIVE SITE ACCESS ANALYSIS (PRE-SR125)/ SIGNALIZED INTERSECTION LOCATION MAP

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Table 7-1

INTERIM (PRE- SR 125) PROPOSED PROJECT CONDITION INTERSECTION PERFORMANCE SUMMARY

AM PEAK HOUR	Alt. 1 Base Condition		Alt. 2 Partial Access		Alt. 3 Partial Access		Alt. 4 Full Access	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
23. Otay Lakes Rd/Eastlake Pkwy	25.8	D	24.8	C	24.7	C	22.4	C
22. Otay Lakes Rd/Mid-Block Eastlake Access Point	No Signal		No Signal		No Signal		17.8	C
24a. Eastlake Pkwy/Fenton St.(w/o mitigation)	25.7	D	25.1	D	24.1	C	22.9	C
24b. Eastlake Pkwy/Fenton St. (w/ mitigation)(1)	25.2	D	25.2	D	25.3	D	25.5	D
25. Eastlake Pkwy/Miller Street	27.9	D	27.9	D	27.9	D	27.9	D

PM PEAK HOUR	Alt. I Base Condition		Alt. II		Alt. III		Alt. IV Full Access	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
23. Otay Lakes Rd/Eastlake Pkwy	29.8	D	24.8	C	24.9	C	22.4	C
22. Otay Lakes Rd/Mid-Block Eastlake Access Point	No Signal		No Signal		No Signal		23.2	C
24a. Eastlake Pkwy/Fenton St.(w/o mitigation)	-	F	-	F	-	F	-	F
24b. Eastlake Pkwy/Fenton St. (w/ mitigation)(1)	38.2	D	34.5	D	33.2	D	33.7	D
25. Eastlake Pkwy/Miller Street	38.0	D	38.0	D	38.0	D	38.0	D

Note: 1. Geometric Modification at Eastlake Parkway and Fenton Street: EB - L, L, T, R; WB - L, L, T, R; NB - L, L, T, TR; SB - L, L, T, TR.

INTERSECTIONS

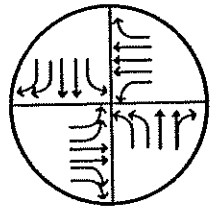
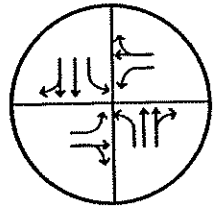
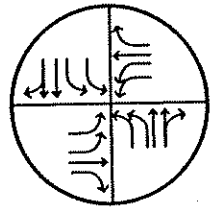
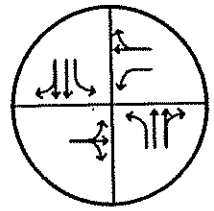
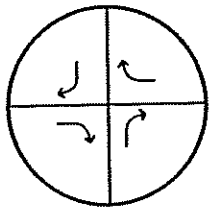
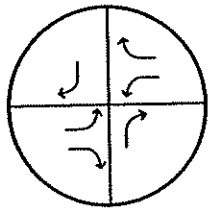
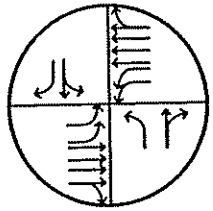
ALTERNATIVES	22. Otay Lakes Rd & Eastlake Mid Block Access Point	23. Otay Lakes Rd & Eastlake Parkway	24A. Eastlake Parkway & Southern Eastlake Access Point (Fenton St) without Mitigation	24B. Eastlake Parkway & Southern Eastlake Access Point (Fenton St) with Mitigation	25. Eastlake Pkwy & Northern Eastlake Access Point (Miller Rd)
Alternative 1 Base Case	No Access				
Alternative 2 Rights in & Rights out at Eastlake Mid-Block Access Point		Same As Base Case	Same As Base Case	Same As Base Case	Same As Base Case
Alternative 3 Lefts in & Rights in & out at Eastlake Mid-Block Access Point		Same As Base Case	Same As Base Case	Same As Base Case	Same As Base Case
Alternative 4 Signalized Intersection with Full Access at Eastlake Mid-Block Access Point		Same As Base Case	Same As Base Case	Same As Base Case	Same As Base Case

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Figure 7-2

ALTERNATIVE INTERSECTION GEOMETRIC CONFIGURATION

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8. GENERAL PLAN BUILDOUT BASE CONDITION

For the accurate determination of impacts resulting from the approval of the Proposed Eastlake I SPA Amendment at Buildout it was necessary to establish the Buildout "No Project" conditions in the study area. For the Buildout time-frame, the Adopted Chula Vista General Plan land use and circulation network conditions were used to define the Base Condition, which included the original Eastlake SPA Plan as part of the analysis. This General Plan Buildout Analysis formed the Buildout Base Condition, and all project impacts resulting from the Proposed Eastlake I SPA Amendment are documented in Chapters 9 and 10. In summary, any deterioration in the performance of the Buildout circulation system beyond levels reported in this chapter is considered a project-related impact. However, it is assumed that circulation improvements which are necessary to accommodate the General Plan Buildout volume conditions would be provided with or without the Proposed Eastlake I SPA Amendment Project.

Segment Capacity Analysis

To analyze the Buildout Conditions on study area freeway and arterial segments, ADT volume data were taken from the Chula Vista General Plan Circulation Element results based on the Combined Southbay Transportation Model provided by SANDAG. Arterial levels of service (LOS) were calculated based on a comparison of the ADT values and the functional classifications of roadways and the maximum recommended ADT volumes as shown on Table 2-1. Figure 8-1 shows the Adopted General Plan Circulation Element network alignments and functional classification of roadways analyzed under this condition. Figure 8-2 shows the General Plan Buildout Segment Capacity Analysis.

Table 8-1 shows that the following roadway segments exceed the maximum recommended ADT volume for their functional classification:

General Plan Buildout (Base Condition)
Segment Impacts

Segment	From - To
I-805	SR 54 to Telegraph Canyon Road
Bonita Road	I-805 to Otay Lakes Road
Orange Avenue	I-805 to Paseo Ranchero

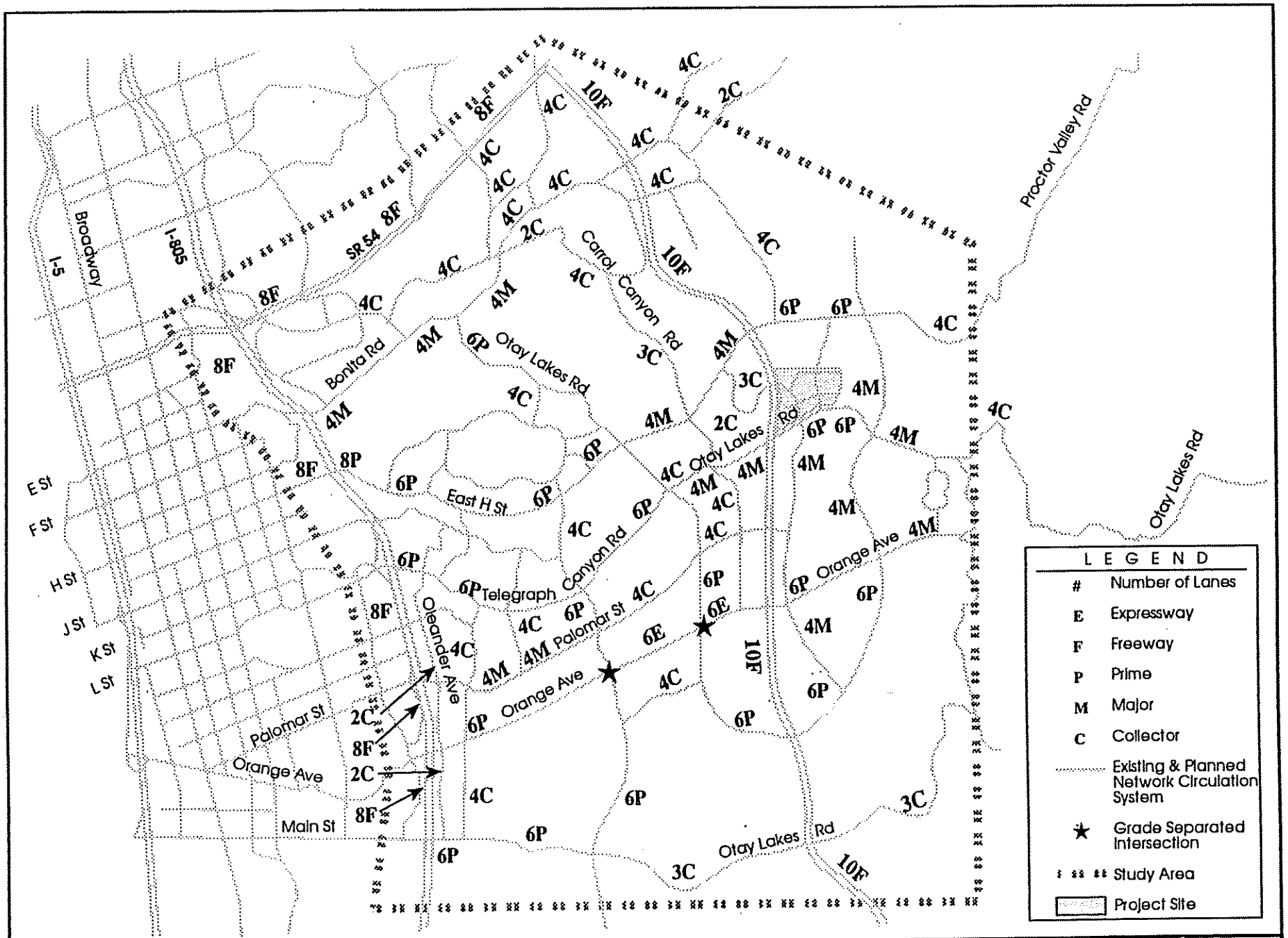

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Figure 8-1

GENERAL PLAN BUILDOUT NETWORK CLASSIFICATION MAP

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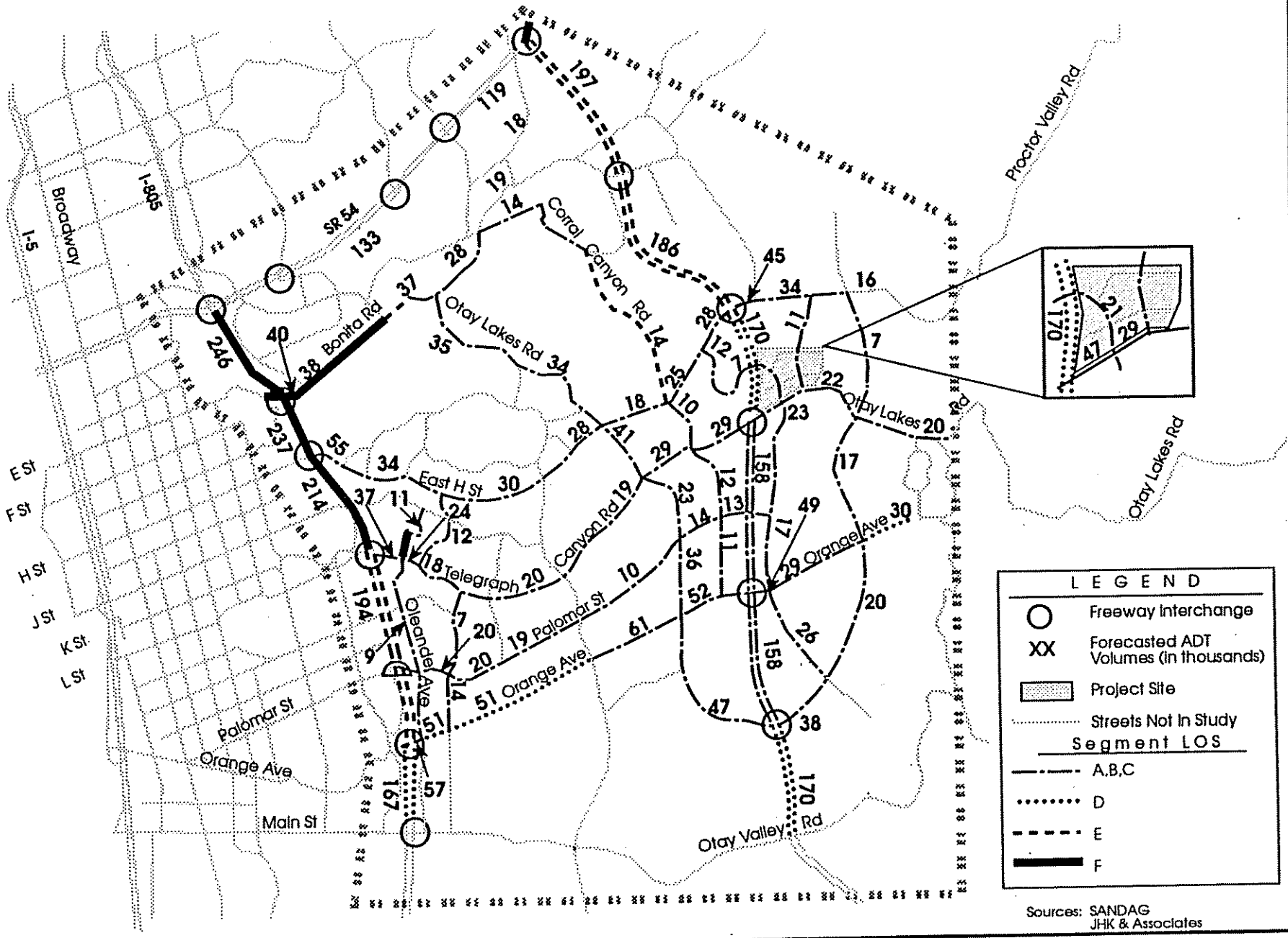

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Figure 8-2

GENERAL PLAN BUILDOUT NETWORK TRAFFIC CONDITIONS WITHOUT MODIFIED PROJECT

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Table 8-1
GENERAL PLAN BUILDOUT ANALYSIS (BASE CONDITION)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	ADT	Relationship to Planning Level Capacity Guideline	SPA Amendment Area ADT	% Contribution to Link Volume
I-805					
State Route 54 to Bonita Road	Freeway (10 LN)	245,700	Over	334	0%
Bonita Road to East H Street	Freeway (10 LN)	236,700	Over	334	0%
East H Street to Telegraph Canyon Road	Freeway (10 LN)	213,600	Over	835	0%
Telegraph Canyon Road to Orange Avenue	Freeway (10 LN)	193,600	Under	668	0%
Orange Avenue to Otay Valley Road	Freeway (10 LN)	167,000	Under	167	0%
Bonita Road					
I-805 to Plaza Bonita Road	Major (4 LN)	40,000	Over	0	0%
Plaza Bonita Road to Willow Street	Major (4 LN)	38,100	Over	0	0%
Willow Street to Otay Lakes Road	Major (4 LN)	36,900	Over	0	0%
Otay Lakes Road to Central Avenue	Major (4 LN)	28,000	Under	0	0%
East H Street					
I-805 to Hidden Vista Drive	Prime (8 LN)	55,000	Under	334	1%
Hidden Vista Drive to Paseo Del Rey	Prime (6 LN)	33,600	Under	501	1%
Paseo Del Rey to Paseo Ranchero	Prime (6 LN)	30,300	Under	501	2%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	27,500	Under	668	2%
Otay Lakes Road to Corral Canyon Road/Rutgers Avenue	Major (4 LN)	17,800	Under	1002	6%
Corral Canyon Road/Rutgers Avenue to Eastlake Drive	Major (4 LN)	25,000	Under	1169	5%
Eastlake Parkway to SR 125	Major (4 LN)	28,200	Under	3173	11%
SR 125 to San Miguel Road	Prime (6 LN)	45,000	Under	835	2%
San Miguel Road to Hunte Parkway	Prime (6 LN)	34,400	Under	334	1%
Hunte Parkway to Proctor Valley Road	Collector (4 LN)	16,300	Under	167	1%
Telegraph Canyon Road					
I-805 to Crest Drive/Oleander Avenue	Prime (6 LN)	36,500	Under	501	1%
Crest Drive/Oleander Avenue to Paseo Del Rey	Prime (6 LN)	23,600	Under	501	2%
Paseo Del Rey to Medical Center Drive	Prime (6 LN)	18,100	Under	501	3%
Medical Center Drive to Paseo Ranchero	Prime (6 LN)	19,500	Under	501	3%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	19,300	Under	668	3%
Orange Avenue					
I-805 to Oleander Avenue	Prime (6 LN)	57,300	Over	501	1%
Oleander Avenue to Brandywine Avenue	Prime (6 LN)	51,200	Over	501	1%
Brandywine Avenue to Paseo Ranchero	Prime (6 LN)	50,800	Over	501	1%

Table 8-1 (Continued)
FUTURE GENERAL PLAN BUILDOUT ANALYSIS (BASE CONDITION)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	ADT	Relationship to Planning Level Capacity Guideline	SPA Amendment Area ADT	% Contribution to Link Volume
Orange Avenue (Continued)					
Paseo Ranchero to La Media Road	Expressway (6 LN)	61,000	Under	668	1%
La Media Road to Future SR 125	Expressway (6 LN)	51,800	Under	668	1%
Future SR 125 to Eastlake Parkway	Prime (6 LN)	49,300	Under	334	1%
Eastlake Parkway to Hunte Parkway	Prime (6 LN)	29,000	Under	0	0%
Hunte Parkway to Wueste Road	**Major (4 LN)**	**30,000**	**Over**	**0**	**0%**
Palomar Street					
I-805 to Crest Drive/Oleander Avenue	Major (4 LN)	25,300	Under	0	0%
Crest Drive/Oleander Avenue to Medical Center Drive	Major (4 LN)	20,300	Under	0	0%
Medical Center Drive to Paseo Ranchero	Major (4 LN)	19,200	Under	0	0%
Paseo Ranchero to La Media Road	Collector (4 LN)	9,500	Under	0	0%
La Media to Corral Canyon Road/Rutgers Avenue	Collector (4 LN)	14,100	Under	501	4%
Corral Canyon Road/Rutgers Avenue to Eastlake Parkway	Collector (4 LN)	12,900	Under	501	4%
Corral Canyon Road/Rutgers Avenue					
Bonita Road to Blacksmith Road	Collector (4 LN)	13,900	Under	501	4%
Blacksmith Road to East H Street	**Collector (3 LN)**	**13,900**	**Over**	334	3%
East H Street to Otay Lakes Road	Collector (4 LN)	10,300	Under	0	0%
Otay Lakes Road to Palomar Street	Collector (4 LN)	12,000	Under	0	0%
Palomar Street to Orange Avenue	Collector (4 LN)	10,600	Under		
Future SR 125					
SR 54 to San Miguel Road	Freeway (10 LN)	197,000	Under	3340	2%
San Miguel Road to East H Street	Freeway (10 LN)	186,000	Under	2505	1%
East H Street to Otay Lakes Road	Freeway (10 LN)	169,600	Under	2505	1%
Otay Lakes Road to Orange Avenue	Freeway (10 LN)	158,000	Under	1169	1%
Orange Avenue to La Media Road	Freeway (10 LN)	157,600	Under	1169	1%
La Media Road to Lone Star Road	Freeway (10 LN)	169,500	Under	835	0%
Eastlake Drive/Parkway					
East H Street to Lakeshore Drive	Collector (4 LN)	12,000	Under	2672	22%
Lakeshore Drive to Future SR 125	Collector (3 LN)	6,500	Under	3173	49%

Table 8-1 (Continued)
FUTURE GENERAL PLAN BUILDOUT ANALYSIS (BASE CONDITION)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	ADT	Relationship to Planning Level Capacity Guideline	SPA Amendment Area ADT	% Contribution to Link Volume
Eastlake Drive/Parkway (Continued)					
Future SR 125 to Otay Lakes Road	Major (4 LN)	21,200	Under	6513	31%
Otay Lakes Road to Palomar Street	Major (4 LN)	23,200	Under	3173	14%
Palomar Street to Orange Avenue	Major (4 LN)	17,300	Under	2171	13%
Orange Avenue to Hunte Parkway	Major (4 LN)	25,700	Under	668	3%
Hunte Parkway					
Proctor Valley Road to East H Street	Collector (4 LN)	5,400	Under	167	3%
East H Street to Otay Lakes Road	Major (4 LN)	6,900	Under	334	5%
Otay Lakes Road to Orange Avenue	Major (4 LN)	17,000	Under	167	1%
Orange Avenue to Eastlake Parkway	Prime (6 LN)	20,000	Under	0	0%
Eastlake Parkway to Future SR 125	Prime (6 LN)	38,000	Under	0	0%
Lane Avenue					
East H Street to Otay Lakes Road	Collector (4 LN)	11,000	Under	1837	17%
Crest Drive/Oleander Avenue					
Douglas Street to Telegraph Canyon Road	**Collector (2 LN)**	**11,200**	**Over**	**0**	**0%**
Telegraph Canyon Road to Naples Street	Collector (3 LN)	9,000	Under	0	0%
Naples Street to Palomar Street	Collector (2 LN)	3,900	Under	0	0%
Palomar Street to Orange Avenue	Collector (2 LN)	6,000	Under	0	0%
Paseo Del Rey					
East H Street to Telegraph Canyon Road	Collector (3 LN)	11,600	Under	0	0%
Medical Center Drive					
Telegraph Canyon Road to Palomar Street	Collector (4 LN)	6,900	Under	0	0%
Palomar Street to Orange Avenue	Collector (4 LN)	13,600	Under	0	0%
Otay Lakes Road					
Bonita Road to East H Street	Prime (6 LN)	34,500	Under	501	1%
East H Street to Telegraph Canyon Road	Prime (6 LN)	40,800	Under	501	1%
Telegraph Canyon Road to Rutgers Avenue	Prime (6 LN)	29,300	Under	1503	5%
Rutgers Avenue to Future SR 125	Prime (6 LN)	29,100	Under	1837	6%

Table 8-1 (Continued)
FUTURE GENERAL PLAN BUILDOUT ANALYSIS (BASE CONDITION)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	ADT	Relationship to Planning Level Capacity Guideline	SPA Amendment Area ADT	% Contribution to Link Volume
Otay Lakes Road (Continued)					
Future SR 125 to Eastlake Parkway	Prime (6 LN)	47,000	Under	5511	12%
Eastlake Parkway to Lane Avenue	Prime (6 LN)	29,000	Under	668	2%
Lane Avenue to Hunte Parkway	Prime (6 LN)	21,500	Under	1169	5%
Hunte Parkway to Wueste Road	Major (4 LN)	20,000	Under	835	4%
La Media Road					
Telegraph Canyon Road to Palomar Street	Prime (6 LN)	23,100	Under	0	0%
Palomar Street to Orange Avenue	Prime (6 LN)	36,300	Under	0	0%
Orange Avenue to Future SR 125	Prime (6 LN)	47,000	Under	0	0%

Orange Avenue	Hunte Parkway to Wueste Road
Corral Canyon Road/Rutgers Avenue	Blacksmith Road to East H Street
Crest Drive/Oleander Avenue	Douglas Street to Telegraph Canyon Road

The following section provides an analysis of the General Plan Buildout Base Conditions for major signalized study area intersections.

Signalized Intersection Capacity Analysis

To analyze the General Plan Buildout Base Conditions of critical signalized intersections within the study area, ADT volumes taken from the Combined Southbay Transportation Model provided by SANDAG were used.

All major study area signalized intersections were screened using the intersection screening methodology detailed in Chapter 2 to analyze total daily entering volumes and identify potential impacts. Figure 8-3 shows the location of the three high volume intersections found under the General Plan Buildout Base Condition. The following list summarizes the location, ADT entering volume, and stage of these three impacted intersections.

General Plan Buildout Base Condition
Intersection Impacts

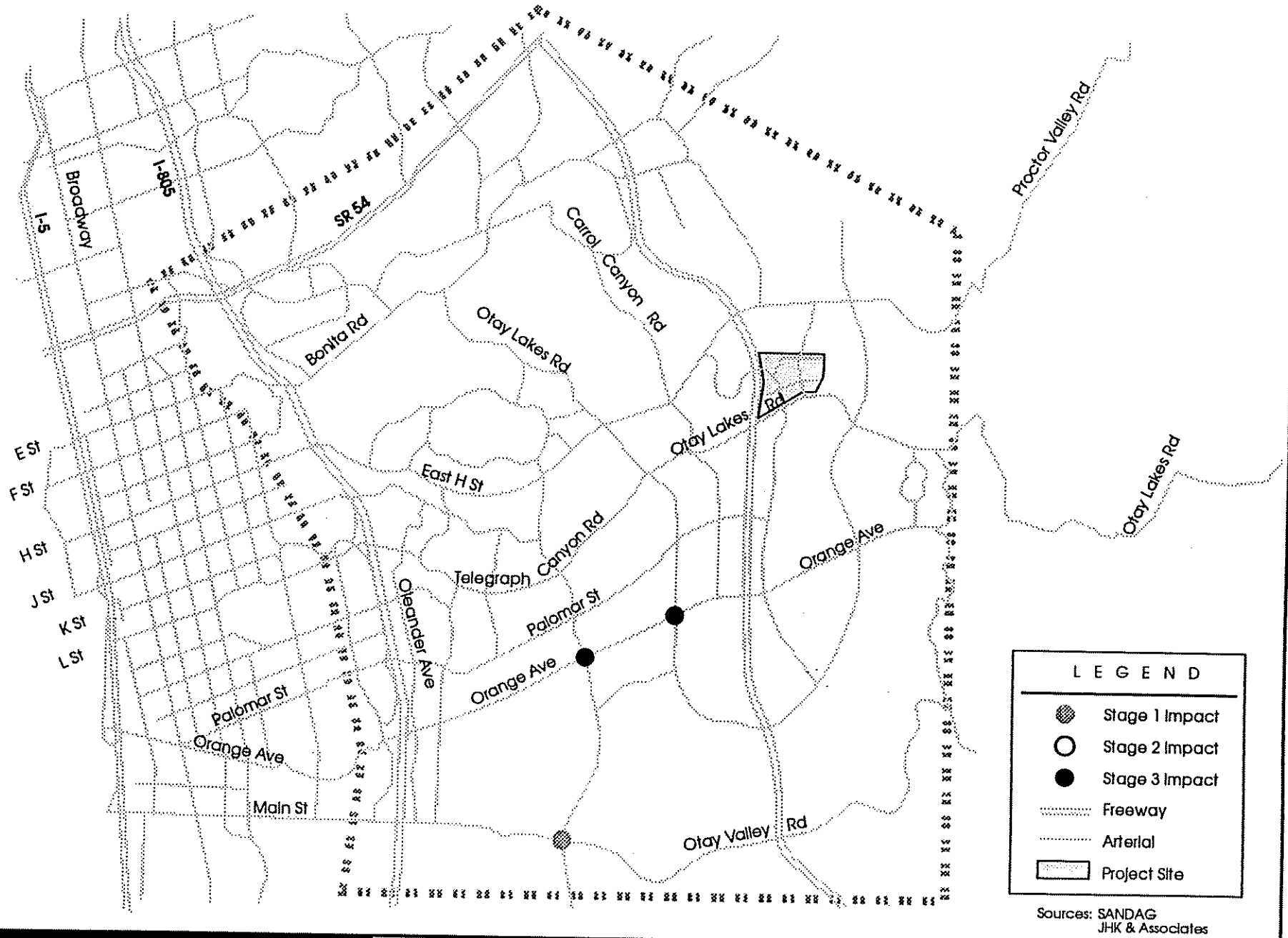
N/S Street	E/W Street	Entering Volume	Stage of Impact(1)
Paseo Ranchero	Orange Avenue	88,400	3
Paseo Ranchero	Main Street/Otay Valley Road	74,550	1
La Media	Orange Avenue	103,100	3

Note: 1. See page 2-6 for definition of Stage of Impact

Conclusions

The remainder of this report deals with the implementation of the Proposed Project and its impact on the General Plan Base Condition as described in this chapter. The impact analysis under with project conditions will focus on the addition circulation system impacts resulting from the higher trip generation level associated with the proposed project.

The following chapter presents the anticipated impacts to the study area circulation network under the General Plan Buildout Conditions with the Proposed Project.



Sources: SANDAG
JHK & Associates

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Figure 8-3

GENERAL PLAN BUILDOUT NETWORK HIGH VOLUME INTERSECTIONS WITHOUT MODIFIED PROJECT

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9. GENERAL PLAN BUILDOUT IMPACT ANALYSIS WITH PROPOSED PROJECT

As stated in Chapter 8, The planned geometric configuration of the circulation system and signalized intersections within the study area based on Chula Vista General Plan, formed the basis for determining project impacts. The following sections have been prepared to document the impact of the increase in trip generation from the SPA Amendment Area and the remainder of the Eastlake I SPA Amendment Area totalling 22,044 daily trips.

Segment Capacity Analysis

To analyze the General Plan Buildout with Proposed Project conditions on study area freeway and arterial segments, the General Plan Circulation Element was modified replacing the original land use assumptions within the SPA Amendment Area with the land use assumptions of the proposed project. Based on these assumptions, the Combined Southbay Transportation Model was remodelled and forecasted ADT volumes were provided by SANDAG. Arterial and freeway levels of service were calculated based on a comparison of the ADT values and functional classification of roadways and the recommended maximum ADT volumes as shown on Table 2-1. This analysis was based on the General Plan Circulation Element network alignments and functional classifications as shown in Figure 8-1. Figure 9-1 shows the percentages of project generated traffic that was added to the General Plan Buildout Base Condition. Figure 9-2 shows the General Plan Buildout with Project operating conditions, and Table 9-1 provides a summary of the operating performance for each major study area freeway and arterial segment and a comparison with the General Plan Buildout base. Table 9-1 shows that the following roadway segments are expected to exceed the maximum recommended ADT volume for their functional classifications:

General Plan Buildout (Base Condition)
Segment Impacts

Segment	From - To
I-805	SR 54 to Telegraph Canyon Road
Bonita Road	I-805 to Otay Lakes Road
Orange Avenue	I-805 to Paseo Ranchero
Orange Avenue	Hunte Parkway to Wueste Road
Corral Canyon Road/Rutgers Avenue	Blacksmith Road to East H Street
Crest Drive/Oleander Avenue	Douglas Street to Telegraph Canyon Road

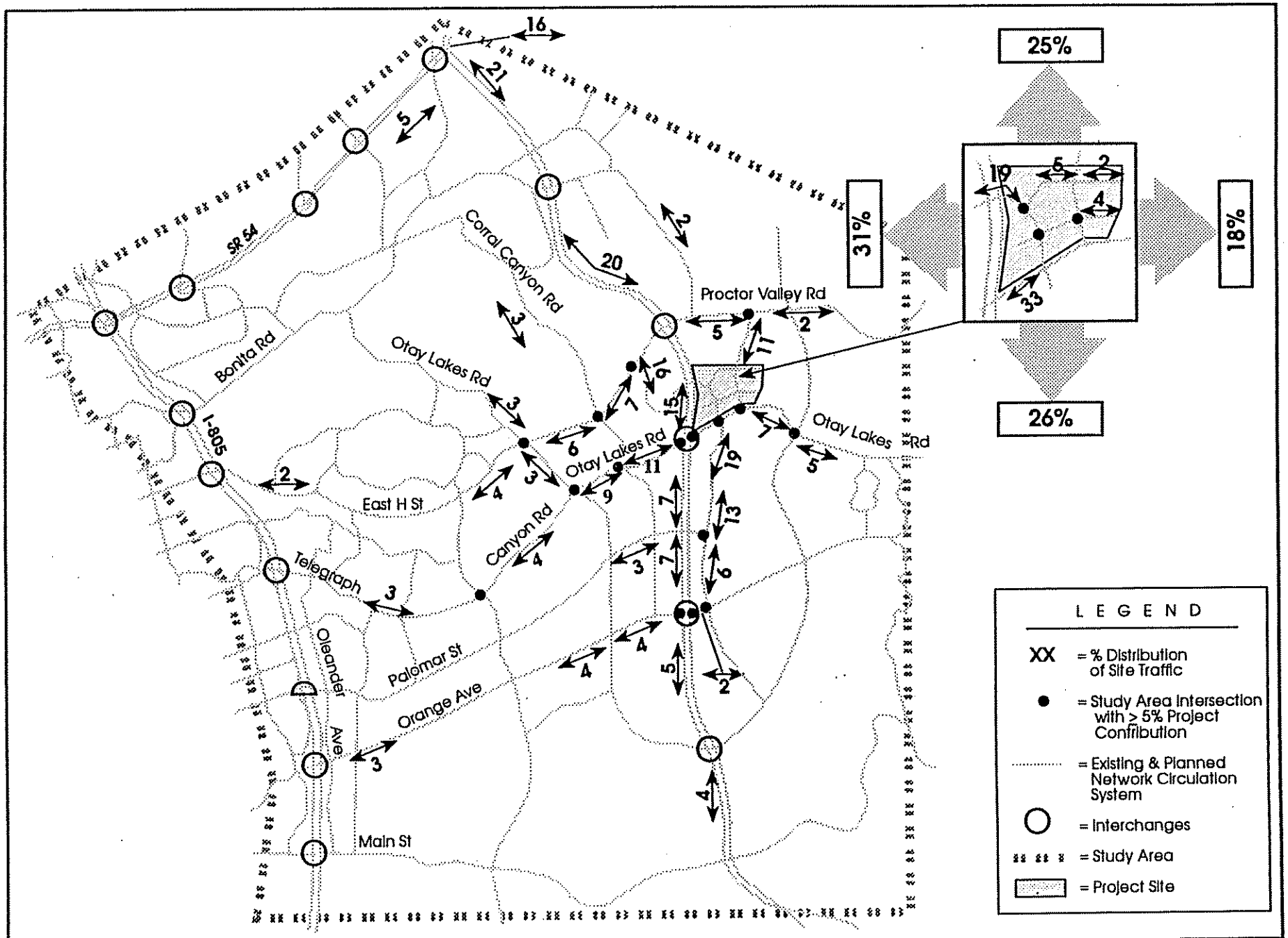

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Figure 9-1

GENERAL PLAN BUILDOUT NETWORK WITH PROJECT - TRAFFIC DISTRIBUTION (WITHOUT SR 54 RAMPS AT EASTLAKE PARKWAY)

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Table 9-1 (Continued)
GENERAL PLAN BUILDOUT "WITH PROJECT" ANALYSIS (WITHOUT RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project		% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline			
Telegraph Canyon Road (Continued)								
Medical Center Drive to Paseo Ranchero	Prime (6 LN)	19,500	Under	19,100	Under	-2%	1266	7%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	19,300	Under	20,800	Under	8%	2231	11%
Orange Avenue								
I-805 to Oleander Avenue	**Prime (6 LN)**	**57,300**	**Over**	**58,100**	**Over**	**1%**	**1394**	**2%**
Oleander Avenue to Brandywine Avenue	**Prime (6 LN)**	**51,200**	**Over**	**51,000**	**Over**	**0%**	**1392**	**3%**
Brandywine Avenue to Paseo Ranchero	**Prime (6 LN)**	**50,800**	**Over**	**51,300**	**Over**	**1%**	**1532**	**3%**
Paseo Ranchero to Otay Lakes Road	Expressway (6 LN)	61,000	Under	62,400	Under	2%	1664	3%
Otay Lakes Road to Future SR 125	Expressway (6 LN)	51,800	Under	51,900	Under	0%	1783	3%
Future SR 125 to Eastlake Parkway	**Prime (6 LN)**	49,300	Under	**51,500**	**Over**	**4%**	**1007**	**2%**
Eastlake Parkway to Hunte Parkway	Prime (6 LN)	29,000	Under	31,800	Under	10%	50	0%
Hunte Parkway to Wueste Road	**Major (4 LN)**	**30,000**	**Over**	**32,500**	**Over**	**8%**	**62**	**0%**
Palomar Street								
I-805 to Crest Drive/Oleander Avenue	Major (4 LN)	25,300	Under	24,900	Under	-2%	188	1%
Crest Drive/Oleander Avenue to Medical Center Drive	Major (4 LN)	20,300	Under	19,600	Under	-3%	193	1%
Medical Center Drive to Paseo Ranchero	Major (4 LN)	19,200	Under	18,700	Under	-3%	355	2%
Paseo Ranchero to La Media Road	Collector (4 LN)	9,500	Under	9,100	Under	-4%	614	7%
La Media to Corral Canyon Road/Rutgers Avenue	Collector (4 LN)	14,100	Under	15,000	Under	6%	1255	8%
Corral Canyon Road/Rutgers Avenue to Eastlake Parkway	Collector (4 LN)	12,900	Under	14,400	Under	12%	1592	11%
Corral Canyon Road/Rutgers Avenue								
Bonita Road to Blacksmith Road	Collector (4 LN)	13,900	Under	20,700	Under	49%	1677	8%
Blacksmith Road to East H Street	**Collector (3 LN)**	**13,900**	**Over**	**17,000**	**Over**	**22%**	**1677**	**10%**
East H Street to Otay Lakes Road	Collector (4 LN)	10,300	Under	20,700	Under	101%	386	2%
Otay Lakes Road to Palomar Street	Collector (4 LN)	12,000	Under	21,000	Under	75%	332	2%
Palomar Street to Orange Avenue	Collector (4 LN)	10,600	Under	11,000	Under	4%	360	3%

Table 9-1 (Continued)
GENERAL PLAN BUILDOUT "WITH PROJECT"ANALYSIS (WITHOUT RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project		% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline			
Future SR 125								
SR 54 to San Miguel Road	**Freeway (10 LN)**	197,000	Under	**204,000**	**Over**	**4%**	**9248**	**5%**
San Miguel Road to East H Street	Freeway (10 LN)	186,000	Under	190,500	Under	2%	9248	5%
East H Street to Otay Lakes Road	Freeway (10 LN)	169,600	Under	172,000	Under	1%	6791	4%
Otay Lakes Road to Orange Avenue	Freeway (10 LN)	158,000	Under	168,000	Under	6%	3238	2%
Orange Avenue to La Media Road	Freeway (10 LN)	157,600	Under	162,100	Under	3%	2508	2%
La Media Road to Lone Star Road	Freeway (10 LN)	169,500	Under	172,700	Under	2%	2006	1%
Eastlake Drive/Parkway								
East H Street to Lakeshore Drive	Collector (4 LN)	12,000	Under	19,000	Under	58%	7528	40%
Lakeshore Drive to Future SR 125	Collector (3 LN)*	6,500	Under	15,200	Under	134%	8682	57%
Future SR 125 to Otay Lakes Road	**Major (4 LN)**	21,200	Under	**31,200**	**Over**	**47%**	**24534**	**79%**
Otay Lakes Road to Palomar Street	Major (4 LN)	23,200	Under	26,300	Under	13%	8890	34%
Palomar Street to Orange Avenue	Major (4 LN)	17,300	Under	19,000	Under	10%	3001	16%
Orange Avenue to Hunte Parkway	Major (4 LN)	25,700	Under	25,900	Under	1%	1451	6%
Hunte Parkway								
Proctor Valley Road to East H Street	Collector (4 LN)	5,400	Under	5,600	Under	4%	123	2%
East H Street to Otay Lakes Road	Major (4 LN)	6,900	Under	8,200	Under	19%	11	0%
Otay Lakes Road to Orange Avenue	Major (4 LN)	17,000	Under	16,600	Under	-2%	463	3%
Orange Avenue to Eastlake Parkway	Prime (6 LN)	20,000	Under	20,600	Under	-3%	154	1%
Eastlake Parkway to Future SR 125	Prime (6 LN)	38,000	Under	36,500	Under	-4%	218	1%
Lane Avenue								
East H Street to Otay Lakes Road	Collector (4 LN)	11,000	Under	18,000	Under	64%	5167	29%
Crest Drive/Oleander Avenue								
Douglas Street to Telegraph Canyon Road	**Collector (2 LN)**	**11,200**	**Over**	**11,400**	**Over**	**2%**	**0**	**0%**
Telegraph Canyon Road to Naples Street	Collector (3 LN)	9,000	Under	8,400	Under	-7%	80	1%
Naples Street to Palomar Street	Collector (2 LN)	3,900	Under	4,400	Under	13%	23	1%
Palomar Street to Orange Avenue	Collector (2 LN)	6,000	Under	6,400	Under	7%	2	0%
Paseo Del Rey								
East H Street to Telegraph Canyon Road	Collector (3 LN)	11,600	Under	10,500	Under	-9%	143	1%

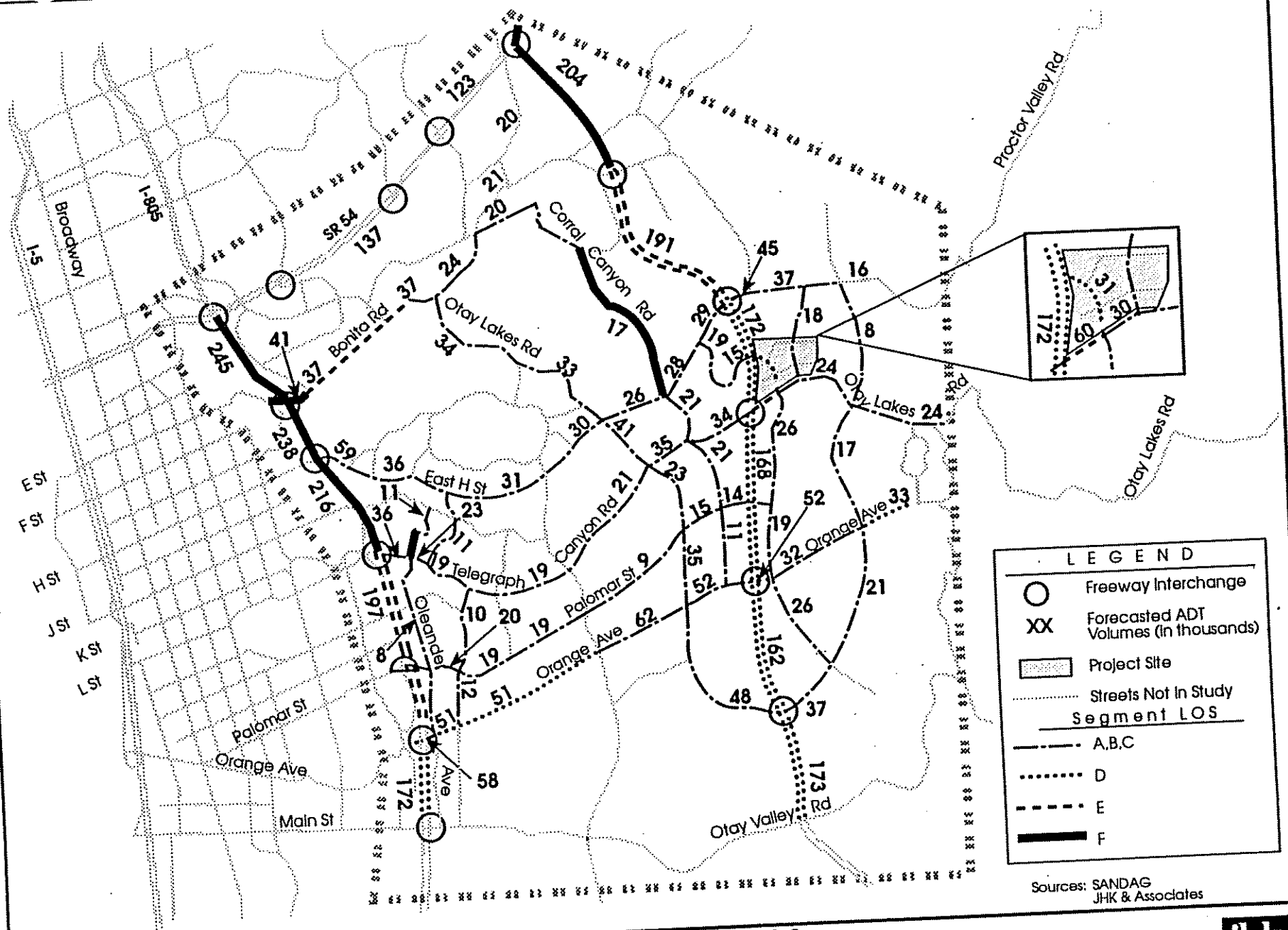

Figure 9-2

GENERAL PLAN BUILDOUT NETWORK TRAFFIC CONDITIONS WITH PROJECT (WITHOUT RAMPS AT EASTLAKE PARKWAY AND SR 125)

EASTLAKE I SPA AMENDMENT

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Table 9-1
GENERAL PLAN BUILDOUT "WITH PROJECT"ANALYSIS (WITHOUT RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project				
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline	% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
I-805								
State Route 54 to Bonita Road	Freeway (10 LN)	245,700	Over	244,700	Over	0%	682	0%
Bonita Road to East H Street	Freeway (10 LN)	236,700	Over	237,800	Over	0%	489	0%
East H Street to Telegraph Canyon Road	Freeway (10 LN)	213,600	Over	215,600	Over	1%	49	0%
Telegraph Canyon Road to Orange Avenue	Freeway (10 LN)	193,600	Under	197,200	Under	2%	212	0%
Orange Avenue to Otay Valley Road	Freeway (10 LN)	167,000	Under	172,000	Under	3%	1057	1%
Bonita Road								
I-805 to Plaza Bonita Road	Major (4 LN)	40,000	Over	41,300	Over	3%	259	1%
Plaza Bonita Road to Willow Street	Major (4 LN)	38,100	Over	36,900	Over	-3%	376	1%
Willow Street to Otay Lakes Road	Major (4 LN)	36,900	Over	37,100	Over	1%	621	2%
Otay Lakes Road to Central Avenue	Major (4 LN)	28,000	Under	24,000	Under	-14%	58	0%
East H Street								
I-805 to Hidden Vista Drive	Prime (8 LN)	55,000	Under	58,500	Under	6%	1015	2%
Hidden Vista Drive to Paseo Del Rey	Prime (6 LN)	33,600	Under	36,400	Under	8%	1148	3%
Paseo Del Rey to Paseo Ranchero	Prime (6 LN)	30,300	Under	30,700	Under	1%	1339	4%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	27,500	Under	30,400	Under	11%	1871	6%
Otay Lakes Road to Corral Canyon Road/Rutgers Avenue	Major (4 LN)	17,800	Under	26,300	Under	48%	2951	11%
Corral Canyon Road/Rutgers Avenue to Eastlake Drive	Major (4 LN)	25,000	Under	28,300	Under	13%	3345	12%
Eastlake Parkway to SR 125	Major (4 LN)	28,200	Under	28,500	Under	1%	2160	8%
SR 125 to San Miguel Road	Prime (6 LN)	45,000	Under	45,200	Under	0%	1335	3%
San Miguel Road to Hunte Parkway	Prime (6 LN)	34,400	Under	36,900	Under	7%	2278	6%
Hunte Parkway to Proctor Valley Road	Collector (4 LN)	16,300	Under	16,000	Under	-2%	992	6%
Telegraph Canyon Road								
I-805 to Crest Drive/Oleander Avenue	Prime (6 LN)	36,500	Under	36,200	Under	-1%	642	2%
Crest Drive/Oleander Avenue to Paseo Del Rey	Prime (6 LN)	23,600	Under	23,300	Under	-1%	726	3%
Paseo Del Rey to Medical Center Drive	Prime (6 LN)	18,100	Under	18,500	Under	2%	798	4%

Table 9-1 (Continued)
GENERAL PLAN BUILDOUT "WITH PROJECT" ANALYSIS (WITHOUT RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project		% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline			
Medical Center Drive								
Telegraph Canyon Road to Palomar Street	Collector (4 LN)	6,900	Under	9,900	Under	43%	224	2%
Palomar Street to Orange Avenue	Collector (4 LN)	13,600	Under	12,100	Under	-11%	92	1%
Otay Lakes Road								
Bonita Road to East H Street	Prime (6 LN)	34,500	Under	34,000	Under	-1%	1597	5%
East H Street to Telegraph Canyon Road	Prime (6 LN)	40,800	Under	40,500	Under	-1%	1393	3%
Telegraph Canyon Road to Rutgers Avenue	Prime (6 LN)	29,300	Under	34,600	Under	18%	3960	11%
Rutgers Avenue to Future SR 125	Prime (6 LN)	29,100	Under	34,000	Under	17%	5215	15%
Future SR 125 to Eastlake Parkway	**Prime (6 LN)**	47,000	Under	**59,600**	**Over**	**27%**	**15100**	**25%**
Eastlake Parkway to Lane Avenue	Prime (6 LN)	29,000	Under	29,500	Under	2%	2270	8%
Lane Avenue to Hunte Parkway	Prime (6 LN)	21,500	Under	23,500	Under	9%	3085	13%
Hunte Parkway to Wueste Road	Major (4 LN)	20,000	Under	24,400	Under	22%	2565	11%
La Media Road								
Telegraph Canyon Road to Palomar Street	Prime (6 LN)	23,100	Under	23,000	Under	0%	307	1%
Palomar Street to Orange Avenue	Prime (6 LN)	36,300	Under	35,300	Under	-3%	710	2%
Orange Avenue to Future SR 125	Prime (6 LN)	47,000	Under	48,300	Under	3%	696	1%

Note: * The segment of Eastlake Drive from Lakeshore Drive to Future SR 125 is comprised of a pair of two-lane collector facilities which form a loop circulation system which results in a doubling of the capacity of a typical two-lane collector facility.

Additional Project-Related Segment Impacts

Segment	From - To
Otay Lakes Road	Future SR 125 to Eastlake Parkway
Orange Avenue	Future SR 125 to Eastlake Parkway
Eastlake Parkway	Future SR 125 to Otay Lakes Road
Future SR 125	SR 54 to San Miguel Road

The following section provides an analysis of the General Plan Buildout with Project Conditions at major signalized study area intersections.

Signalized Intersection Capacity Analysis

To analyze the General Plan Buildout with Proposed Project Conditions of the major signalized intersections within the study area, forecasted ADT volumes were taken from the Combined Southbay Transportation Model.

All major signalized intersections analyzed under the General Plan Base Condition were reanalyzed with project traffic added to the network, using the intersection screening methodology detailed in Chapter 2 to analyze total daily entering volumes and identify potential impacts. Figure 9-3 shows the location of the four high volume intersections found under the General Plan Buildout with Project Condition. The following list summarizes the location, ADT entering volume, and stage of impact of these four intersections:

General Plan Buildout Base Condition Intersection Impacts

N/S Street	E/W Street	Entering Volume	Stage of Impact(1)
Paseo Ranchero	Orange Avenue	85,000	3
Paseo Ranchero	Main Street/Otay Valley Road	68,500	1
La Media	Orange Avenue	101,350	3

Additional Project-Related Impact Intersections

N/S Street	E/W Street	Entering Volume	Stage of Impact
Eastlake Parkway	Otay Lakes Road	69,300	1

Note: 1. See Page 2-6 for definition of Stage of Impact

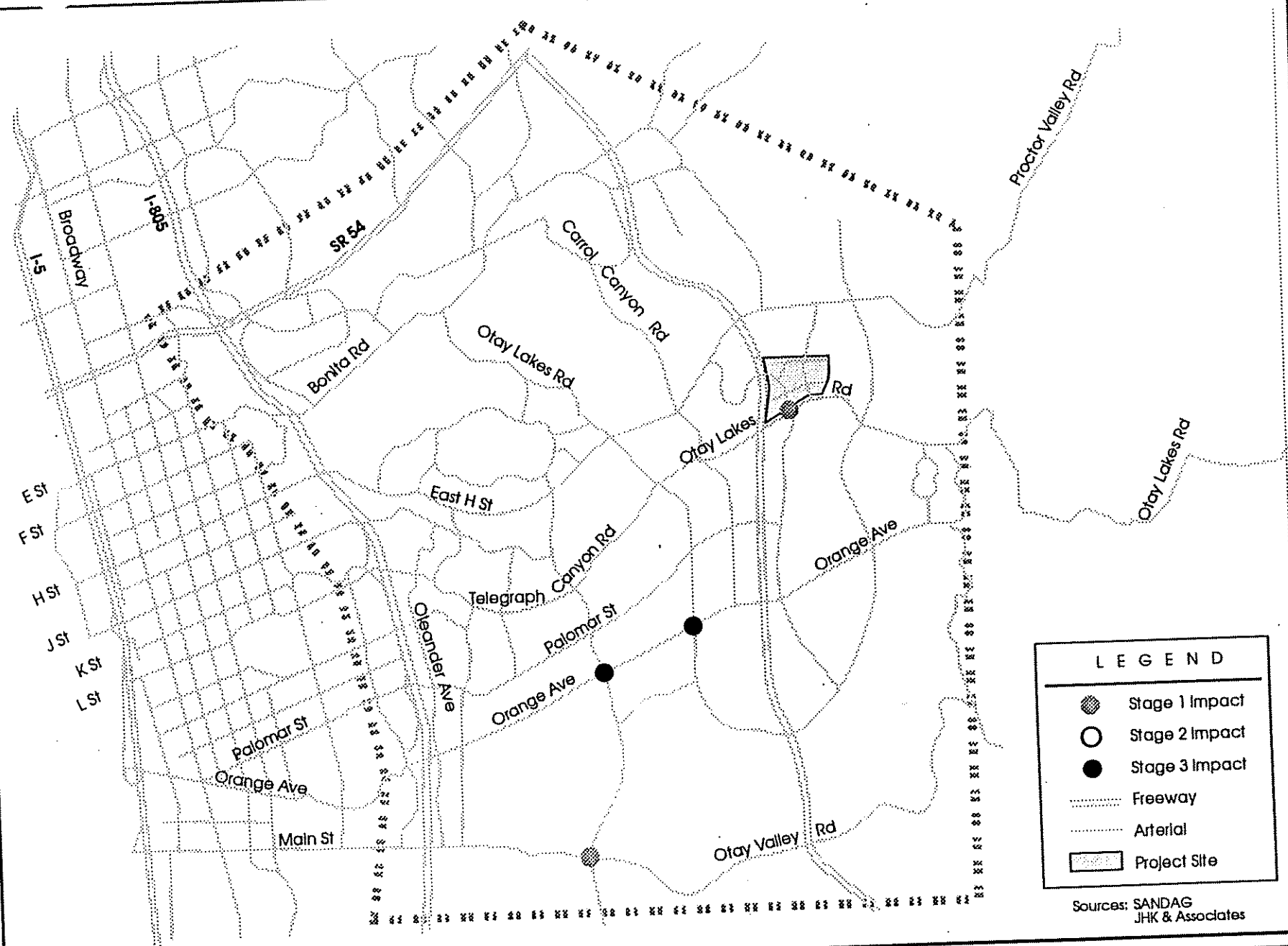

Figure 9-3

GENERAL PLAN BUILOUT NETWORK WITH PROJECT
HIGH VOLUME INTERSECTIONS
(WITHOUT RAMPS AT EASTLAKE PARKWAY AND SR 125)

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As compared to the General Plan base, this summary indicates that one additional intersection is impacted by the Proposed Project.

The following chapter provides an analysis of the General Plan Buildout with Project Condition, including a half-diamond interchange on Future SR 125 at Eastlake Parkway. As stated in Chapter 1, this network alternative was recommended by the Project Applicant as a potential mitigation measure that would address project impacts and require an amendment to the Adpoted General Plan Circulation Element.

10. GENERAL PLAN BUILDOUT ALTERNATIVE NETWORK ANALYSIS WITH PROPOSED PROJECT

As stated in Chapter 9, this chapter details the anticipated circulation network impacts under General Plan Buildout with Proposed Project Condition, under a modified network configuration. Specifically, this chapter analyzes the potential impacts of the addition of a half-diamond interchange on Future SR 125 at Eastlake Parkway with ramps to and from the north. The same land use assumptions utilized in Chapter 9 were used for this analysis under this modified network configuration. The following sections detail the anticipated impacts under this condition.

Segment Capacity Analysis

To analyze the General Plan Buildout with Proposed Project conditions on the modified circulation network for study area freeway and arterial segments, the additional half-diamond interchange (with ramps to and from the north) on Future SR 125 at Eastlake Parkway was incorporated into the Combined Southbay Transportation Model, while holding the land use assumptions for the General Plan Buildout with Proposed Project constant. Based on these network configuration modifications and land use assumptions, the Combined Southbay Transportation Model was remodeled and forecasted ADT volumes were provided by SANDAG. Arterial and freeway levels of service were calculated based on a comparison of the ADT values and functional classification of roadways and the maximum recommended ADT volumes as shown on Table 2-1. This analysis was based on the General Plan Circulation Element network alignments and functional classification of roadways as shown in Figure 8-1, and including the additional half-diamond northbound interchange on Future SR 125 at Eastlake Parkway. Figure 10-1 illustrates the project SPA Amendment Area site traffic distribution percentages of project generated traffic that were added to the General Plan base condition. Figure 10-2 shows the General Plan Buildout with Project with SR 125 northbound ramps at Eastlake Parkway operating conditions, and Table 10-1 provides a summary of the operating performance for each major study area freeway and arterial segment and a comparison with the General Plan Buildout base condition. Table 10-1 shows that the following roadway segments are expected to exceed the maximum recommended ADT volume for their functional classifications:

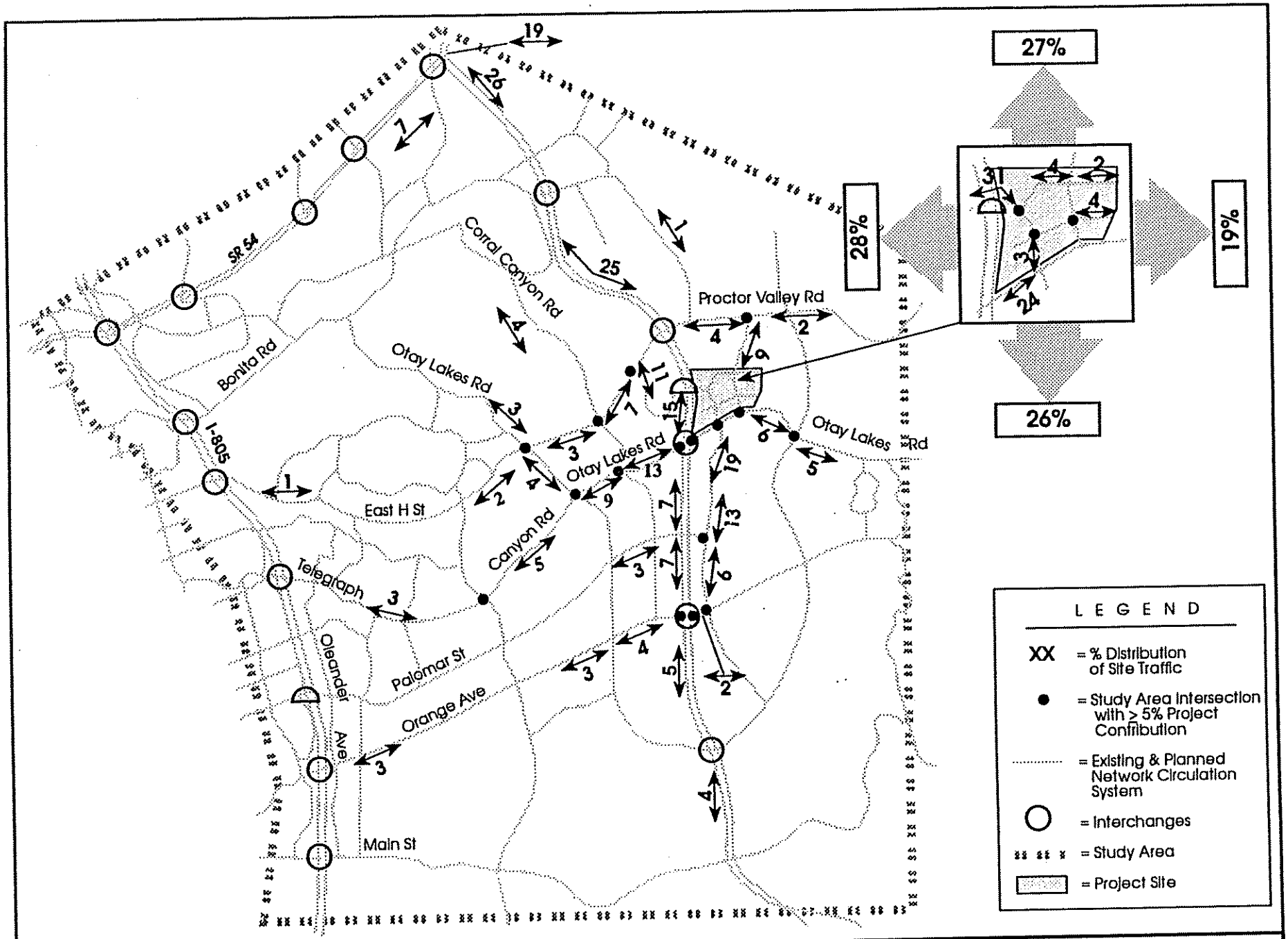

Figure 10-1

GENERAL PLAN BUILDOUT NETWORK WITH PROJECT - TRAFFIC DISTRIBUTION (WITH SR 125 RAM' AT EASTLAKE PARKWAY)

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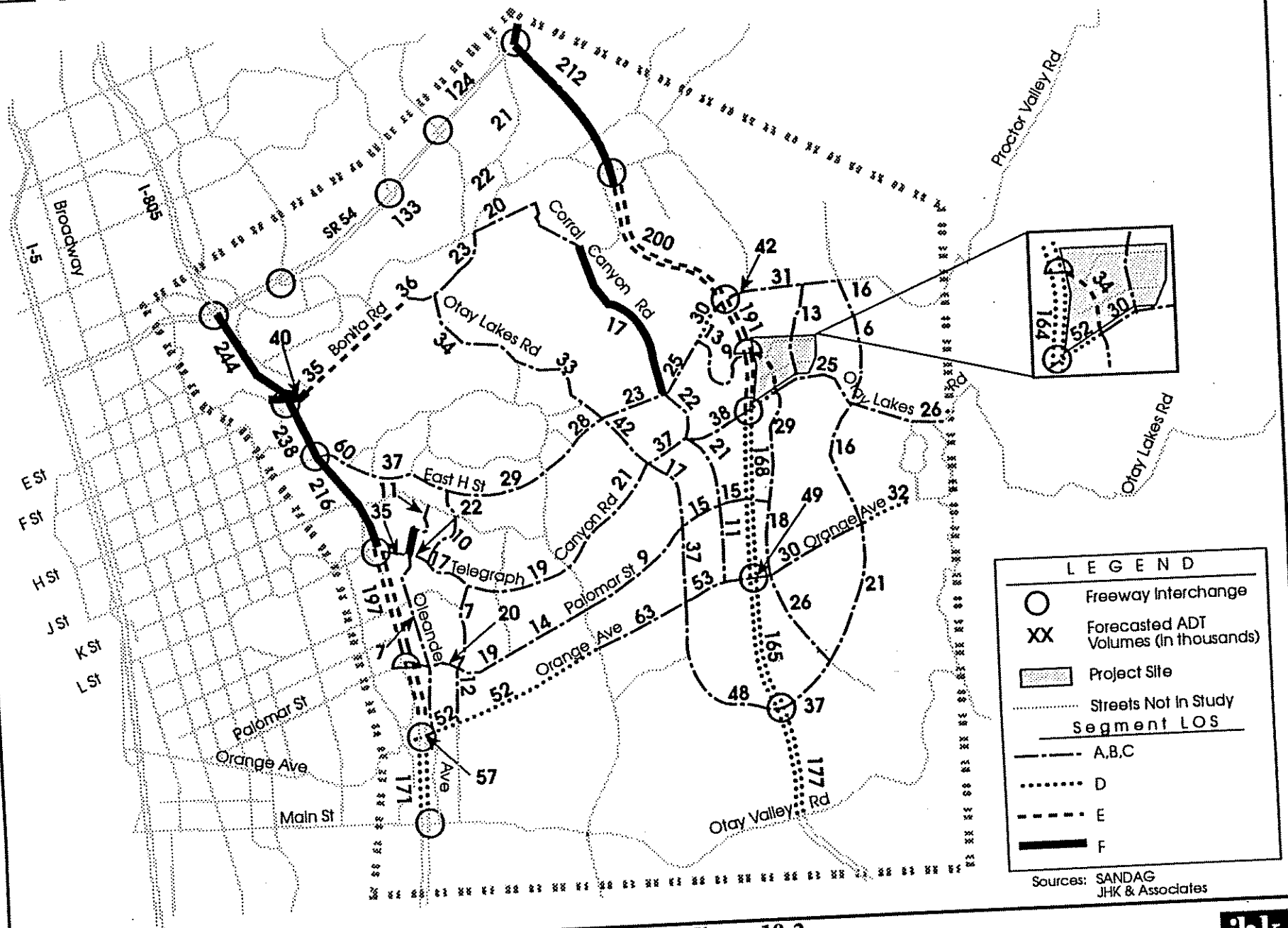

Figure 10-2

GENERAL PLAN BUILDOUT NETWORK TRAFFIC CONDITIONS WITH PROJECT (WITH RAMPS AT EASTLAKE PARKWAY AND SR 125)

EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

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Table 10-1
GENERAL PLAN BUILDOUT "WITH PROJECT"ANALYSIS (WITH RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project				
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline	% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
I-805								
State Route 54 to Bonita Road	Freeway (10 LN)	245,700	Over	244,200	Over	-1%	76	0%
Bonita Road to East H Street	Freeway (10 LN)	236,700	Over	238,300	Over	1%	73	0%
East H Street to Telegraph Canyon Road	Freeway (10 LN)	213,600	Over	215,500	Over	1%	33	0%
Telegraph Canyon Road to Orange Avenue	Freeway (10 LN)	193,600	Under	196,900	Under	2%	204	0%
Orange Avenue to Otay Valley Road	Freeway (10 LN)	167,000	Under	171,000	Under	2%	992	1%
Bonita Road								
I-805 to Plaza Bonita Road	Major (4 LN)	40,000	Over	39,700	Over	-1%	15	0%
Plaza Bonita Road to Willow Street	Major (4 LN)	38,100	Over	35,100	Over	-8%	100	0%
Willow Street to Otay Lakes Road	Major (4 LN)	36,900	Over	35,800	Over	-3%	259	1%
Otay Lakes Road to Central Avenue	Major (4 LN)	28,000	Under	23,000	Under	-18%	24	0%
East H Street								
I-805 to Hidden Vista Drive	Prime (8 LN)	55,000	Under	60,400	Under	10%	507	1%
Hidden Vista Drive to Paseo Del Rey	Prime (6 LN)	33,600	Under	36,900	Under	10%	621	2%
Paseo Del Rey to Paseo Ranchero	Prime (6 LN)	30,300	Under	29,000	Under	-4%	724	2%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	27,500	Under	28,200	Under	3%	1113	4%
Otay Lakes Road to Corral Canyon Road/Rutgers Avenue	Major (4 LN)	17,800	Under	23,000	Under	29%	1368	6%
Corral Canyon Road/Rutgers Avenue to Eastlake Parkway	Major (4 LN)	25,000	Under	25,000	Under	0%	1371	5%
Eastlake Parkway to SR 125	Major (4 LN)	28,200	Under	30,000	Under	6%	3109	10%
SR 125 to San Miguel Road	Prime (6 LN)	45,000	Under	42,400	Under	-6%	1968	5%
San Miguel Road to Hunte Parkway	Prime (6 LN)	34,400	Under	31,200	Under	-9%	1670	5%
Hunte Parkway to Proctor Valley Road	Collector (4 LN)	16,300	Under	16,000	Under	-2%	930	6%
Telegraph Canyon Road								
I-805 to Crest Drive/Oleander Avenue	Prime (6 LN)	36,500	Under	34,700	Under	-5	610	2
Crest Drive/Oleander Avenue to Paseo Del Rey	Prime (6 LN)	23,600	Under	21,900	Under	-7	687	3

Table 10-1 (Continued)
GENERAL PLAN BUILDOUT "WITH PROJECT" ANALYSIS (WITH RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project		% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline			
Telegraph Canyon Road (Continued)								
Paseo Del Rey to Medical Center Drive	Prime (6 LN)	18,100	Under	17,400	Under	-4%	806	5%
Medical Center Drive to Paseo Ranchero	Prime (6 LN)	19,500	Under	19,000	Under	-3%	1229	6%
Paseo Ranchero to Otay Lakes Road	Prime (6 LN)	19,300	Under	20,900	Under	8%	2197	11%
Orange Avenue								
I-805 to Oleander Avenue	**Prime (6 LN)**	**57,300**	**Over**	**57,400**	**Over**	**0%**	**1304**	**2%**
Oleander Avenue to Brandywine Avenue	**Prime (6 LN)**	**51,200**	**Over**	**51,600**	**Over**	**1%**	**1302**	**3%**
Brandywine Avenue to Paseo Ranchero	**Prime (6 LN)**	**50,800**	**Over**	**51,700**	**Over**	**2%**	**1429**	**3%**
Paseo Ranchero to La Media Road	Expressway (6 LN)	61,000	Under	62,900	Under	3%	1515	2%
La Media Road to Future SR 125	Expressway (6 LN)	51,800	Under	53,200	Under	3%	1652	3%
Future SR 125 to Eastlake Parkway	Prime (6 LN)	49,300	Under	48,600	Under	-1%	978	2%
Eastlake Parkway to Hunte Parkway	Prime (6 LN)	29,000	Under	30,400	Under	5%	68	0%
Hunte Parkway to Wueste Road	**Major (4 LN)**	**30,000**	**Over**	**31,500**	**Over**	**5%**	**79**	**0%**
Palomar Street								
I-805 to Crest Drive/Oleander Avenue	Major (4 LN)	25,300	Under	25,700	Under	2%	169	1%
Crest Drive/Oleander Avenue to Medical Center Drive	Major (4 LN)	20,300	Under	19,700	Under	-3%	175	1%
Medical Center Drive to Paseo Ranchero	Major (4 LN)	19,200	Under	18,600	Under	-3%	342	2%
Paseo Ranchero to La Media Road	Collector (4 LN)	9,500	Under	9,000	Under	-5%	643	7%
La Media to Corral Canyon Road/Rutgers Avenue	Collector (4 LN)	14,100	Under	15,000	Under	6%	1228	8%
Corral Canyon Road/Rutgers Avenue to Eastlake Parkway	Collector (4 LN)	12,900	Under	14,500	Under	12%	1582	11%
Corral Canyon Road/Rutgers Avenue								
Bonita Road to Blacksmith Road	Collector (4 LN)	13,900	Under	20,000	Under	44%	1494	7%
Blacksmith Road to East H Street	**Collector (3 LN)**	**13,900**	**Over**	**17,000**	**Over**	**22%**	**1494**	**9%**

Table 10-1 (Continued)
GENERAL PLAN BUILDOUT "WITH PROJECT"ANALYSIS (WITH RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project				
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline	% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
Corral Canyon Road/Rutgers Avenue (Continued)								
East H Street to Otay Lakes Road	Collector (4 LN)	10,300	Under	21,600	Under	110%	204	1%
Otay Lakes Road to Palomar Street	Collector (4 LN)	12,000	Under	21,300	Under	78%	233	1%
Palomar Street to Orange Avenue	Collector (4 LN)	10,600	Under	10,700	Under	1%	328	3%
Future SR 125								
SR 54 to San Miguel Road	**Freeway (10 LN)**	197,000	Under	**212,000**	**Over**	**8%**	**12666**	**6%**
San Miguel Road to East H Street	Freeway (10 LN)	186,000	Under	200,000	Under	8%	12666	6%
East H Street to Otay Lakes Road	Freeway (10 LN)	169,600	Under	190,900	Under	13%	11675	6%
Otay Lakes Road to Orange Avenue	Freeway (10 LN)	158,100	Under	167,900	Under	6%	3163	2%
Orange Avenue to La Media Road	Freeway (10 LN)	157,600	Under	164,800	Under	5%	2489	2%
La Media Road to Lone Star Road	Freeway (10 LN)	169,500	Under	176,600	Under	4%	1951	1%
Eastlake Drive/Parkway								
East H Street to Lakeshore Drive	Collector (4 LN)	12,000	Under	13,000	Under	8%	4070	31%
Lakeshore Drive to Future SR 125	Collector (3 LN)	6,500	Under	8,900	Under	37%	4970	56%
Future SR 125 to Otay Lakes Road	**Major (4 LN)**	21,200	Under	**33,900**	**Over**	**60%**	**27606**	**81%**
Otay Lakes Road to Palomar Street	Major (4 LN)	23,200	Under	28,600	Under	23%	8663	30%
Palomar Street to Orange Avenue	Major (4 LN)	17,300	Under	18,200	Under	5%	2859	16%
Orange Avenue to Hunte Parkway	Major (4 LN)	25,700	Under	25,600	Under	0%	1408	6%
Hunte Parkway								
Proctor Valley Road to East H Street	Collector (4 LN)	5,400	Under	5,600	Under	4%	115	2%
East H Street to Otay Lakes Road	Major (4 LN)	6,900	Under	6,300	Under	-9%	44	1%
Otay Lakes Road to Orange Avenue	Major (4 LN)	17,000	Under	16,100	Under	-5%	271	2%
Orange Avenue to Eastlake Parkway	Prime (6 LN)	20,000	Under	20,700	Under	4%	122	1%
Eastlake Parkway to Future SR 125	Prime (6 LN)	38,000	Under	36,500	Under	-4%	193	1%
Lane Avenue								
East H Street to Otay Lakes Road	Collector (4 LN)	11,000	Under	13,000	Under	18%	4357	34%

Table 10-1 (Continued)
GENERAL PLAN BUILDOUT "WITH PROJECT" ANALYSIS (WITH RAMPS)
SEGMENT PERFORMANCE SUMMARY

Segment	Class	General Plan Buildout Base Condition		General Plan Buildout With Project				
		ADT	Relationship to Planning Level Capacity Guideline	ADT	Relationship to Planning Level Capacity Guideline	% Increase in ADT Forecast	SPA Amendment Area ADT	% Contribution to Link Volume
Crest Drive/Oleander Avenue								
Douglas Street to Telegraph Canyon Road	**Collector (2 LN)**	**11,200**	**Over**	**11,300**	**Over**	**1%**	**0**	**0%**
Telegraph Canyon Road to Naples Street	Collector (3 LN)	9,000	Under	8,500	Under	-6%	73	1%
Naples Street to Palomar Street	Collector (2 LN)	3,900	Under	4,300	Under	10%	18	0%
Palomar Street to Orange Avenue	Collector (2 LN)	6,000	Under	6,900	Under	15%	2	0%
Paseo Del Rey								
East H Street to Telegraph Canyon Road	Collector (3 LN)	11,600	Under	10,400	Under	-10%	123	1%
Medical Center Drive								
Telegraph Canyon Road to Palomar Street	Collector (4 LN)	6,900	Under	6,600	Under	-4%	191	3%
Palomar Street to Orange Avenue	Collector (4 LN)	13,600	Under	12,200	Under	-10%	81	1%
Otay Lakes Road								
Bonita Road to East H Street	Prime (6 LN)	34,500	Under	34,000	Under	-1%	1138	3%
East H Street to Telegraph Canyon Road	Prime (6LN)	40,800	Under	41,600	Under	2%	1720	4%
Telegraph Canyon Road to Rutgers Avenue	Prime (6 LN)	29,300	Under	37,100	Under	27%	4186	11%
Rutgers Avenue to Future SR 125	Prime (6 LN)	29,100	Under	37,700	Under	30%	5919	16%
Future SR 125 to Eastlake Parkway	**Prime (6 LN)**	47,000	Under	**52,400**	**Over**	**11%**	**11207**	**21%**
Eastlake Parkway to Lane Avenue	Prime (6 LN)	29,000	Under	30,100	Under	4%	2374	8%
Lane Avenue to Hunte Parkway	Prime (6 LN)	21,500	Under	24,800	Under	15%	2742	11%
Hunte Parkway to Wueste Road	Major (4 LN)	20,000	Under	25,900	Under	30%	2401	9%
La Media Road								
Telegraph Canyon Road to Palomar Street	Prime (6 LN)	23,100	Under	16,900	Under	-27%	261	2%
Palomar Street to Orange Avenue	Prime (6 LN)	36,300	Under	36,700	Under	1%	634	2%
Orange Avenue to Future SR 125	Prime (6 LN)	47,000	Under	48,000	Under	2%	706	1%

General Plan Buildout (Base Condition) Segment Impacts

Segment	From - To
I-805	SR 54 to Telegraph Canyon Road
Bonita Road	I-805 to Otay Lakes Road
Orange Avenue	I-805 to Paseo Ranchero
Orange Avenue	Hunte Parkway to Wueste Road
Corral Canyon Road/Rutgers Avenue	Blacksmith Road to East H Street
Crest Drive/Oleander Avenue	Douglas Street to Telegraph Canyon Road

Additional Project-Related Segment Impacts

Segment	From - To
Otay Lakes Road	Future SR 125 to Eastlake Parkway
Eastlake Parkway	Future SR 125 to Otay Lakes Road
Future SR 125	SR 54 to San Miguel Road

The construction of the proposed half-diamond interchange at Eastlake Parkway would relieve the capacity problem on Orange Avenue between Future SR 125 and Eastlake Parkway and allow this segment to operate under its design capacity, (LOS C). However, the other three segments would continue to exceed capacity and would require mitigation.

The following section provides an analysis of the General Plan Buildout with Project Condition study area intersections.

Signalized Intersection Capacity Analysis

To analyze the conditions of major signalized intersections within the study area, under the General Plan Buildout scenario with Proposed Project and the additional northbound ramps on SR 125 at Eastlake Parkway, ADT volumes taken from the Combined Southbay Transportation Model were used.

All major signalized intersections analyzed under the General Plan Buildout base condition were reanalyzed with project traffic and the additional SR 125 ramps added to the network, using the intersection screening methodology detailed in Chapter 2. Figure 10-3 shows the location of the three high volume intersections found under the General Plan Buildout with Project with Additional SR 125 northbound ramps condition. The following list summarizes the location, ADT entering volume, and stage of impact of these three intersections:

General Plan Buildout Base Condition
Intersection Impacts

N/S Street	E/W Street	Entering Volume	Stage of Impact[1]
Paseo Ranchero	Orange Avenue	85,150	3
Paseo Ranchero	Main Street/Otay Valley Road	68,900	1
La Media	Orange Avenue	102,850	3

Additional Project-Related Impacted Intersections

N/S Street	E/W Street	Entering Volume	Stage of Impact
None			

Note: 1. See page 2-6 for definition of Stage of Impact

As compared to the General Plan base, this summary indicates that no additional intersections are impacted by the proposed project under this network scenario. More importantly, the intersection of Eastlake Parkway and Otay Lakes Road is no longer impacted under this condition with the addition of the half-diamond interchange ramps at Eastlake Parkway. Thus, the list of project related mitigation measures in Chapter 12 will include this interchange as a required improvement necessary to provide acceptable traffic operations within the study area.

The following chapter contains a Buildout site access review based on traffic activity expected under the General Plan Buildout with Proposed Project Condition. The peak hour operating conditions at the critical intersections at or near the project site, along with a final analysis of the mid-block signal on Otay Lakes Road between Future SR 125 and Eastlake Parkway is provided in Chapter 11.

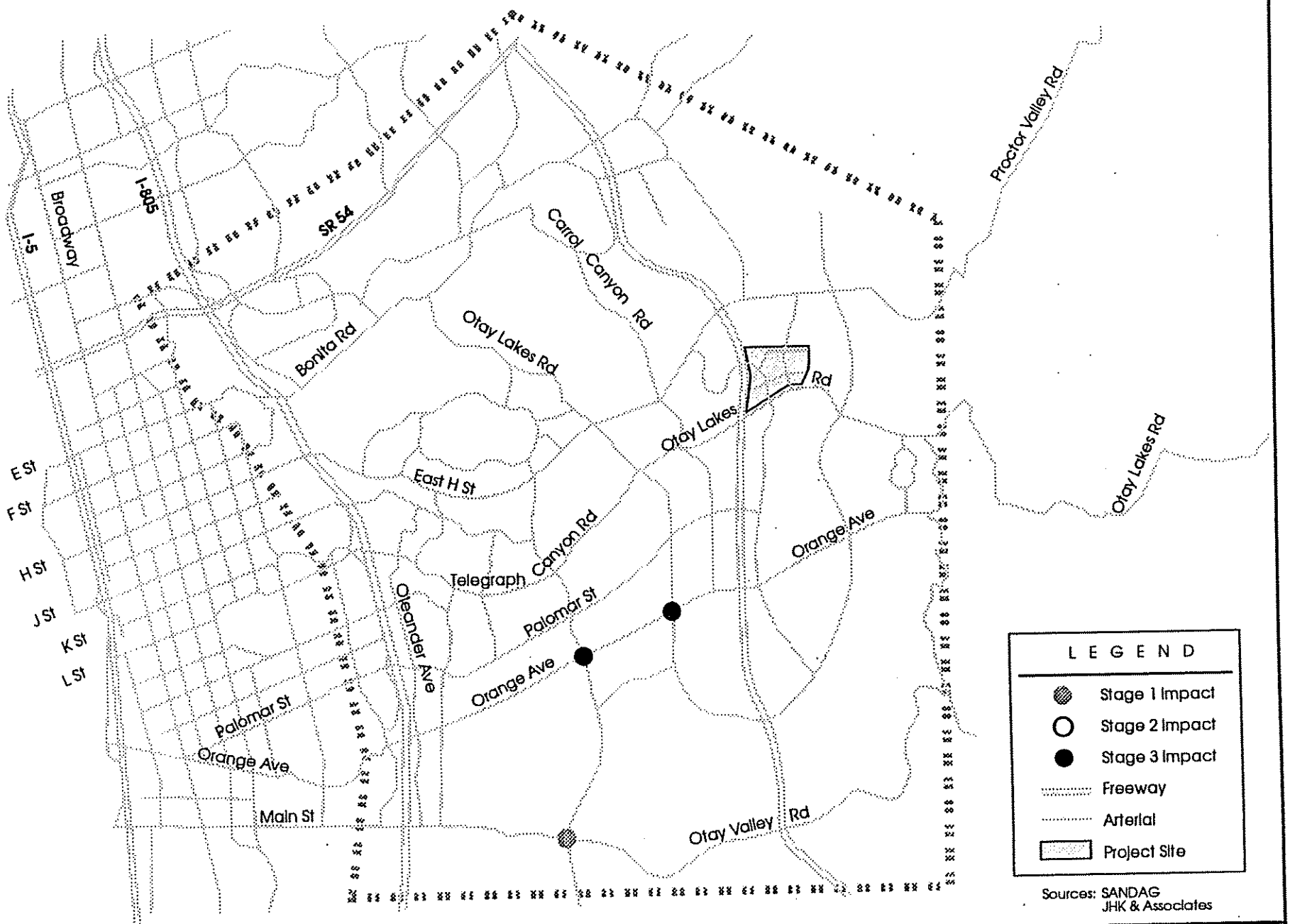

Figure 10-3

GENERAL PLAN BUILOUT NETWORK
HIGH VOLUME INTERSECTIONS
(WITH RAMPS AT STLAKE PARKWAY AND SR 125)

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11. ANALYSIS OF SITE ACCESS ALTERNATIVES GENERAL PLAN BUILDOUT CONDITIONS

Several access alternatives were analyzed to determine the best method of providing access from the project site to the street system under the General Plan horizon year. These access alternatives were developed based on analysis of the following key issues:

- Project Site Land Use: General Plan or Proposed Project.

- Access from Eastlake Parkway to SR 125: No Access or Provision of Ramps from Eastlake Parkway to and from SR 125 to the North.

- Access from the Project Site to Otay Lakes Road via a mid-block intersection on Otay Lakes Road between SR 125 and Eastlake Parkway: No access, Right Turn In/Out Access , Right Turn Access plus Left Turn in Access, or Full Access.

- Potential access from the SR 125/Otay Lakes Road interchange directly to the Project Site.

These issues are illustrated in Figure 11-1.

The analysis of alternatives was based on peak hour operations at the following signalized intersections:

- Otay Lakes Road/SR 125 Southbound
- Otay Lakes Road/SR 125 Northbound
- Otay Lakes Road/Project Access Drive
- Otay Lakes Road/Eastlake Parkway
- Eastlake Parkway/Fenton Street
- Eastlake Parkway/Miller Road
- Eastlake Parkway/SR 125 Southbound

It should be noted that some of the intersections did not exist in certain access scenarios. The intersection of Eastlake Parkway and the SR 125 Northbound Ramp was considered to operate satisfactorily as an unsignalized intersection and was not included in the analysis.

The analysis was conducted as follows:

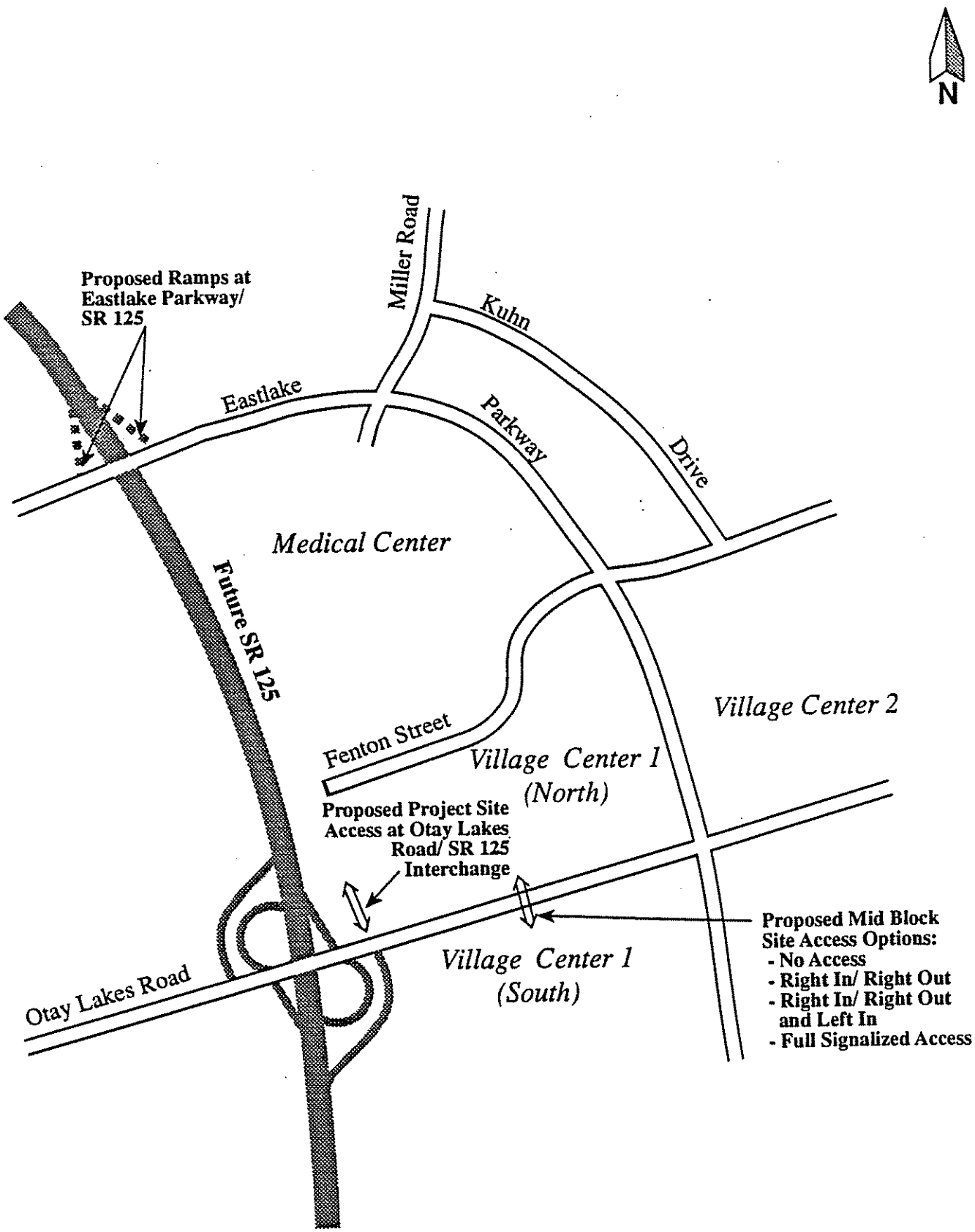

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Figure 11-1

KEY SITE ACCESS ISSUES, ADOPTED GENERAL PLAN TRAFFIC CONDITIONS

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- The General Plan Land Use was analyzed only with no access at Eastlake Parkway/SR 125 and no access at Otay Lakes Road and the Project Site.

- The proposed project scenario was analyzed with adopted General Plan roadway improvements plus assumed improvements to be implemented on roadways adjacent to the site as discussed below. For this scenario, it was assumed that there would be no ramps at Eastlake Parkway and SR 125, no direct access from the project site to the Otay Lakes Road/SR 125 interchange, and Left In plus Right In/Right Out mid-block access from the project site to Otay Lakes Road.

- A variety of access options and mitigation measures were analyzed to determine what improvements would be needed to support the proposed project and provide intersection operations which meet City standards. Level of service D is the minimum level of service which is considered to be acceptable for peak hour intersection operations.

The roadway improvements which were assumed to be implemented adjacent to the project site, above and beyond adopted General Plan roadway conditions are shown in Figure 11-2. They include the following:

- Widening of Otay Lakes Road from Eastlake Parkway to SR 125 to include eight through lanes.

- Widening of Eastlake Parkway from south of Otay Lakes Road to north of Fenton Street to include six through lanes.

- Widening of the intersection of Eastlake Parkway and Miller Road to include double lefts and a through/right lane on the Miller Road approaches and a left, through, and a through/right lane on the Eastlake Parkway approaches.

- Widening of the intersection of Eastlake Parkway and Fenton Street to include double lefts, a through, and a right turn lane on the Fenton Street approaches and double lefts, two through lanes, and a through/right lane on the Eastlake Parkway approaches.

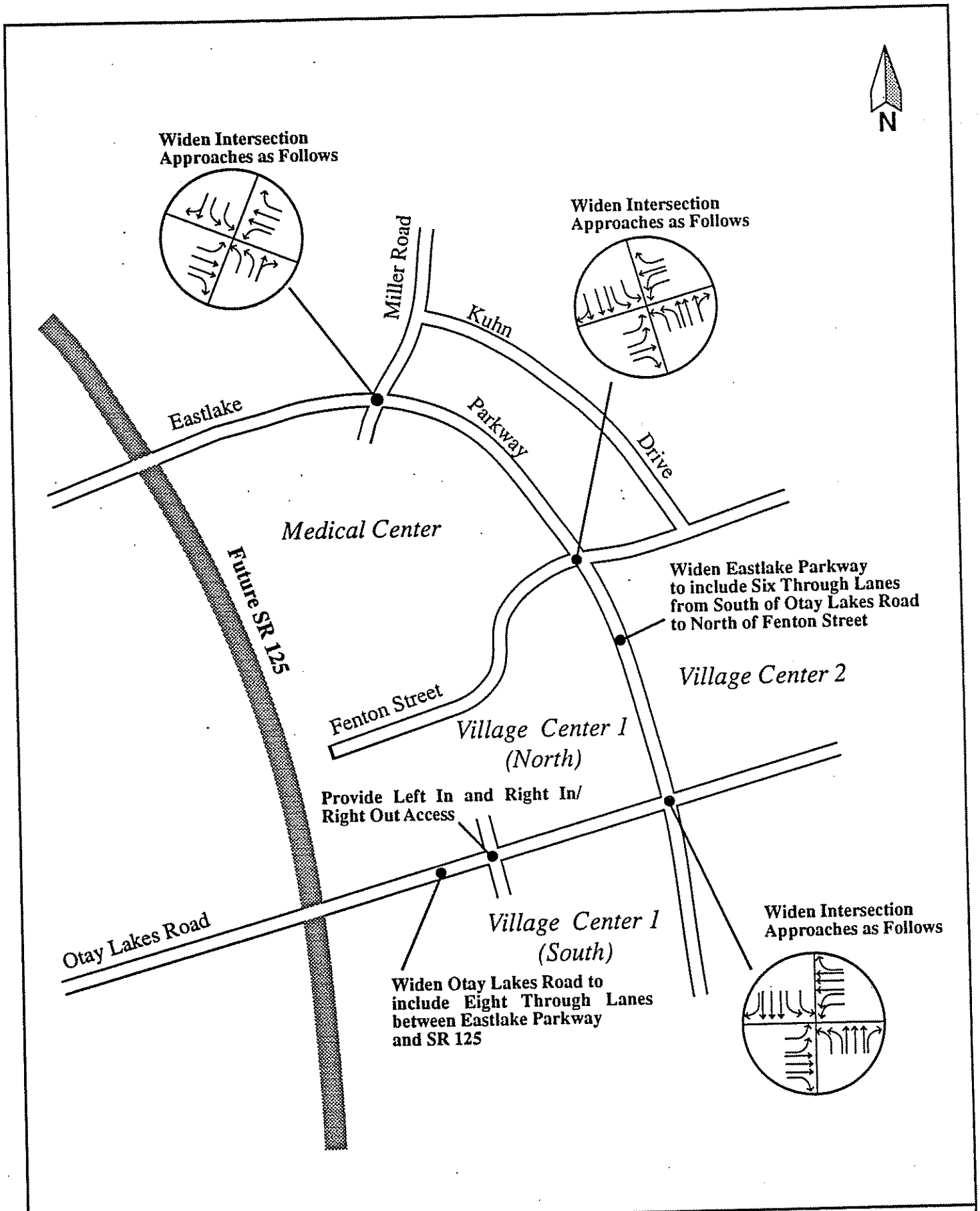

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Figure 11-2

ASSUMED PROJECT SCENARIO ROADWAY IMPROVEMENTS ABOVE AND BEYOND ADOPTED GENERAL PLAN ROADWAY CONDITIONS

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- Provision of Left In and Right In/Right Out access at the project access driveway to Otay Lakes Road.

Table 11-1 summarizes the results of the intersection capacity analysis for adopted General Plan conditions, Proposed Project conditions plus assumed roadway improvements, and two possible scenarios of mitigation. The following conclusions were drawn from the capacity analysis:

- All intersections would operate at adequate levels of service with General Plan land use and General Plan roadway conditions.

- With the Proposed Project and assumed site area roadway improvements, the intersection of Eastlake Parkway and Otay Lakes Road would operate at level of service F in the PM peak hour and would require mitigation to meet City standards for peak hour intersection operations.

- A variety of potential mitigation measures were tested to improve traffic operations at Eastlake Parkway and Otay Lakes Road. There were two scenarios of mitigation which were considered feasible and which provided full mitigation at the Eastlake Parkway/Otay Lakes Road intersection. The results of these mitigation scenarios are shown in Table 11-1 and discussed below.

- The recommended mitigation scenario is shown in Figure 11-3. It includes the provision of ramps to and from SR 125 to the north of Eastlake Parkway and a direct connection from the project site to the Otay Lakes Road/SR 125 interchange.

- The optional mitigation scenario is shown in Figure 11-4. It includes the provision of ramps to and from SR 125 north at Eastlake Parkway and the provision of full, signalized access to the project at Otay Lakes Road between Eastlake Parkway and SR 125. This mitigation scenario is feasible but not recommended because it would violate City standards for signal spacing along Otay Lakes Road. This roadway is designated as a Six-Lane Prime Arterial which should have traffic signals only at major cross-streets and should have signal spacing of one half mile. Further discussion of signal spacing on Otay Lakes Road is included below.

Table 11-1

SUMMARY OF INTERSECTION PERFORMANCE-PEAK HOUR LEVELS OF SERVICE [1] PROJECT SITE ACCESS ALTERNATIVES

	General Plan Land Use with General Plan Roadway Assumptions[2]		Proposed Project with Assumed Site Area Roadway Improvements[2]		Proposed Project with Assumed Site Area Roadway Improvements and Recommended Mitigation [3]		Proposed Project with Assumed SIte Area Roadway Improvements and Optional Mitigation [4]	
Intersection	**AM [5]**	**PM [6]**	**AM [5]**	**PM [6]**	**AM [5]**	**PM [6]**	**AM [5]**	**PM [6]**
Eastlake Parkway/SR 125 SB	-	-	-	-	B	B	B	B
Eastlake Parkway/Miller Road	C	D	C	D	C	D	C	D
Eastlake Parkway/Fenton Road	C	C	C	C	C	D	C	D
Eastlake Parkway/Otay Lakes Road	C	D	D	F	D	D	D	D
Otay Lakes Road/SR 125 SB	B	B	B	B	C	B	B	B
Otay Lakes Road/SR 125 NB	B	B	B	B	B	C	B	B
Otay Lakes Road/Project Access	-	-	-	-	-	-	C	D

Notes:

1. Level of Service determined using the methods of the 1985 Highway Capacity Manual operations procedure for signalized intersections.

2. Analysis conducted for adopted General Plan Traffic Conditions, with and without the Proposed Project.

3. Recommended mitigation includes direct access from the site to the Otay Lakes Road SR 125 interchange and the provision of ramps to and from SR 125 to the north.

4. Optional mitigation includes the provision of access to the project site from a mid-block traffic signal along Otay Lakes Road between Eastlake Parkway and SR 125 and the provision of ramps to and from SR 125 to the north at Eastlake Parkway.

5. A.M. refers to A.M. peak hour Traffic Conditions.

6. P.M. refers to P.M. peak hour Traffic Conditions.

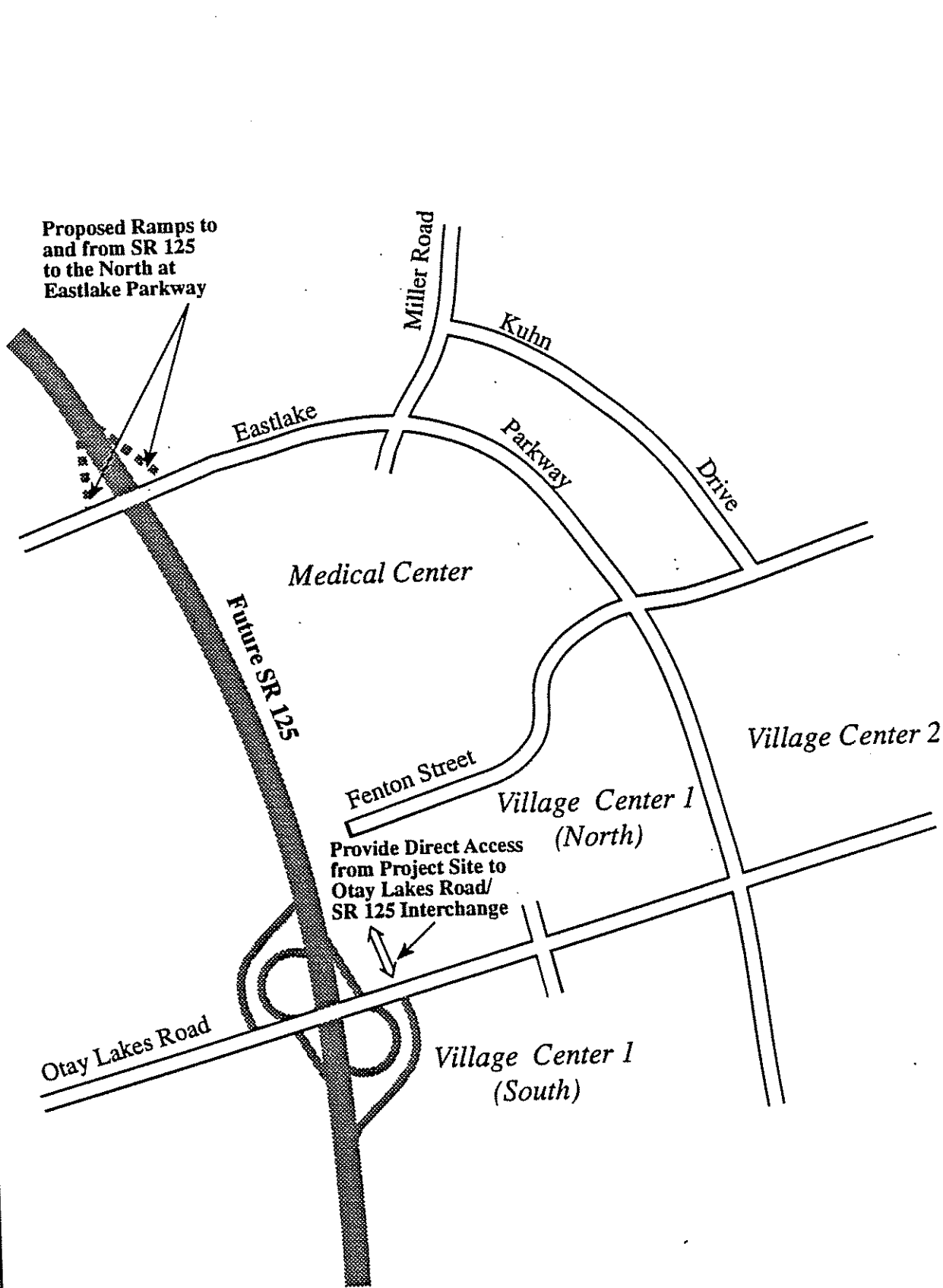

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Figure 11-3

SUMMARY OF ACCESS - RELATED MITIGATION MEASURES TO PROVIDE RECOMMENDED MITIGATION

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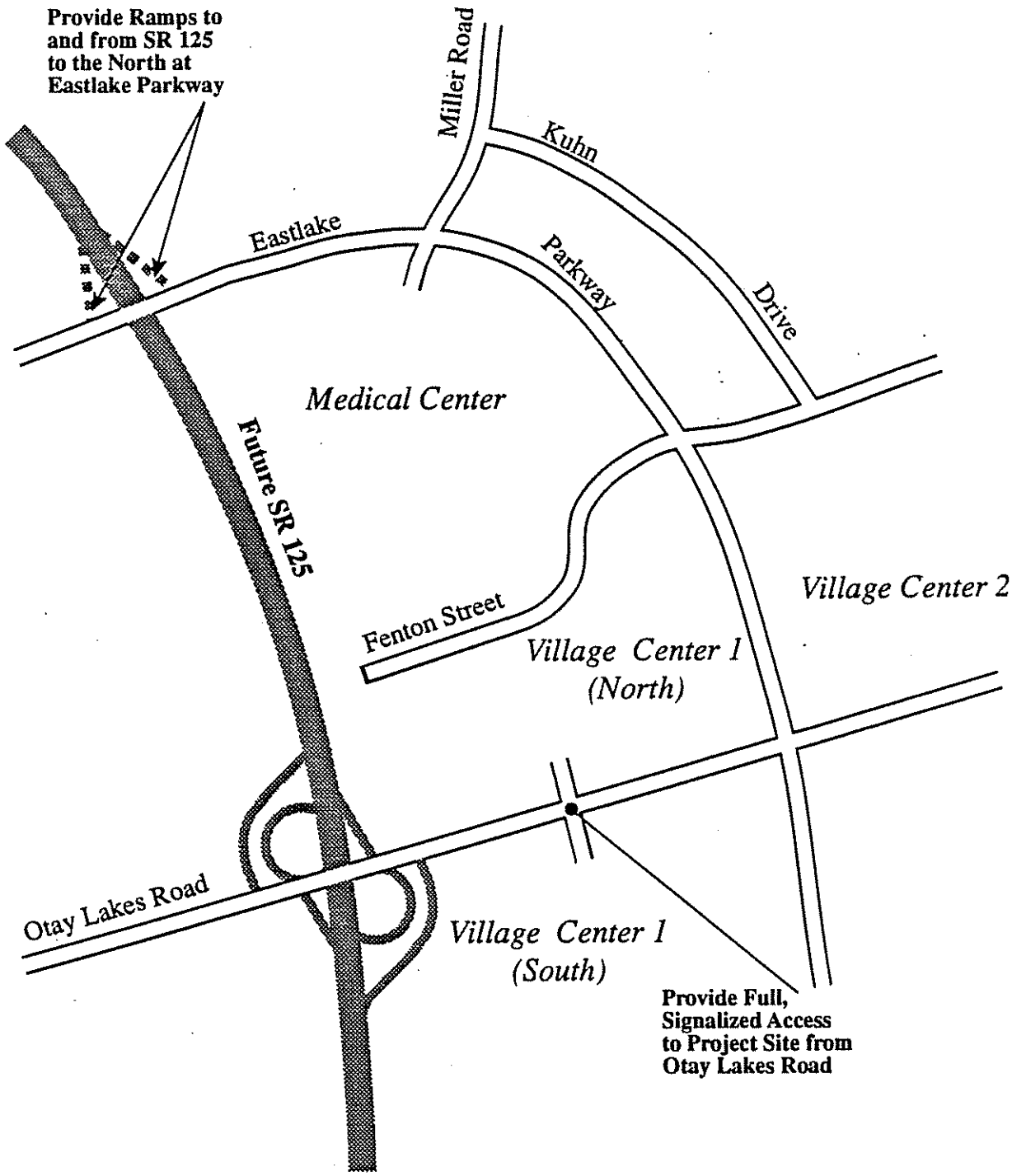

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Figure 11-4

SUMMARY OF ACCESS - RELATED MITIGATION MEASURES TO PROVIDE OPTIONAL MITIGATION

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It should be noted that various scenarios of mitigation were tested with no ramps at Eastlake Parkway and SR 125. None of these scenarios provided adequate traffic operations at the Eastlake Parkway/Otay Lakes Road interchange and it was concluded that the Eastlake Parkway/SR 125 ramps will be necessary if full mitigation is to be provided.

In the course of the analysis of project site access, two related issues were considered. These are discussed below.

SIGNAL SPACING ON OTAY LAKES ROAD

Several of the project access alternatives include full access at a mid-block location from the project site to Otay Lakes Road. If full access were provided at this location, a traffic signal would be required which was not previously anticipated to occur along Otay Lakes Road. Whenever a signal is added along a street, it will have a negative impact on through traffic since some vehicles will have to stop when they would have otherwise proceeded without delay.

The installation of a mid-block signal at the project site and Otay Lakes Road is contrary to the intent of the City's Street Design Standards Policy. On a six-lane prime arterial, such as Otay Lakes Road, access is typically restricted to abutting properties and major intersections (i.e. signals) are to be spaced at one-half mile intervals. Therefore the proposed project site signal is contrary to the design standards from the signal spacing and access point of view.

The impact of a traffic signal on through vehicles can vary widely depending on its spacing compared to other signals, traffic levels, and the speed of through traffic. A detailed signal timing study (using the PASSER signal timing model, for example) could provide additional insight into the effects of signal spacing, traffic levels, and speeds at this location.

FENTON STREET EXTENSION

One possible street improvement that has been discussed is an extension of Fenton Street west of SR 125. This would provide an alternate route to Otay Lakes Road for traffic in the area and would provide significant traffic benefits. Further study would be required prior to recommending this improvement as a mitigation measure to the project. The extension of Fenton Street is considered to be a worthwhile improvement that should be studied further, but at this time is infeasible because of its impacts to the design of SR 125 and its impacts on land use plans in the area.

It should be noted that various scenarios of mitigation were tested with no ramps at Eastlake Parkway and SR 125.. None of these scenarios provided adequate traffic operations at the Eastlake Parkway/Otay Lakes Road interchange and it was concluded that the Eastlake Parkway/SR 125 ramps will be necessary if full mitigation is to be provided.

In the course of the analysis of project site access, two related issues were considered. These are discussed below.

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12. MITIGATION

This chapter defines the required mitigation measures to achieve acceptable segment and intersection operations for the Eastlake I SPA Amendment Project. Part I of this chapter defines area-wide circulation network mitigation measures, and Part II defines site access mitigation measures for the Interim (Pre-SR 125) and Buildout conditions with the Proposed Project.

PART I - AREA-WIDE CIRCULATION NETWORK MITIGATION

As detailed in Chapters 4, 6, 8 and 9, four primary stages of area-wide circulation network analyses were conducted. This section details the recommended mitigation measures developed for each stage of analysis, where appropriate. In order to develop accurate mitigation to respond to the level of increased traffic generated by the proposed Eastlake I SPA Amendment Project, it was necessary to clearly define Base Conditions and project impacts. The following topics summarize the periods of analysis reported in this document and outline the process for developing the mitigation measures to be detailed in Part I.

- For accurate determination of impacts resulting from the approval of the Proposed Eastlake I SPA Amendment, it was necessary to establish the future "No Project" condition. In essence there is no true "No Project" (i.e. No-Build) condition due to the fact that the entire Eastlake I SPA including the SPA Amendment Area has an approved level of development and trip generation value as described in Chapter 1. The recently completed Final Eastern Chula Vista Transportation Phasing Plan Update (TPP) developed by Willdan Associates (January 1991) was utilized to establish the future Interim (Pre-SR 125) Conditions in the study area. It is assumed that circulation improvements which are necessary to accommodate the Approved Projects volume conditions would be provided with or without the Proposed Eastlake I SPA Amendment Project. Thus, any deterioration in the performance of the future circulation system beyond the levels reported for this condition are considered project related impacts.

- Based on the findings of the analysis conducted on the TPP Base conditions, project impacts for the Interim (Pre-SR 125) stage of development were defined. This analysis revealed that no additional Interim (Pre-SR 125)

mitigation measures beyond those required for the TPP Base Conditions, would be required with the implementation of the proposed project.

- The Base Condition for the Buildout stage of development was defined by the City of Chula Vista General Plan Circulation Element. Through the review and adoption process conducted by the Chula Vista City Council, the inherent deficiencies of the approved circulation network were recognized and a decision of overriding considerations was made. Thus, the circulation network impacts of the General Plan Buildout Base Condition as detailed in Chapter 8 are, in essence not considered to require mitigation for the purposes of this analysis.

- The determination of appropriate mitigation for project impacts involved the identification of additional segment and intersection deficiencies beyond those found under the General Plan Buildout Base Condition. These additional deficiencies resulting from the implementation of the Proposed Project were identified in Chapter 9 and specific physical mitigation measures are defined in this chapter. It was recognized in Chapter 9 that the project impacts further deteriorated operations on particular segments that had been identified as deficient in Chapter 8, and the level of project contribution to this degradation was reported. However, no specific additional mitigation measures have been developed for these incremental impacts.

The remainder of Part I details the specific area-wide mitigation measures developed for this project under both stages of analysis.

Mitigation Measures - Interim (Pre-SR 125) TPP Base Condition

The section defines the specific area-wide mitigation measures required for the Interim (Pre-SR 125) Conditions with or without the implementation of the proposed project.

Planned Segment Mitigation

Based on the segment capacity analysis detailed in Chapter 4, significant roadway improvements will be required on particular arterial facilities with the study area. These segment improvements, shown on Figure 12-1 and summarized on Table 12-1 will be required with or without the implementation of the Proposed Project, and are included as committed or planned improvements by the City of Chula Vista. Currently, there are no

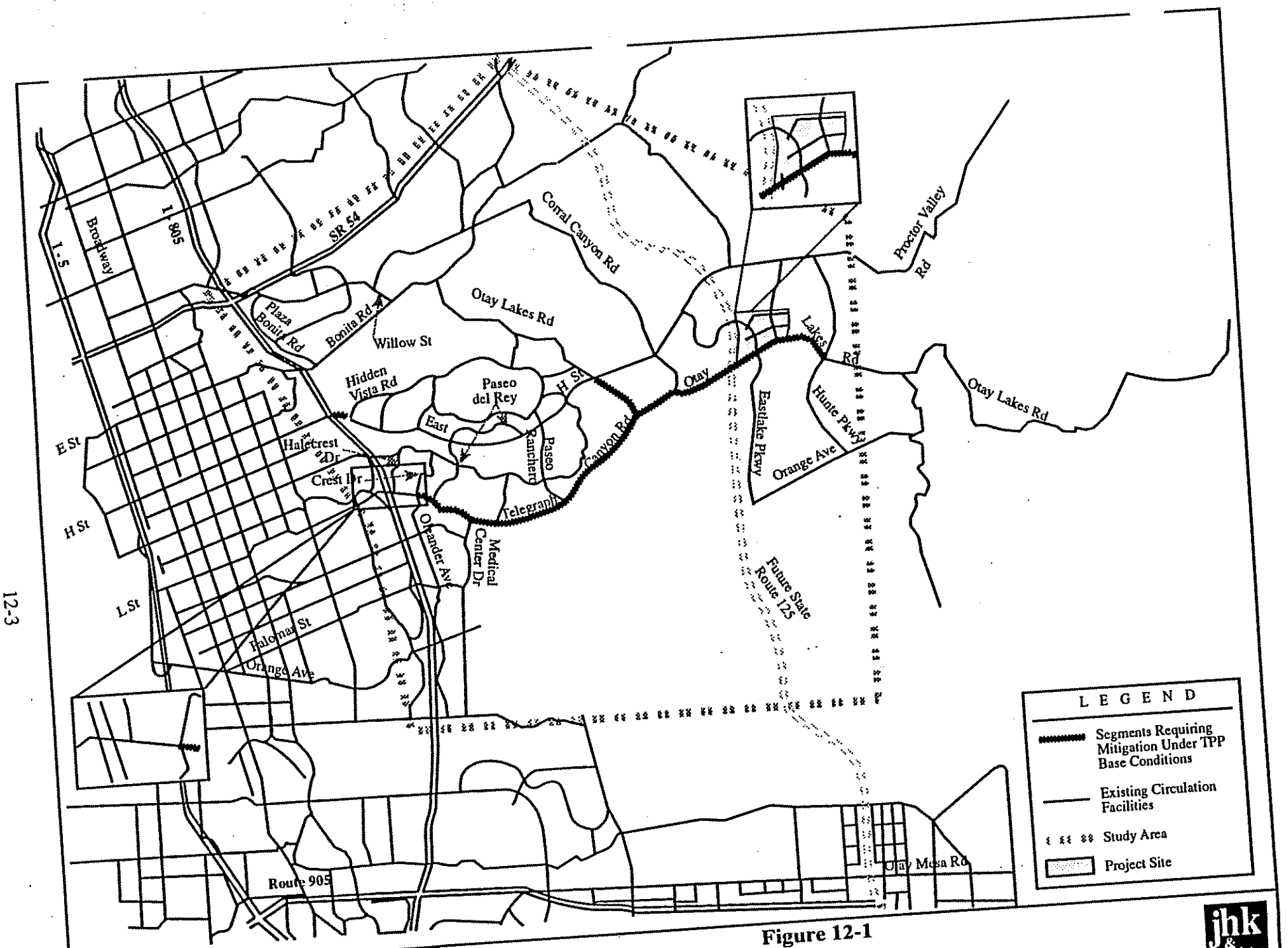

Figure 12-1

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE - SR 125) CONDITIONS
SUMMARY OF PLANNED SEGMENT MITIGATION LOCATIONS

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Table 12-1

PLANNED TPP (PRE-SR 125) BASE CONDITIONS
APPROVED PROJECTS WITHOUT MODIFIED PROJECT
PLANNED SEGMENT MITIGATION LOCATIONS

Segment	From-To	Existing Classification	Recommended Classification	Maximum Forecasted ADT on Segment	Maximum Desirable ADT Volume at LOS C	Relationship to Planning Level Capacity Guideline
Telegraph Canyon Road	Crest Drive to Paseo Ranchero	Major (4LN)	Prime (6LN)	38,600	50,000	Under
Telegraph Canyon Road	Paseo Ranchero to Otay Lakes Road	Class II Collector (3LN)	Prime (6LN)	33,800	50,000	Under
Otay Lakes Road	East H Street to Telegraph Canyon Rd	Major (4LN)	Prime (6LN)	37,000	50,000	Under
Otay Lakes Road	Telegraph Canyon Rd to Hunte Parkway	Class II Collector (3LN)	Prime (6LN)	49,400	50,000	Under
East H Street	**I-805 to Hidden Vista Drive**	**Prime (6LN)**	**Prime (8LN)**	**76,600**	**66,700**	**Over***

Note: * See "Planned Intersection Mitigation" section (Chapter 12 - Part I) for the identification of detailed intersection geometric improvements designed to mitigate this forecasted high segment volume condition under peak hour operations.

additional segment improvements planned for by the City or recommended project related mitigation in this report for the Interim (Pre-SR 125) Base Condition.

As shown on Table 12-1 the segment of East H Street from I-805 to Hidden Vista Drive is forecasted to operate over the planning level capacity guideline (LOS C) daily traffic volume of 66,700 vpd by approximately 10,100 vpd. Additionally, as detailed in Chapter 4, the following five segments are also forecasted to operate over their Level of Service C Planning Level Capacity Guideline.

TPP Base Condition With Proposed Project
Residual Segment Impacts with Mitigation

Segment	From - To
Interstate 805	State Route 54 to East H Street
Bonita Road	I-805 to Plaza Bonita Road
Bonita Road	Willow Street to Otay Lakes Road
East H Street	I-805 to Paseo Ranchero
Medical Center Drive	Telegraph Canyon Road to Medical Center Court

For all other study are segments under this Interim (Pre-SR 125) TPP Base Condition, arterial operations are forecasted to be under the LOS C Planning Level Capacity Guideline.

As stated in Chapter 2 for the analysis of Interim Conditions segment levels of service are reported as a secondary source of circulation system performance while peak hour intersection LOS provides the primary measure of traffic impacts and forms the basis for determining required mitigation. Thus, to precisely define interim conditions mitigation to ensure adequate circulation system performance, the following description of intersection mitigation is provided. This section has been specifically developed to address the potential circulation system impacts caused by the high volume segments during the A.M. and P.M. peak hours.

Planned Intersection Mitigation

Also based on the analysis detailed in Chapter 4, geometric enhancements will be required at selected intersection locations within the study area. The locations of these intersections are shown on Figure 12-2 and the recommended intersection geometric mitigations for each intersection is shown on Figure 12-3. These geometric enhancements will be necessary to fully mitigate the peak hour volume loadings associated with the TPP Base Condition, with or without the implementation of the Proposed Project.

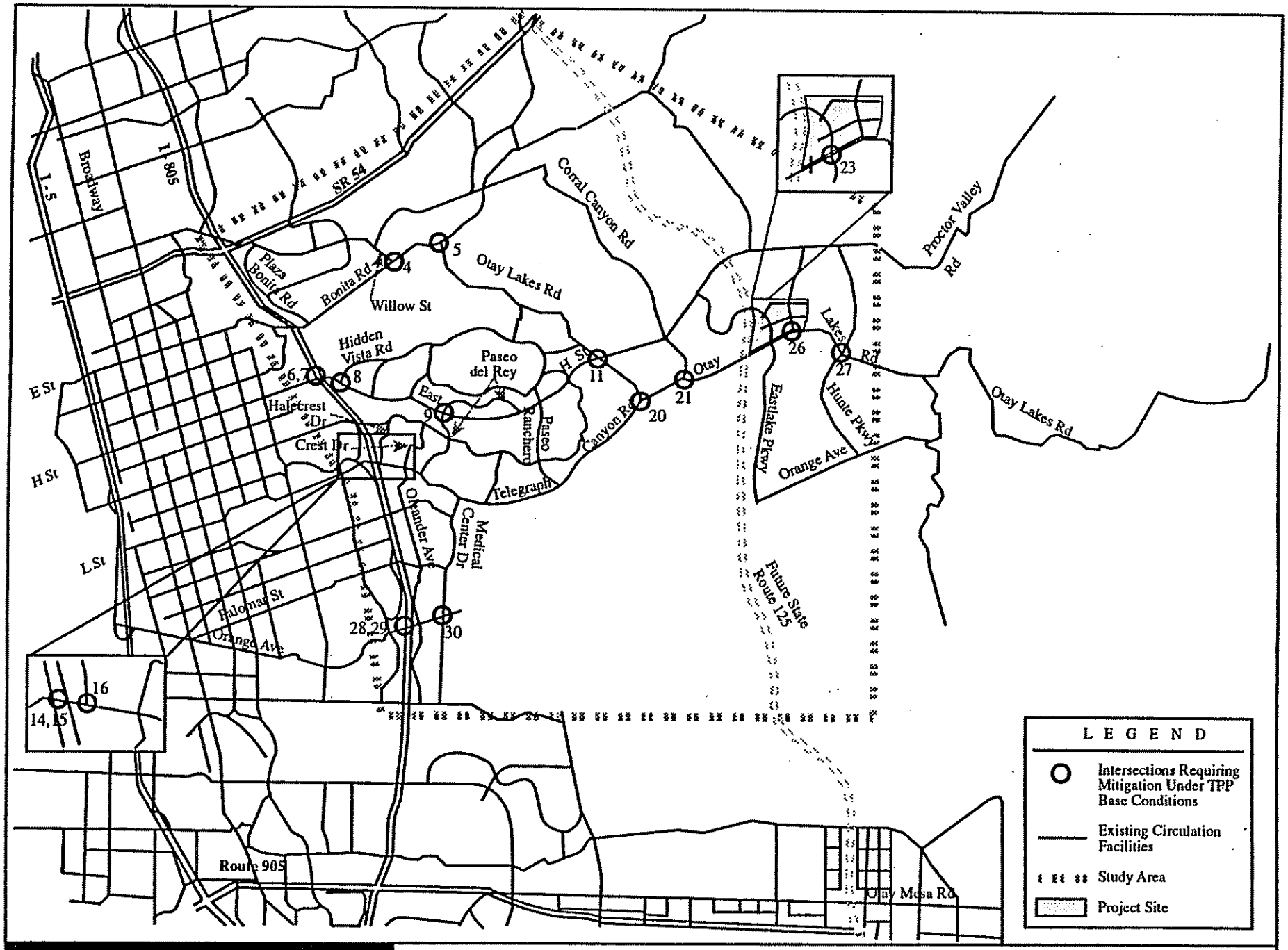

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Figure 12-2

PLANNED TPP "APPROVED PROJECTS WITHOUT MODIFIED PROJECT" (PRE - SR 125) CONDITIONS SUMMARY OF PLANNED INTERSECTION MITIGATION LOCATIONS

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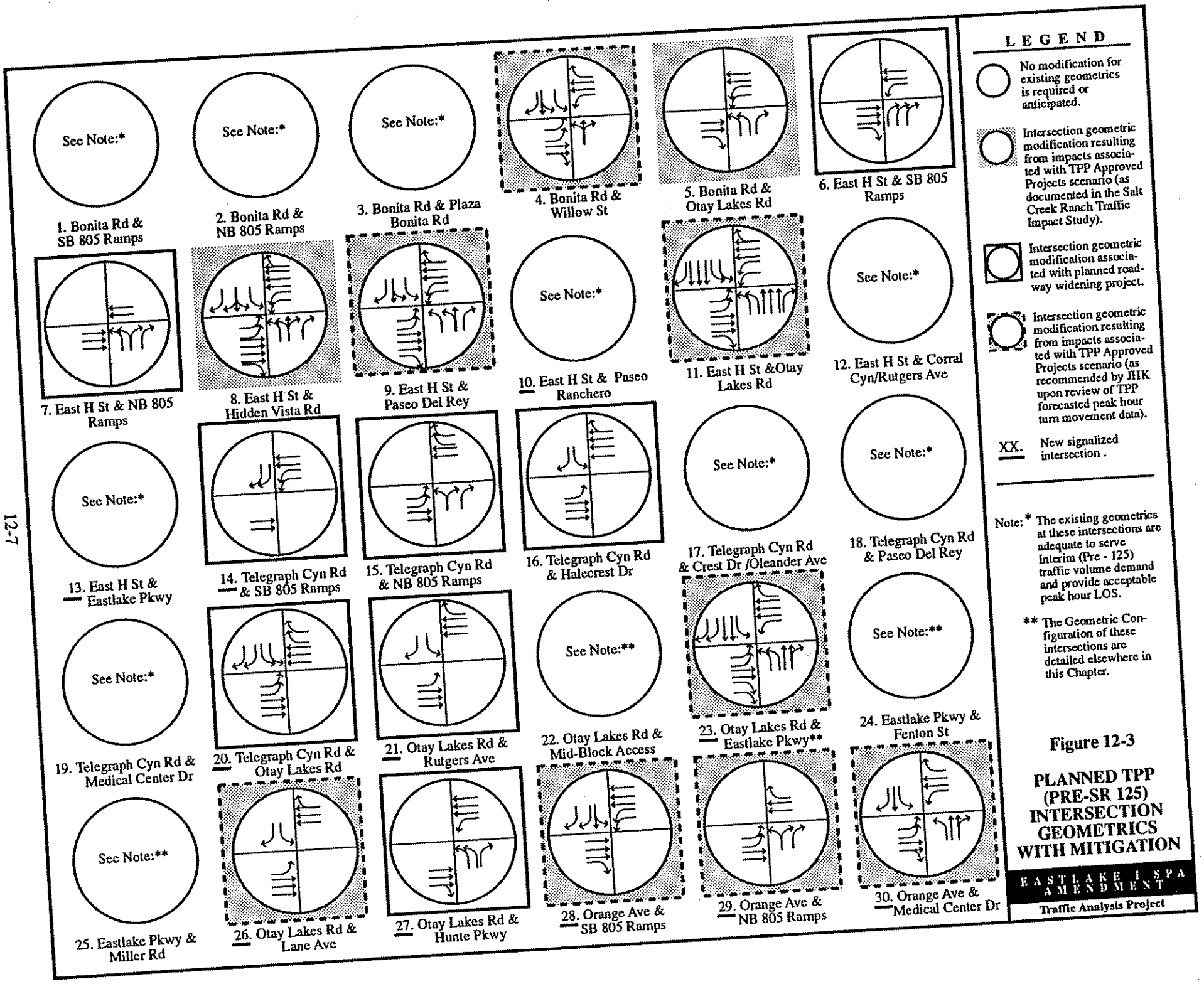
See Note:*
1. Bonita Rd & SB 805 Ramps
See Note:*
2. Bonita Rd & NB 805 Ramps
See Note:*
3. Bonita Rd & Plaza Bonita Rd
4. Bonita Rd & Willow St
5. Bonita Rd & Otay Lakes Rd
6. East H St & SB 805 Ramps
7. East H St & NB 805 Ramps
8. East H St & Hidden Vista Rd
9. East H St & Paseo Del Rey
See Note:*
10. East H St & Paseo Ranchero
11. East H St &Otay Lakes Rd
See Note:*
12. East H St & Corral Cyn/Rutgers Ave
See Note:*
13. East H St & Eastlake Pkwy
14. Telegraph Cyn Rd & SB 805 Ramps
15. Telegraph Cyn Rd & NB 805 Ramps
16. Telegraph Cyn Rd & Halecrest Dr
See Note:*
17. Telegraph Cyn Rd & Crest Dr /Oleander Ave
See Note:*
18. Telegraph Cyn Rd & Paseo Del Rey
See Note:*
19. Telegraph Cyn Rd & Medical Center Dr
20. Telegraph Cyn Rd & Otay Lakes Rd
21. Otay Lakes Rd & Rutgers Ave
See Note:**
22. Otay Lakes Rd & Mid-Block Access
23. Otay Lakes Rd & Eastlake Pkwy**
See Note:**
24. Eastlake Pkwy & Fenton St
See Note:**
25. Eastlake Pkwy & Miller Rd
26. Otay Lakes Rd & Lane Ave
27. Otay Lakes Rd & Hunte Pkwy
28. Orange Ave & SB 805 Ramps
29. Orange Ave & NB 805 Ramps
30. Orange Ave & Medical Center Dr
LEGEND
No modification for existing geometrics is required or anticipated.
Intersection geometric modification resulting from impacts associated with TPP Approved Projects scenario (as documented in the Salt Creek Ranch Traffic Impact Study).
Intersection geometric modification associated with planned roadway widening project.
Intersection geometric modification resulting from impacts associated with TPP Approved Projects scenario (as recommended by JHK upon review of TPP forecasted peak hour turn movement data).
XX. New signalized intersection .
Note:* The existing geometrics at these intersections are adequate to serve Interim (Pre - 125) traffic volume demand and provide acceptable peak hour LOS.
** The Geometric Configuration of these intersections are detailed elsewhere in this Chapter.
Figure 12-3
PLANNED TPP (PRE-SR 125) INTERSECTION GEOMETRICS WITH MITIGATION
EASTLAKE I SPA AMENDMENT
Traffic Analysis Project

Mitigation Measures - Interim (Pre-SR 125) TPP With Project Condition

As discussed in the introduction to Part I, assuming that the mitigation measures recommended for the TPP Base Condition are in place prior to the implementation of the Proposed Project, the analysis conducted in Chapter 6 revealed that no additional mitigation measures would be required as a result of the implementation of the Proposed Project for the Interim (Pre-SR 125) Condition.

Based on preliminary review of the segment and intersection impacts which were detailed in Chapter 6, JHK has reached initial conclusions regarding the types of mitigation measures which could be applied to these impacts in an attempt to achieve acceptable segment and intersection operating conditions in the future. As a result of this brief analysis, it is recommended that all Interim (Pre-SR 125) segment impacts be re-examined under Buildout conditions. Many of the freeway arterial segments which are considered impacted under the TPP Based Condition or the Proposed Project condition experience relatively insignificant levels of traffic volume contribution to the signalized intersections. In terms of peak hour intersection operations in the Eastern Chula Vista Area, it is apparent from this analysis of Interim (Pre-SR 125) Conditions that the Proposed Project places many locations at or near the Level of Service D operating threshold. However, no intersections are projected to operate over the threshold value, thus there are no significant impacts resulting from the implementation of the Proposed SPA Amendment Project (with Phase I & II of the Kaiser Medical Center Facility) on the TPP circulation system. This absorption of reserve capacity beyond the TPP Base Condition confirms the conclusions reached by Willdan & Associates that the level of trip generation resulting from the implementation of all "Approved Projects" combined with a project of this scale (12,620 Additional Daily Trips; See Table 5-4) in Eastern Chula Vista places the circulation system at a maximum stage of performance. Finally, the issue of capacity allocation over the TPP assumed value of 20,916 daily trips for the SPA Amendment Area must be addressed by the City.

As shown by this technical analysis of Interim (Pre-SR 125) Conditions it may be possible to full accommodate the level of new traffic activity that will be associated with the Proposed Project. This conclusion assumes that the project could be allocated additional capacity beyond the capacity which is currently reserved for projects included in the TPP "Approved Project" Base Condition. It is important to recognize, however, that other projects in Eastern Chula Vista (Salt Creek Ranch and Telegraph Canyon Road Development Projects) are currently being process for approval by the City. Thus, these projects collectively are applying for the same excess capacity which will exist in the future TPP Circulation System upon the completion of all "Approved Projects". The City of

Chula Vista must determine which project or projects will be allocated this additional circulation capacity prior to the approval of any of these competing projects. It is also apparent from this and other technical analyses conducted in Eastern Chula Vista, that these projects which proposed to add traffic over and above the levels projected for the TPP Base Condition, cannot be accommodated on a cumulative basis without exceeding the capacity provided by the proposed TPP network (Pre-SR 125).

Mitigation Measures - General Plan Buildout Base Conditions

As detailed in the introduction to Part I, the impacts associated with the General Plan Buildout Base Condition, detailed in Chapter 8 were deemed acceptable by the Chula Vista City Council through the adoption of the General Plan and do not require the development of mitigation for the purposes of this analysis.

Mitigation Measures - General Plan Buildout with Project Condition (With Ramps at Eastlake Parkway/SR 125)

This section defines the specific area-wide mitigation measures required for the General Plan Buildout with Proposed Project Conditions. It is important to note that the following discussion of project related mitigation measures does not include the mitigation of the General Plan Base Condition Impacts mentioned above and documented in Chapter 8. Thus, the focus of this section is to present mitigation which addresses the incremental impacts of this Proposed Project in excess of the General Plan Base Condition. The network condition which was utilized to develop the project related a mitigation measures included the implementation of crucial half diamond interchange (ramps to and from the north) at Eastlake Parkway and Future SR 125 as proposed by the project applicant. The need for this additional point of access to this important regional transportation facility was confirmed by the technical analysis performed by JHK in Chapters 10 and 11.

Planned Segment Mitigation

Based on the segment capacity analysis detailed in Chapter 10 of this document, significant roadway improvements will be required on critical arterial and freeway facilities within the study area. These segment improvements, shown on Figure 12-4 and summarized on Table 12-2 will be required prior to the implementation of the Proposed Project.

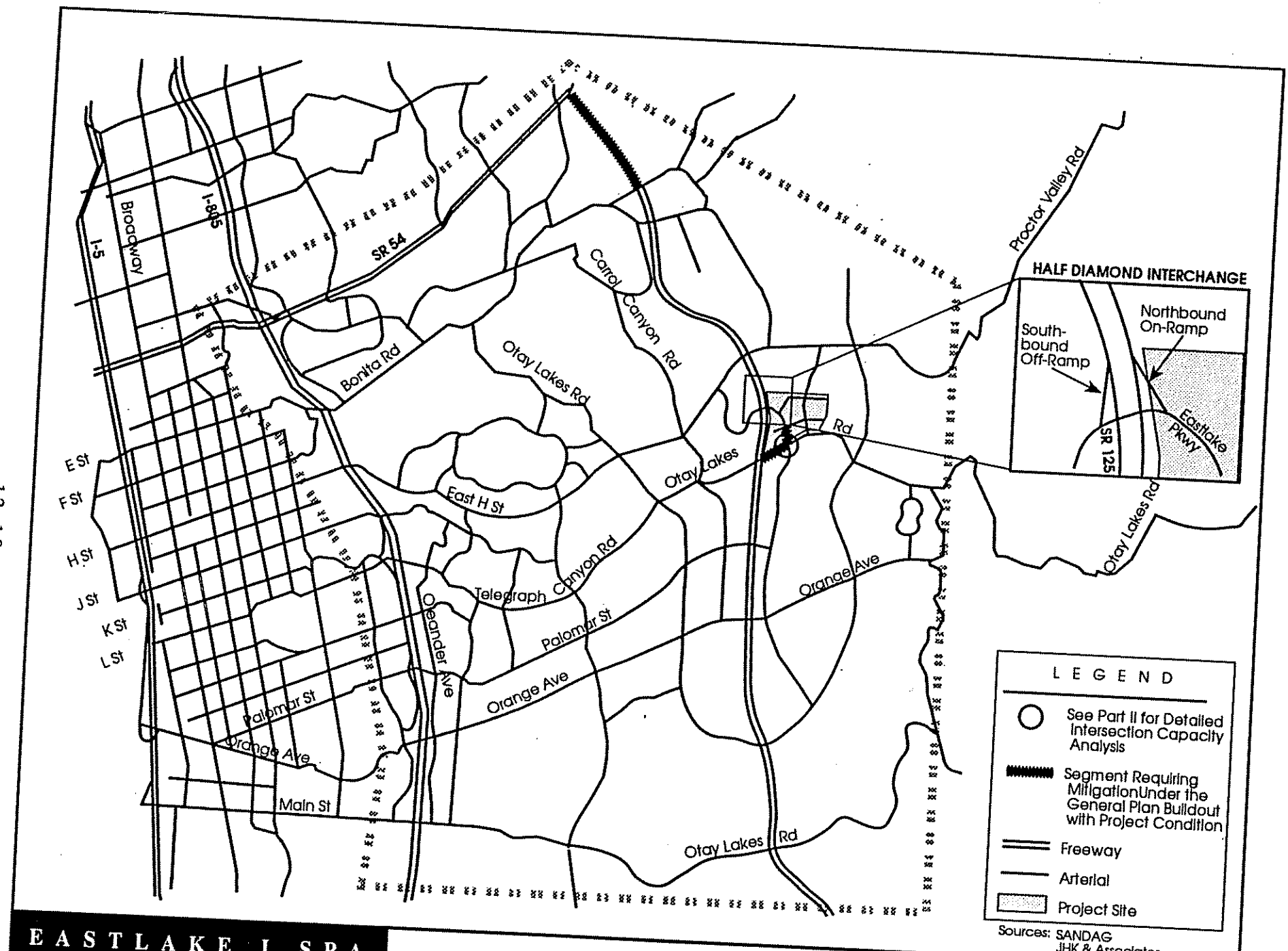

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Figure 12-4

GENERAL PLAN BUILDOUT NETWORK WITH PROJECT * SUMMARY OF RECOMMENDED MITIGATION MEASURES

jhk & associates

* with Proposed Half Diamond Interc

Table 12-2

GENERAL PLAN BUILDOUT WITH PROPOSED PROJECT CONDITION
PLANNED SEGMENT MITIGATION MEASURES

Segment	From-To	Existing Classification	Recommended Classification	Maximum Forecasted ADT on Segment*	Maximum Desirable ADT Volume at LOS C	Relationship to Planning Level Capacity Guideline
Otay Lakes Road	Future SR 125 to Eastlake Parkway	Prime (6LN)	Prime (8LN)	52,400	66,700	Under
Eastlake Parkway	Otay Lakes Road to the Northside of Fenton Street	Major (4LN)	Major (6LN)	33,900	40,000	Under
Future SR 125	**SR 54 to San Miguel Road****	**Freeway (10LN)**	**Freeway (10 LN)**	**212,000**	**200,000**	**Over**

Note:

* It is important to recognize that the segment ADT volumes shown on this table are based on the travel forecast which includes the new freeway interchange mitigation measure at Eastlake Parkway and Future SR 125 with ramps to and from the north (See Chapter 10).

** This freeway segment impact remains Significant and Unmitigable (with mitigaiton) due to the fact that the ten-lane facility design is the maximum design currently planned for by Caltrans for the SR 125 facility. It should be noted that the total daily segment volume of 212,000 vpd exceeds the maximum desirable ADT volume at LOS E (200,000 vpd) by approximately 6 percent. The Proposed Project contributes approximately 6 percent of the total daily traffic volume forecast for this link.

Source: JHK & Associates.

Planned Intersection Mitigation

Also based on the analysis detailed in Chapter 10, no additional geometric enhancements will be required at any study area intersections as a result of project related impacts under area-wide analysis procedures. However, site specific intersection mitigation analysis is provided in the following section. For a detailed discussion of these site area intersection mitigation measures, related to project specific impacts, refer to Part II of this Chapter.

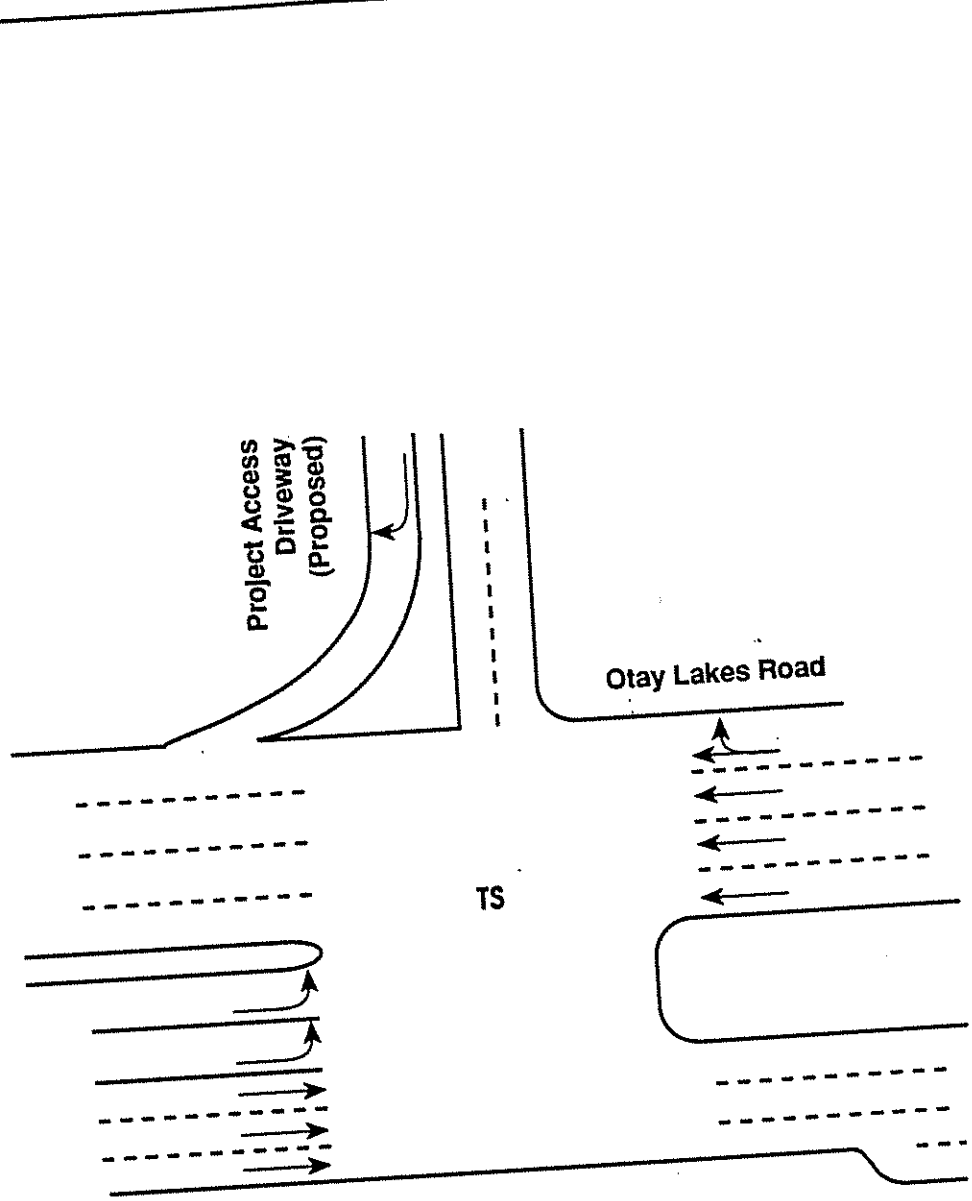
PART II - PROJECT SITE AREA MITIGATION MEASURES

In previous chapters of this report, mitigation measures were identified for the project site area separately for both Interim and Buildout Conditions. At some intersections, the improvements required for Interim and Buildout Conditions are different. It will be at the discretion of the City to determine, for each intersection, whether the Buildout level of mitigation should be implemented immediately or whether the Interim improvements should be implemented initially and implementation of Buildout mitigation should follow at a later date. In consideration of these issues, JHK has recommended a plan of intersection improvements. The recommended plan basically provides traffic capacity for each scenario of traffic with the minimum feasible amount of roadway reconstruction. Recommended intersection lane geometry and roadway improvements for Interim and Buildout Conditions are discussed below.

Recommended Circulation/Access Improvements - Interim Conditions

The recommended lane geometry for intersections near the project site under Interim (Pre-SR 125) conditions is shown in Figures 12-5 through 12-9. The following description of each of the mitigation figures is provided to clearly identify the stages of mitigation at each location.

Figure	Title	Description
12-5	Otay Lakes Road/SR 125 Northbound Off-Ramp Intersection Recommended Lane Geometry Interim Conditions	This Interim Design condition assumes that internal site roadways will be realigned to accommodate future connection from the northbound off-ramp SR 125.



Note: **TS** = Signalization Required

Figure 12-5

OTAY LAKES ROAD/SR 125 NORTHBOUND RECOMMENDED LANE GEOMETRY INTERIM CONDITIONS

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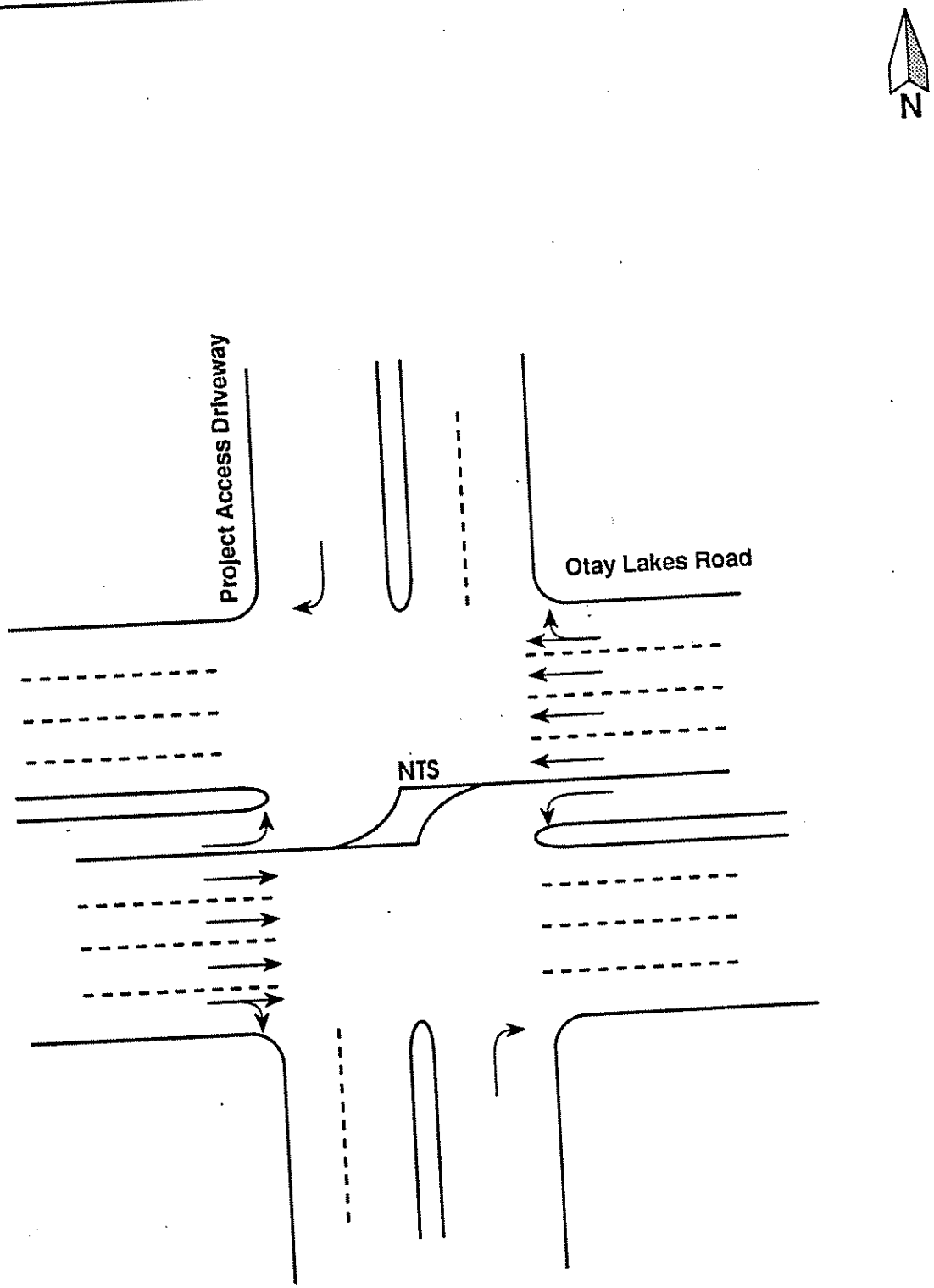
Figure	Title	Description
12-6(A)	Otay Lakes Road/Mid-Block Access Recommended Lane Geometry Interim and Buildout Conditions (With Proposed Project Access Driveway at Future SR 125 Northbound Off-ramp)	These recommended geometrics for this mid-block intersection will accommodate both Interim and Buildout traffic. This geometric condition assumes that the new Proposed Project access driveway at the Future SR 125 northbound off-ramp (See Figure 12-5) will be constructed. Thus, eliminating the need for signalization at this mid-block location.
12-6(B)	Otay Lakes Road/Mid-Block Access Recommended Lane Geometry Interim and Buildout Conditions (Without Proposed Project Access Driveway at Future SR 125 Northbound Off-ramp)	These recommended geometrics for this mid-block intersection will accommodate both Interim and Buildout traffic. This geometric condition assumes that the new Proposed Project Access Driveway at the Future SR 125 Northbound Off-ramp will not be constructed thus requiring the installation of a traffic signal at this mid-block location.
12-7(A)	Otay Lakes Road/Eastlake Parkway Recommended Lane Geometry Interim and Buildout Conditions (With Proposed Project Access Driveway at Future SR 125 Northbound Off-ramp)	These recommended geometrics for this intersection will accommodate both Interim and Buildout traffic. This geometric condition assumes that the new Proposed Project Access Driveway at the Future SR 125 Northbound Off-ramp will be constructed.
12-7(B)	Otay Lakes Road/Eastlake Parkway Recommended Lane Geometry Interim and Buildout Conditions (Without Proposed Project Access Driveway at Future SR 125 Northbound Off-ramp)	These recommended geometrics for this intersection will accommodate both Interim and Buildout traffic. This geometric condition assumes that the new Proposed Project Access Driveway at the Future SR 125 Northbound Off-ramp will not be constructed.
12-8	Eastlake Parkway/Fenton Street Recommended Lane Geometry Interim and Buildout Conditions	These recommended geometrics for this intersection will accommodate both Interim and Buildout traffic.
12-9	Eastlake Parkway/Miller Road Recommended Lane Geometry Interim and Buildout Conditions	These recommended geometrics for this intersection will accommodate both Interim and Buildout traffic.



Note: **NTS** = No Signalization Required

Figure 12-6(A)

OTAY LAKES ROAD/MID-BLOCK ACCESS RECOMMENDED LANE GEOMETRY INTERIM AND BUILOUT CONDITIONS*

* with Proposed Project Access Driveway at Future SR 125 Northbound Off Ramp

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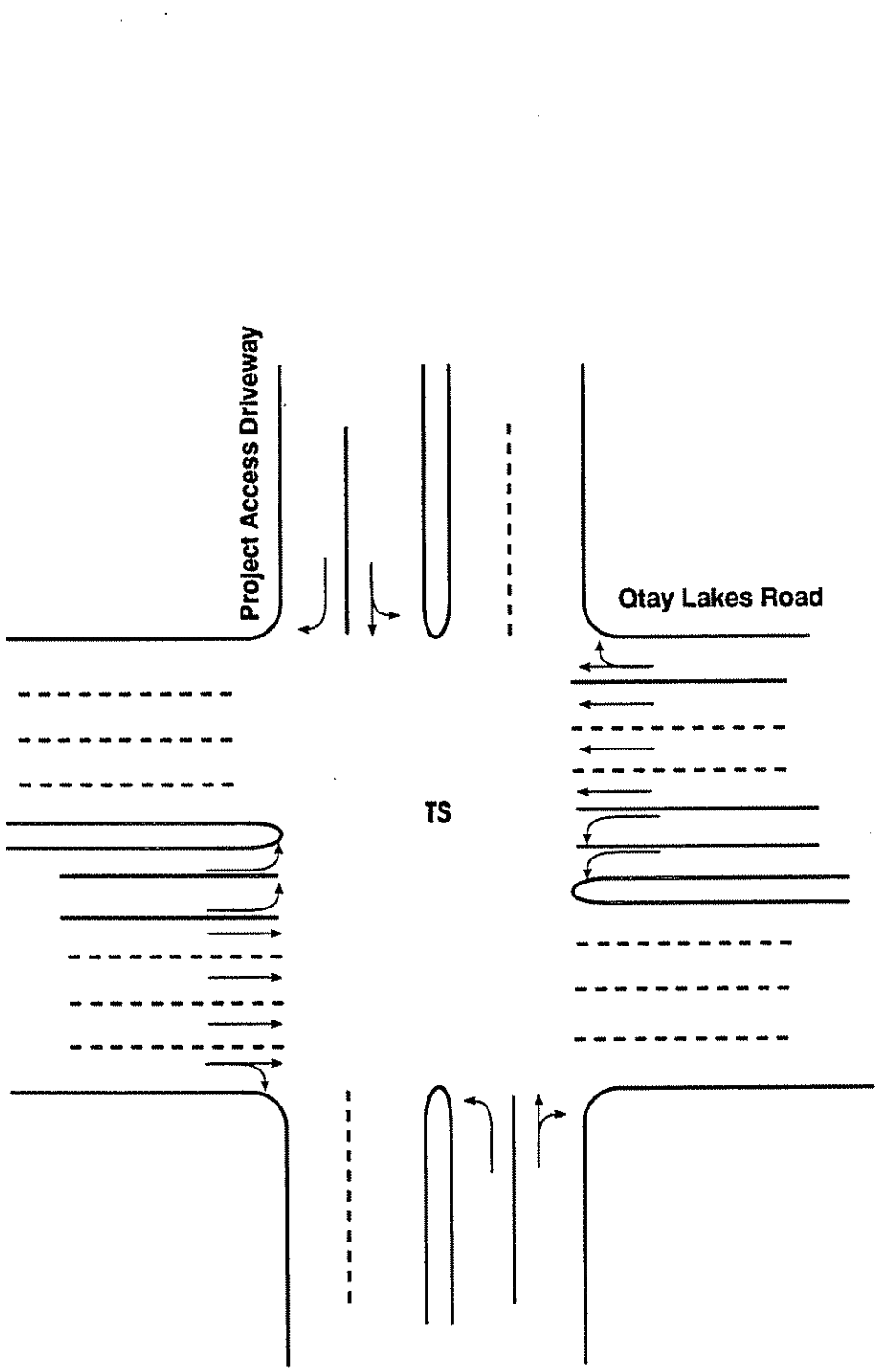

Note: **TS** = Signalization Required

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Figure 12-6(B)

OTAY LAKES ROAD/MID-BLOCK ACCESS RECOMMENDED LANE GEOMETRY INTERIM AND BUILOUT CONDITIONS*

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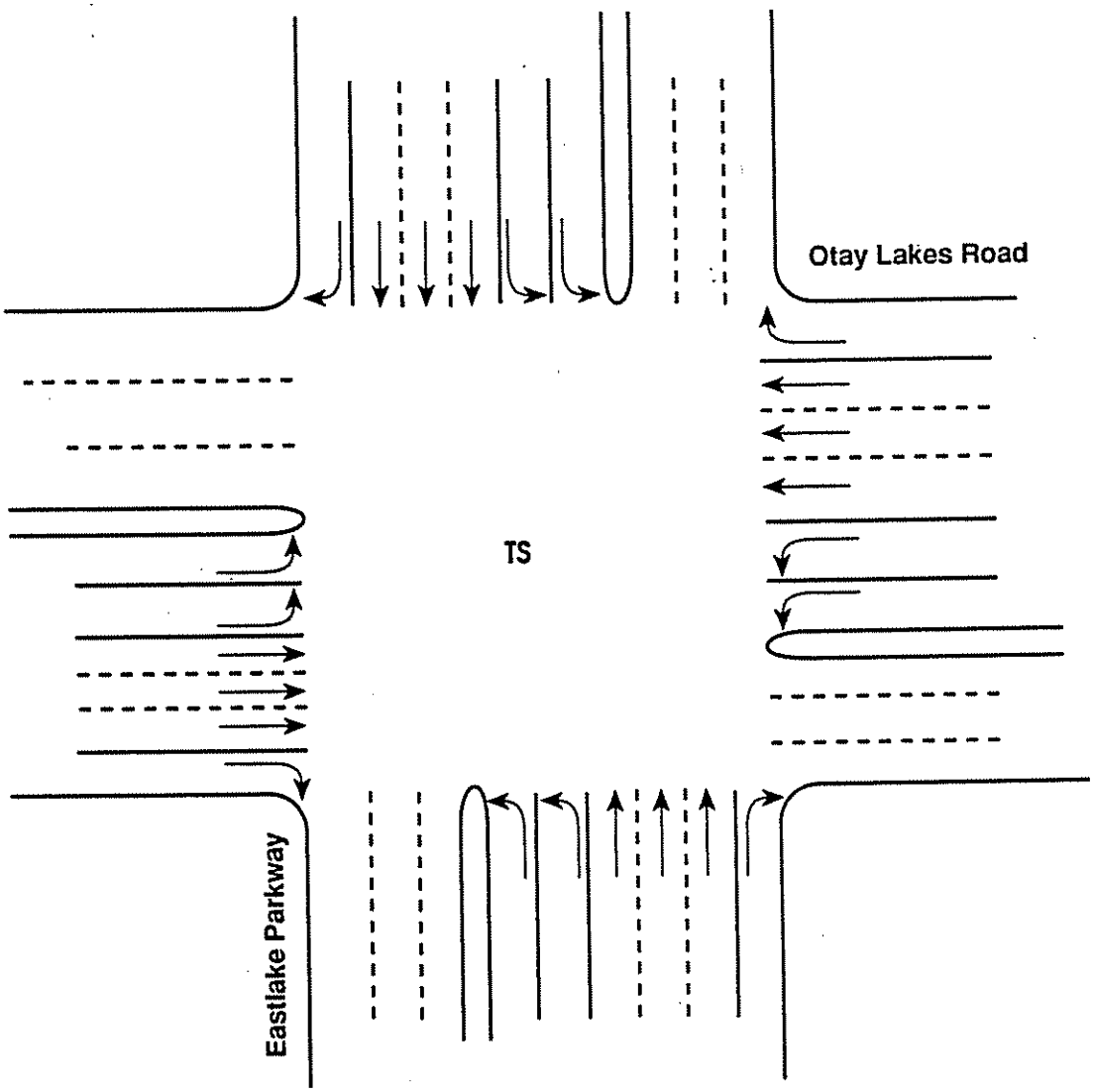
* without Proposed Project Access Driveway



Note: TS = Signalization Required

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Figure 12-7(A)

OTAY LAKES ROAD/EASTLAKE PARKWAY
RECOMMENDED LANE GEOMETRY
INTERIM AND BUILDOUT CONDITIONS*

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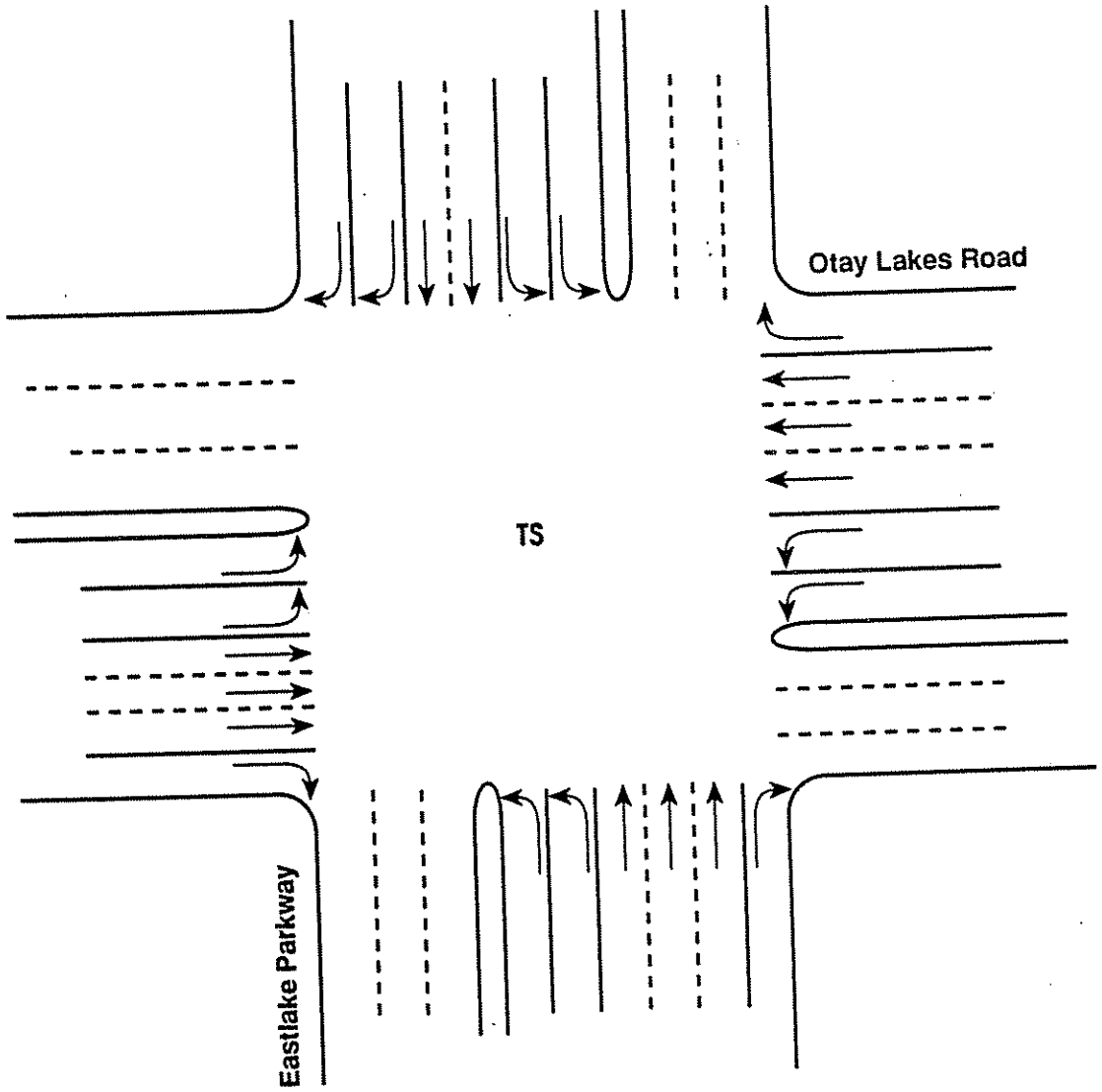
* with Proposed Project Access Driveway



Note: TS = Signalization Required

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Figure 12-7(B)

OTAY LAKES ROAD/EASTLAKE PARKWAY RECOMMENDED LANE GEOMETRY INTERIM AND BUILDOUT CONDITIONS*

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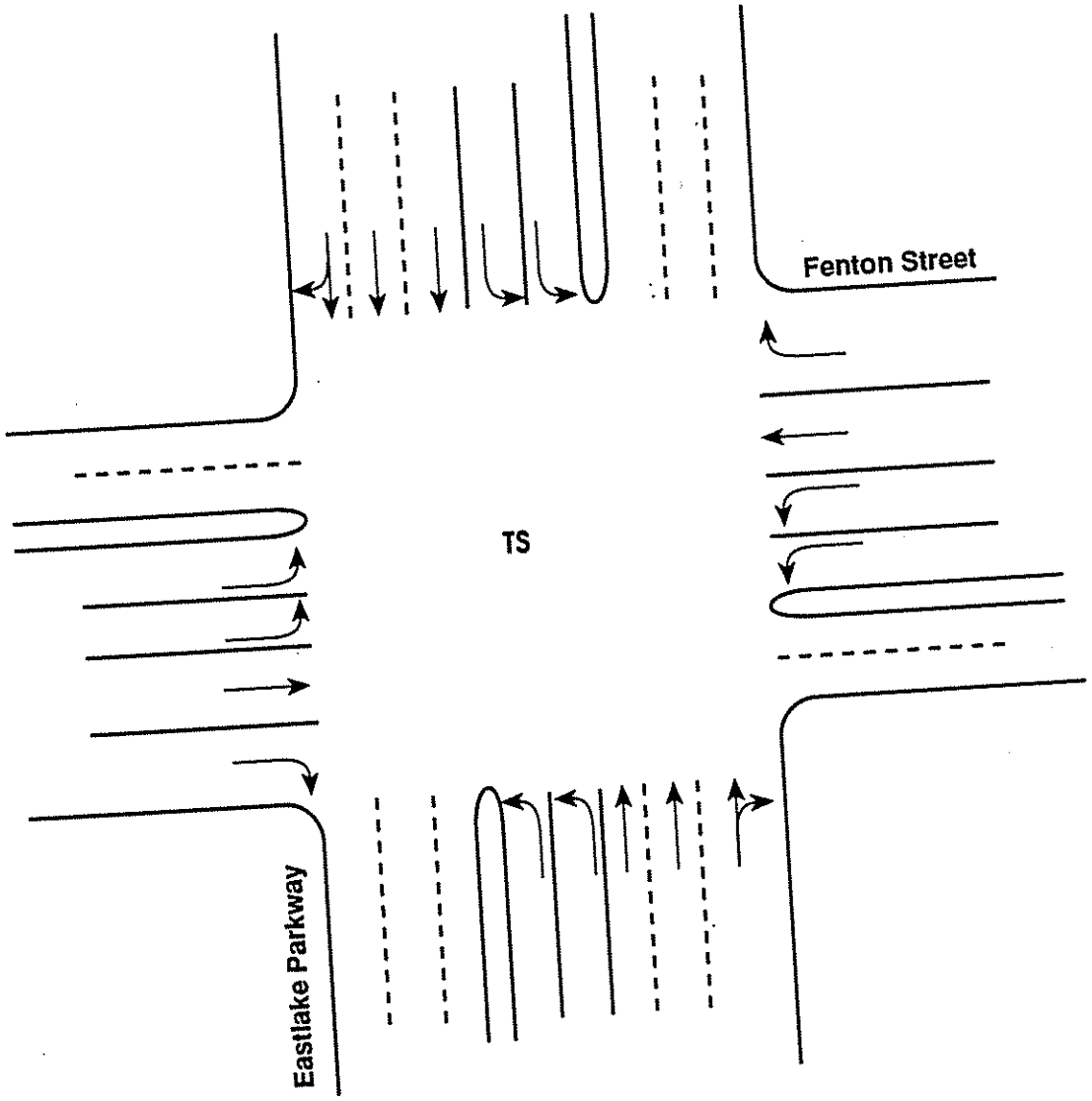

Note: TS = Signalization Required

Figure 12-8

EASTLAKE PARKWAY/FENTON STREET RECOMMENDED LANE GEOMETRY INTERIM AND BUILDOUT CONDITIONS

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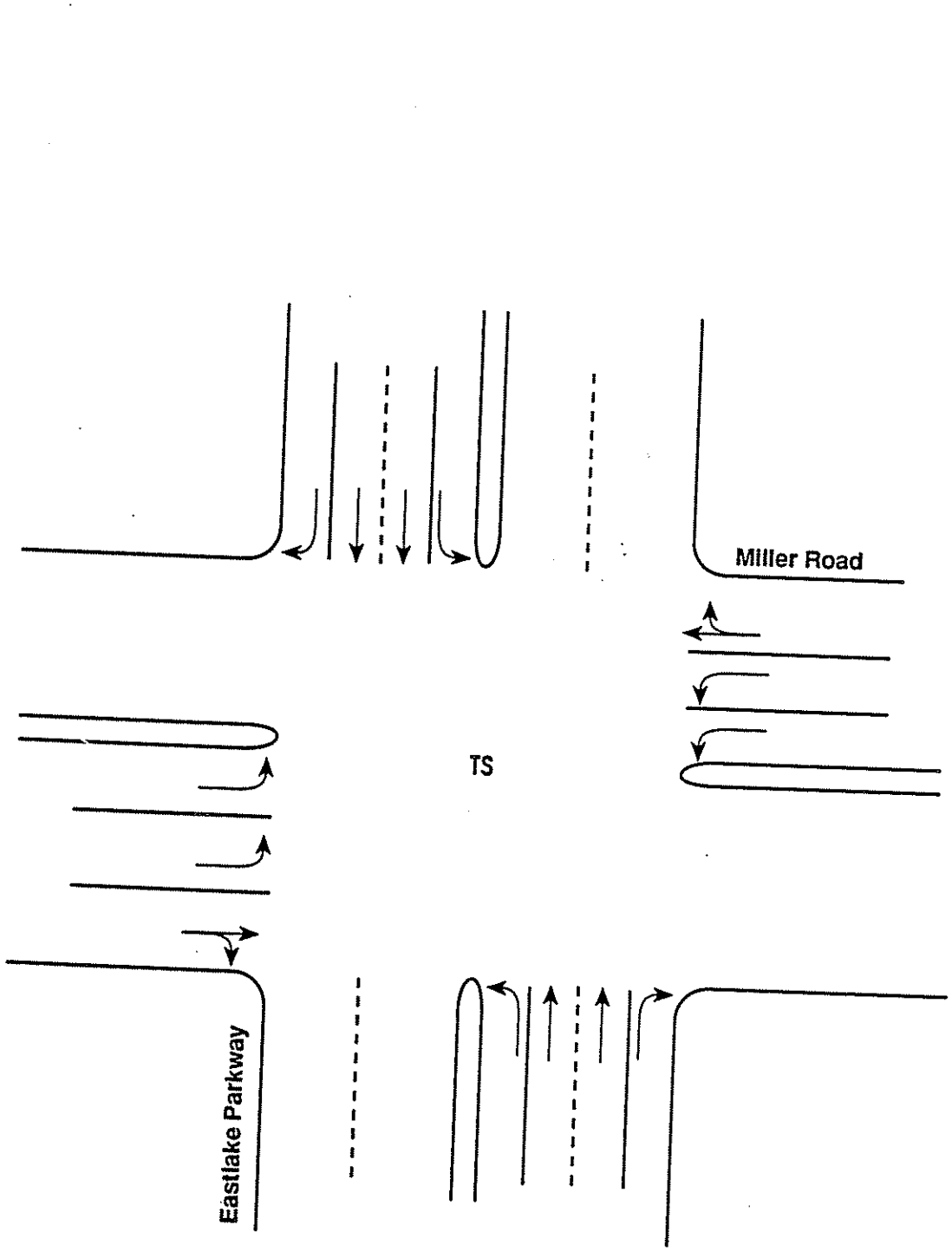

Note: TS = Signalization Required

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Figure 12-9

EASTLAKE PARKWAY/MILLER ROAD
RECOMMENDED LANE GEOMETRY
INTERIM AND BUILOUT CONDITIONS

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To achieve the recommended lane geometry at the intersections of Otay Lakes Road/SR 125 Northbound Off-Ramp, Otay Lakes Road/Mid-Block Access Driveway, Otay Lakes Road/Eastlake Parkway, Eastlake Parkway/Fenton Street, Eastlake Parkway/Miller Road as shown on the previous figures the following roadway improvements would be required:

- Widen Otay Lakes Road between Future SR 125 and Eastlake Parkway to eight lanes.
- Widen Eastlake Parkway between Otay Lakes Road and northside of Fenton Street to six lanes.

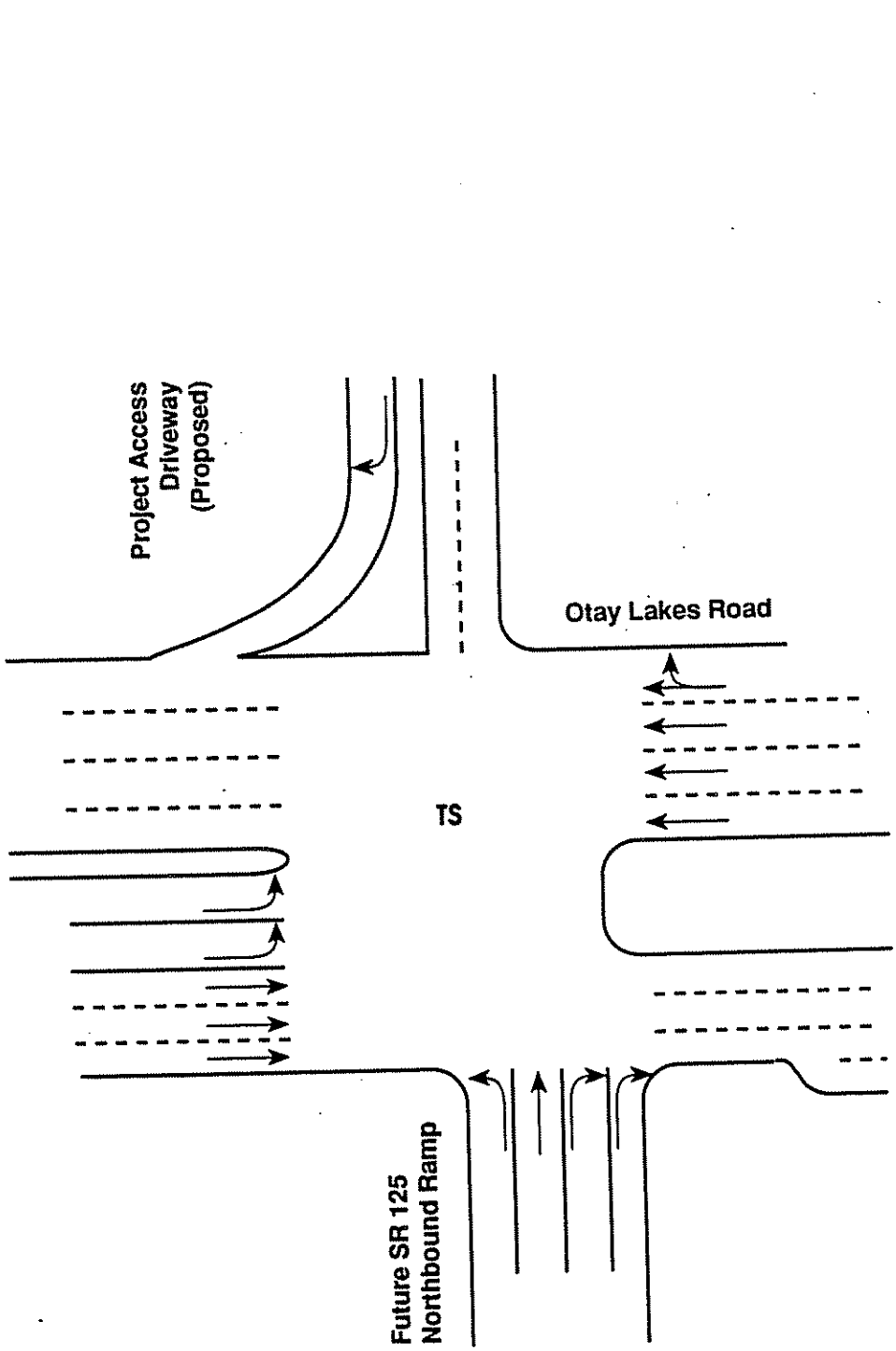
In addition, it is recommended that the project site internal roadways be realigned to accommodate future connection from the project site to the Otay Lakes Road/SR 125 interchange. This site design (Access/Circulation) modification as described in Chapter 11, is recommended to accommodate cumulative and site generated traffic under Interim and Buildout Conditions while maintaining acceptable circulation system performance.

Recommended Circulation/Access Improvements - Buildout Conditions

At the intersections of Eastlake Parkway/Miller Road, Eastlake Parkway/Fenton Street, and Otay Lakes Road/Mid-Block Access Driveway, the recommended lane geometry for Buildout Conditions is the same as the recommended lane geometry for Interim Conditions. The following additional improvements are recommended for Buildout Conditions:

- Construction of ramps to and from SR 125 to the north at Eastlake Parkway.
- Provision of a direct connection from the project site to the Otay Lakes Road/SR 125 interchange, with lane geometry as shown in Figure 12-10.
- Prohibit the construction of a new mid-block traffic signal along Otay Lakes Road between Future SR 125 and Eastlake Parkway. Operations at this intersection should be limited to the movements shown on Figure 12-6(A).
- Restriping of the intersection of Otay Lakes Road and Eastlake Parkway to the lane geometry shown in Figure 12-7(A).

There is one additional off-site intersection which was not addressed in detail in this study, but warrants discussion in relation to the overall set of mitigation measures recommended near the project site. There is a development proposed on the south side of Otay Lakes Road between Future SR 125 and Eastlake Parkway. Partial access to this development is anticipated to occur at a driveway along Otay Lakes Road between SR 125



Note: TS = Signalization Required

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Figure 12-10

OTAY LAKES ROAD/SR 125 NORTHBOUND RECOMMENDED LANE GEOMETRY BUILDOUT CONDITIONS

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and Eastlake Parkway and full access at a driveway along Eastlake Parkway south of Otay Lakes Road. It is expected that this project's driveway to Eastlake Parkway will require the installation of a traffic signal. It is recommended that this driveway be located as far to the south as possible from the intersection of Eastlake Parkway and Otay Lakes Road in order to provide adequate spacing of traffic signals along Eastlake Parkway.

For the recommended design of the mid-block access driveway along Otay Lakes Road see Figure 12-6(A). This figure depicts the geometric configuration at this mid-block location under the access scenario which calls for a new main entrance to the project site at the Future SR 125 Northbound Off-Ramp at Otay Lakes Road. Access to Eastlake I SPA Amendment Project Site (north of Otay Lakes Road) at this major signalized intersection will require modification to the internal circulation system to accommodate this future connection. If this site access alternative is determined to be infeasible it is recommended that additional traffic engineering analysis be conducted to forecast future arterial performance along this segment of Otay Lakes Road adjacent to Future SR 125 under coordinated signal operations.

13. ADDITIONAL TRAFFIC ENGINEERING ANALYSIS

At the request of the City, JHK has performed a series of Traffic Engineering Analyses to address concerns related to the site planning, arterial performance analysis, and traffic queueing.

As indicated in our original scope of work, JHK has conducted an analysis of internal circulation and parking. As depicted on the site plan provided by the Dahlin Group dated December 5, 1991. In addition to this task which was indicated in the contract, JHK has also performed additional traffic engineering analyses as requested by the City Traffic Engineer. This analysis included a review of arterial signal timing and progression under a variety of access scenarios for the site along Otay Lakes Road between Future SR 125 and Eastlake Parkway. Finally, this chapter also documents the results of a queueing analysis which was conducted at the request of the City Traffic Engineer to document the configuration of the center median along Otay Lakes Road between SR 125 and Eastlake Parkway under a variety of access scenarios for the site.

The following discussion addresses each of these issues separately and summarizes the critical concerns which have become apparent during our review of the Proposed Project.

INTERNAL CIRCULATION AND ACCESS REVIEW

Based on our review of our site plan for the Proposed Project dated December 5, 1991, the following areas of concern were identified. Each of these areas of concern should be reviewed in detail by City Staff prior to the approval of the Final Site Plan for this project. An attempt should be made to resolve these concerns by the project applicant prior to the submittal of the Final Site Plan.

- Due to the schematic appearance of the conceptual "Precise Plan", a rigorous and complete analysis of internal circulation is difficult at best. Architectural lines on the site plan are difficult to interpret and it is hard to determine whether vehicular access from the northern portion of the site, that is the Medical Center, is possible to the mid-block access point on Otay Lakes Road. However, the provision of an easily identifiable linkage from the medical center to this access point is crucial.

- In the design of the circulation system, conflict points where vehicular and pedestrian traffic paths intersect each other must be kept to a minimum.

- Any on-site speed control techniques should be clearly identified and discussed with the City Traffic Engineer prior to inclusion on the Final Site Plan.

- If the extension of the SR 125 NB off-ramp into the project site can be achieved it is recommended that the on-site circulation plan be modified to accommodate this two-way exchange of traffic from the ramp and from Otay Lakes Road accessing the site at the signalized intersection. Modification to the site design will include a surface connection from the intersection of SR 125 NB ramp access/Otay Lakes Road to the

western terminus of Fenton Street as shown on the site plan. This modification would also require an adjustment in the parking scheme for the Village Center parcel on its westernmost edge. Also the design of the surface street would need to carefully consider its potential impact with the retention basin located immediately adjacent to the SR 125 Right of Way on the westernmost edge of the Village Center parcel.

- The first on-site intersection on Fenton Street located some 300' west of Eastlake Parkway appears to provide access to the hospital facility to the north and the Village Center to the south. Due to its proximity to the signalized intersection of Eastlake Parkway and the high level of anticipated traffic activity it is recommended that the proposed median opening not be allowed.

- The design of Fenton Street east and west of Eastlake Parkway should accommodate the intersection geometrics recommended in the mitigation section of this document. To accommodate these recommended intersection geometrics it is appropriate to design the roadway to four lane collector or major standards.

- For this project it is recommended that pedestrian flow and linkages be giving a high priority in the Field Site Plan. The on-site pedestrian circulation plan should be integrated with the pedestrian overcrossing to be constructed across Otay Lakes Road west of Eastlake Parkway to connect the northern and southern Village Centers.

PARKING REVIEW

A review of the total number of parking spaces to be supplied on the site plan for the Proposed Project was conducted. As shown on Table 13-1, this review indicated that approximately 6,450 parking spaces are proposed as part of the Medical Center Site. This number easily meets the approximately 3,114 spaces which would be required to meet city parking standards for this type of use. The Village Center portion of the project as depicted on the site plan only defines the acreages of commercial uses. The City of Chula Vista parking standards are based on unit of measure in square footage rather than acreage for determining parking demand. Thus, it is recommended that the City of Chula Vista carefully review the final site plan and the final recommended square footages for each of the commercial buildings to be constructed. This square footage summary should be utilized to determine the total number of parking spaces to be provided by the project. If there is a deficit in parking allocation, additional parking should be provided by the project applicant.

ARTERIAL PERFORMANCE ANALYSIS

A signal timing progression analysis was conducted along Otay Lakes Road for the following signal placement alternatives under the General Plan Buildout plus Proposed Project land use scenario:

Alternative No.1 - A mid-block signal at the main entrance intersection between Future SR 125 and Eastlake Parkway as proposed on the Project Site Plan.

Table 13-1

PARKING ANALYSIS SUMMARY(1)

The following table summarizes parking supply and demand for Phases I, II, and III of the Medical Center area.(2)

Phase	Land Use Type	Land Use Intensity	Parking Space Criteria	Spaces Required	Spaces Provided
I	Medical Office	215,000 SF	1/200 SF	1075	
	Administrative Office	55,000 SF	1/200 SF	275	
	Central Plant	20,000 SF	1/1000 SF	20	
			Sub Total	**1370**	**1400**
II	Hospital (227 Beds)	505,000 SF	1.5/Bed	341	
			Sub Total	**341**	**1800**
III	Hospital (212 Beds)	315,000 SF	1.5/Bed	318	
	Medical Office	135,000 SF	1/200 SF	675	
	Administrative Office	80,000 SF	1/200 SF	400	
	Central Plant	10,000 SF	1/1000 SF	10	
			Sub Total	**1403**	**3250**
			TOTAL	**3114**	**6450**

Notes: 1. A surplus of 3336 parking spaces is expected to occur if the site is developed as proposed.

2. For the Activity Center and the Village Center, an evaluation of the parking space requirements is pending due to the lack of current information regarding the proposed square footage of the floor areas fo the facilities in the land use areas.

Alternative No. 2 - Eliminate the mid-block signal and restrict out-bound left turn movements from the site at this location. Modify the Project Site Plan internal circulation system to provide for a new entrance and right-turn only out-bound at the terminus of the SR 125 Northbound off-ramp at Otay Lakes Road.

Figure 13-1 graphically illustrates these alternatives. For this analysis, JHK utilized the PASSER II-90 software package to determine the optimal signalization scheme for the Otay Lakes Road arterial segment within the study area under each of the alternatives shown in Figure 13-1 and described above.

Methodology

PASSER II-90, an acronym for the Progression Analysis and Signal System Evaluation Routine, was developed by the Texas Transportation Institute. The software package provides recommended signal timing reports for both under - and over - saturated arterial traffic operation. The program allows for various methods of left-turn analysis and advanced capacity evaluation. PASSER II-90 was used to determine the optimal signal timing for the best progression that could be implemented on the Otay Lakes Road signal system under each of the alternative signal configurations shown on Figure 13-1.

Findings

The following Tables 13-2 and 13-3 present summaries of the PASSER II-90 results. Also, the following technical observations were derived from reviewing the outputs:

- Both alternatives retain good progression in both AM and PM peak hours.

- Alternative No. 1 results in a greater total system delay than Alternative No. 2 for both peak hours (11% greater than Alternative 2). In the PM peak hour, the difference is particularly substantial (17.5% greater than Alternative 2).

- Alternative No. 1 results in a greater number of total system stops than Alternative No. 2 for both peak hours (14.3% greater than Alternative No. 2). In the PM peak hour, the difference is particularly substantial (18.6% greater than Alternative No. 2).

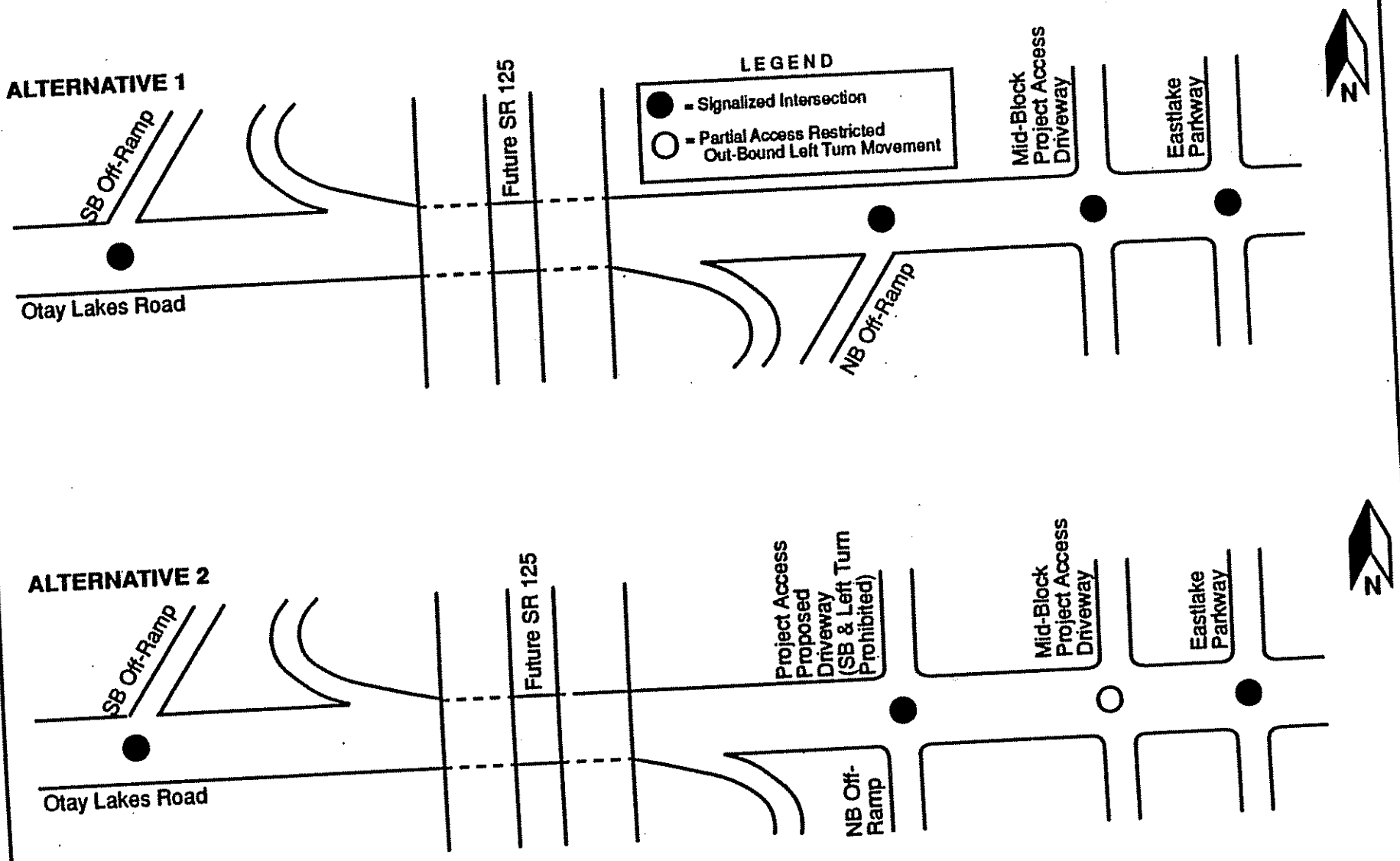

Figure 13-1

ARTERIAL PERFORMANCE ANALYSIS
SIGNAL PLACEMENT ALTERNATIVES

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Table 13-2

PASSER II-90 RESULTS - ALTERNATIVE NO. 1
GENERAL PLAN BUILDOUT WITH PROPOSED PROJECT

Intersection	Delay (sec/veh) AM	Delay (sec/veh) PM	V/C AM	V/C PM	LOS AM	LOS PM
Otay Lakes Rd/SR 125 SB Ramp	12.8	13.9	0.85	0.74	B	B
Otay Lakes Rd/SR 125 NB Ramp	8.4	8.6	0.73	0.76	B	B
Otay Lakes Rd/Project Access Driveway	9.5	26.9	0.76	1.12	B	D
Otay Lakes Rd/Eastlake Parkway	22.8	24.2	0.91	0.98	C	C

	AM	PM
Band Width EB =	40 sec.	32 sec.
WB =	31 sec.	33 sec.
Average Progression Speed =	42 mph	38 mph
Progression Efficiency =	0.32	0.30
Average Intersection Delay =	13.4 sec/veh	19.4 sec/veh
Total System Delay =	73.4 veh-hr/hr	112.9 veh-hr/hr

Note: Future delays as calculated by PASSER II-90 software may not agree with calculations of individual intersection levels of service by the CINEMA software version of the 1985 Highway Capacity Manual Operational Analysis Methodology.

Table 13-3

PASSER II-90 RESULTS - ALTERNATIVE NO. 2
GENERAL PLAN BUILDOUT WITH PROPOSED PROJECT

Intersection	Delay (sec/veh) AM	Delay (sec/veh) PM	V/C AM	V/C PM	LOS AM	LOS PM
Otay Lakes Rd/SR 125 SB Ramp	13.7	14.2	0.85	0.74	B	B
Otay Lakes Rd/SR 125 NB Ramp	9.9	18.8	1.74	1.02	B	C
Otay Lakes Rd/Eastlake Parkway	25.7	29.6	1.00	1.03	D	D

	AM	PM
Band Width EB =	39 sec.	25 sec.
WB =	33 sec.	28 sec.
Average Progression Speed =	41 mph	38 mph
Progression Efficiency =	0.33	0.24
Average Intersection Delay =	17.1 sec/veh	21.8 sec/veh
Total System Delay =	71.6 veh-hr/hr	96.1 veh-hr/hr

Note: Future delays as calculated by PASSER II-90 software may not agree with calculations of individual intersection levels of service by the CINEMA software version of the 1985 Highway Capacity Manual Operational Analysis Methodology.

Analysis of Future Arterial Levels of Service

For the analysis of future arterial levels of service along Otay Lakes Road, JHK utilized the Urban and Suburban Arterials procedures (Chapter 11) of the Highway Capacity Manual (HCM). This analysis provides an indication of future levels for service along Otay Lakes Road by direction (east-west). For this analysis, the section of Otay Lakes Road between the SR 125 Southbound Off-ramp and Eastlake Parkway was considered.

Methodology

The analysis of arterial levels of service found in Chapter 11 of the HCM is based upon the average travel speed for the segments under consideration. The average travel speed of all through vehicles is computed from the running time on the arterial segment and the intersection approach delay.

As stated in the HCM, the operation of vehicles on arterial streets is influenced by three main factors: 1). the arterial environment, such as the geometric characteristics of the facility and adjacent land uses, 2). the interaction between vehicles, determined by traffic density, proportion of heavy vehicles, and turning movements, and 3). the effect of traffic signals which may cause delay and speed changes.

Table 13-4 illustrates the criteria for judging arterial level of service.

Findings

For the analysis of the Otay Lakes Road facility, Otay Lakes Road was assumed to be a Class I arterial. Table 13-5 summarizes the arterial levels of service for both eastbound and westbound directions for the General Plan Buildout condition for Alternatives 1 and 2. Also, the following technical observations were derived from reviewing the results:

- Alternative No. 2 achieves a better or equal travel speed when compared to Alternative 1 for all the cases (i.e. both directions and both peak hours).

- The differences in travel speeds is greater for the eastbound direction. In the eastbound direction, Alternative No. 2 has a better LOS than Alternative No. 1 for both peak hours.

Table 13-4

LEVEL OF SERVICE CRITERIA FOR ARTERIALS HCM METHOD

Arterial Class	I	II	III
Range of Free Flow Speeds (mph)	45 to 35	35 to 30	35 to 25
Typical Free Flow Speed (mph)	40 mph	33 mph	27 mph
Level of Service	**Average Travel Speed (mph)**		
A	>=35	>=30	>=25
B	>=28	>=24	>=19
C	>=22	>=18	>=13
D	>=17	>=14	>=9
E	>=13	>=10	>=7
F	<13	<10	<7

Source: HCM, Chapter 11, "Urban And Suburban Arterials".

Table 13-5

ARTERIAL LEVEL OF SERVICE
HCM METHOD
PEAK HOUR CONDITIONS

	Eastbound				Westbound			
	Average Travel Speed (MPH)		Level of Service (LOS)		Average Travel Speed (MPH)		Level of Service (LOS)	
	AM	PM	AM	PM	AM	PM	AM	PM
Alternative 1	21.8	21.5	D	D	15.2	11.9	E	F
Alternative 2	25.1	25.6	C	C	15.2	13.6	E	E

Source: HCM, Chapter 11, "Urban and Suburban Arterials".

MINIMAL PROJECT OBJECTIVES

The two alternative signalization scenarios were evaluated in terms of measure of performance and the extent to which they met the following minimal project objectives:

- To maintain high quality traffic flow and arterial performance on the major circulation element facility of Otay Lakes Road.
- To provide high quality and safe access to and from the proposed commercial development centers to the north and south of Otay Lakes Road.
- To conform to the minimum signal spacing criteria for a Prime Arterial (one-half mile intervals) identified in the City of Chula Vista Element and Street Design Standards Policy.

Evaluation Results

Based on the analyses performed, Otay Lakes Road performs better without the mid-block signal. Both PASSER II and Arterial LOS analyses indicate more efficient traffic flow without the mid-block signal. Specifically, mid-block signal increases the number of stops which occur within the system, and also increases total delay anticipated within the system, particularly during PM peak hours. This increase in total delay confirms the conclusions reached in the analysis of Arterial Performance which indicated that the average travel speed on Otay Lakes Road is lower with the mid-block signal than without it.

Conclusions

The intersection analysis conducted as part of the Eastlake EIR analysis concluded that either of these options would improve the LOS at Eastlake Parkway and Otay Lakes Road to an acceptable condition (LOS D). However, the alternative of providing a mid-block signal on Otay Lakes road at the main entrance to the Village Center is not appropriate under the City's General Plan designation for a Six Lane Prime Arterial and the City's Street Design Standards for that classification. Based on the requirements to carry a high volume of traffic (50,000 vehicles per day), the General Plan designated this segment of Otay Lakes Road as a Six Lane Prime Arterial. The City's Street Design Standards Policy states that "The prime arterials are designed to move traffic between major generators. Typically, major signalized intersections shall be spaced at on-half mile intervals.... Access to and from prime arterials from minor streets or abutting properties shall typically be restricted. Should a property have frontage only on the prime arterial facility, driveway or minor street access shall be permitted at locations deemed appropriate by the City

Engineer. These access points shall be limited only to right turns in and right turns out. Also, these access points shall require additional roadway width to provide for acceleration and deceleration lanes".

City Staff believed that with the very high level of traffic, a mid-block signal would further lower the level of service for this critical segment of Otay Lakes Road between Future SR 125 and Eastlake Parkway. With the mid-block signal, there would be less than 750 feet to the signal at Eastlake Parkway to the east and less than 900 feet to the future signal at the northbound off-ramp from SR 125 to the west. Because for the poor spacing for the proposed mid-block signal relative to the signals at each end of the segment, and the additional signal which would service as an interruption to orderly traffic flow, City Staff believed that this option would be less traffic efficient to Otay Lakes Road overall, even though it improved the LOS at the Eastlake Parkway intersection. Therefore, the analysis of the impact of the potential mid-block signal confirmed that the mid-block signal would cause less desirable traffic operations along Otay Lakes road as compared to the recommended mitigation alternative. This would also result in more delay to motorists, greater use of energy and a greater impact to the air quality due to the vehicle delay, plus additional on-going annual maintenance and operational costs for the City. A memorandum sent to City staff detailing the methodology and findings is found in Appendix I.

QUEUEING ANALYSIS

In accordance with the task of studying the on-site circulation a queueing analysis was performed for the segment of Otay Lakes Road adjacent to the project site between the northbound SR 125 off-ramp and Eastlake Parkway. This analysis was undertaken in order to determine the recommended storage lengths for the left turn bays approaching the signalized intersections within the segment for two project site access alternatives.

The methodology followed was based on recommendations for storage lengths found in the American Association of State Highway Transportation Officials (AASHTO) 1990 edition of A Policy on Geometric Design of Highways and Streets. This document states that the storage length depends on the signal cycle length, phasing and progression. The storage length is also a function of the volume of traffic using the section, as well as the percentage of heavy vehicles in the traffic flow. The general equation used in calculating storage length for an approach is:

$$\text{Left Turn Storage} = \frac{2 \times \text{left turn volume} \times 1.02 \times (1 - \text{left turn green time/cycle length}) \times 25 \text{ feet/vehicle}}{(3600/1 \text{ hr}) \times \text{cycle length}}$$

The storage length was calculated as such:

Storage Length = Left turn storage/# left turn lanes

A summary of the recommended left turn bay length for signalized intersection approaches is listed in Table 13-6 and graphically shown in Figure 13- 2. A memorandum sent to City staff detailing the methodology and findings is found in Appendix J.

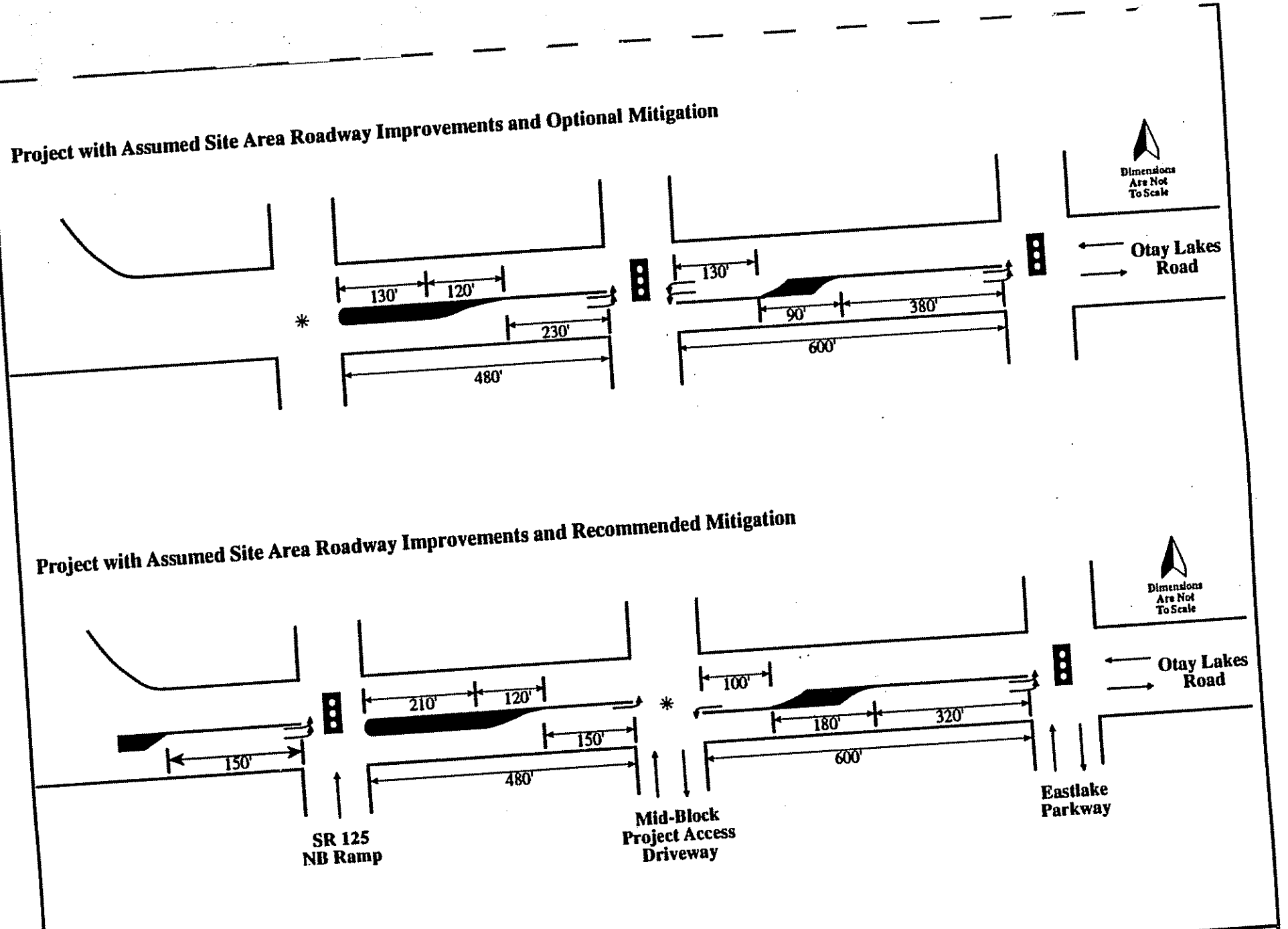
TABLE 13-6

RECOMMENDED LEFT TURN STORAGE LENGTHS FOR INTERSECTION APPROACHES ON OTAY LAKES ROAD FOR TWO BUILDOUT PROJECT SITE ACCESS ALTERNATIVES

Signalized Intersection Turn Movements	w/Assumed Site Area Roadway Improvements and Optional Mitigation(1)	w/Assumed Site Area Roadway Improvements and Recommended Mitigations(2)
NB SR 125/Otay Lakes Road-EB Left	N/A(3)	**150'(4)**
Otay Lakes Road/Mid-Block Project Access-EB Left	**230'**	150'
Otay Lakes Road/Mid-Block Project Access-WB Left	**130'**	100'
Otay Lakes Road/Eastlake Parkway-EB Left	**380'**	**320'**

Notes:

1. Optional mitigation includes the provision of access to the project site from a mid-block traffic signal along Otay Lakes Road between Eastlake Parkway and SR 125 and the provision of ramps to and from SR 125 to the north at Eastlake Parkway.
2. Recommended mitigation includes direct access from the site to the Otay Lakes Road/SR 125 interchange and the provision of ramps to and from SR 125 to the north.
3. N/A = Not Applicable, no direct access to project site on this approach.
4. Bold Numbers reflect double left turn bays at signalized intersection approaches. Unbold numbers reflect single lane left turn bays at unsignalized intersection approaches.



* Queuing Analysis not done at this intersection.

Figure 13-2

REQUIRED LEFT TURN BAY LENGTHS FOR INTERSECTION APPROACHES ON OTAY LAKES ROAD FOR TWO ... PROJECT" LAND USE ALTERNATIVES

EASTLAKE I SPA AMENDMENT

jhk & associates

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APPENDIX A

GUIDELINES AND DIRECTIVES USED TO CONDUCT HIGHWAY CAPACITY MANUAL SIGNALIZED INTERSECTION CAPACITY ANALYSIS

Appendix A

The Level of Service Analysis for Signalized Intersections was based upon the methodology and logic found in Chapter 9 (Signalized Intersections) of the 1985 Highway Capacity Manual developed by the Transportation Research Board. Because there are a number of parameters which are considered in the analysis of signalized intersections, the following assumptions were utilized in establishing a basic format for analyzing the intersections.

Parameter	Default Value	JHK Used
Conflicting pedestrian flow rate ped/hr	50 ped/hr	50 ped/hr
Pedestrian Button	Y/N	Y
Percent Heavy Vehicles	2%	2%
Percent Buses	0 buses/hr	0 buses/hr
Peak Hour Factor, PMF	0.90	0.90
Grade	0%	0%
Parking Number (NM)	20 maneuver/hr (where parking exists)	N
Arrival Type	3	4 for Major or Prime Arterial 3 for Other
Lane Width	12'	12'
Cycle Length	-	110 sec
Lost Time	3 sec	3 sec
Yellow and All Red	-	4 sec
RTOR	-	None or use overlap to simulate
Area Type	CBD	Other

APPENDIX B

SIGNALIZED INTERSECTIONS CAPACITY ANALYSIS WORKSHEETS EXISTING CONDITIONS

HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BOS8 A

****

INTERSECTION: BONITA ROAD /I-805 SB RAM TIME: AM PEAK

ANALYST: JHK DATE: 12/27/91

COMMENT: EXISTING CONDITIONS AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	782	222	0	50	4	3
WB	402	734	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	303	0	492	492	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R 12
WB	L	12	L	12	T	12	T 12
NB							
SB	L	12	L	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	14.0	3
WB	0	2	Y	20	0	.90	N	14.0	3
NB	0	2	Y	20	0	.90	N	26.0	3
SB	0	2	Y	20	0	.90	N	26.0	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 10

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB		TR							
WB	LT	T							
NB			LR						
SB									
GREEN	21	36	26	0	0	0	0	0	
YELLOW	3	4	4	0	0	0	0	0	
RED	2	2	2	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	T	.46	.39	T	.18	14.7	B	EB	15.0	B
	R	.52	.39	R	.20	15.8	C			
WB	L	.62	.23	L	.14	27.4	D	WB	13.3	
	T	.42	.65	T	.27	5.5	B			
SB	L	.37	.29	L	.11	21.6	C	SB	21.6	
	R	.00	.29	R	.00	.0	A			

INTERSECT: DELAY = 15.0 SEC/VEH Xc = .50 LOS = B Sum(v/s)CR =

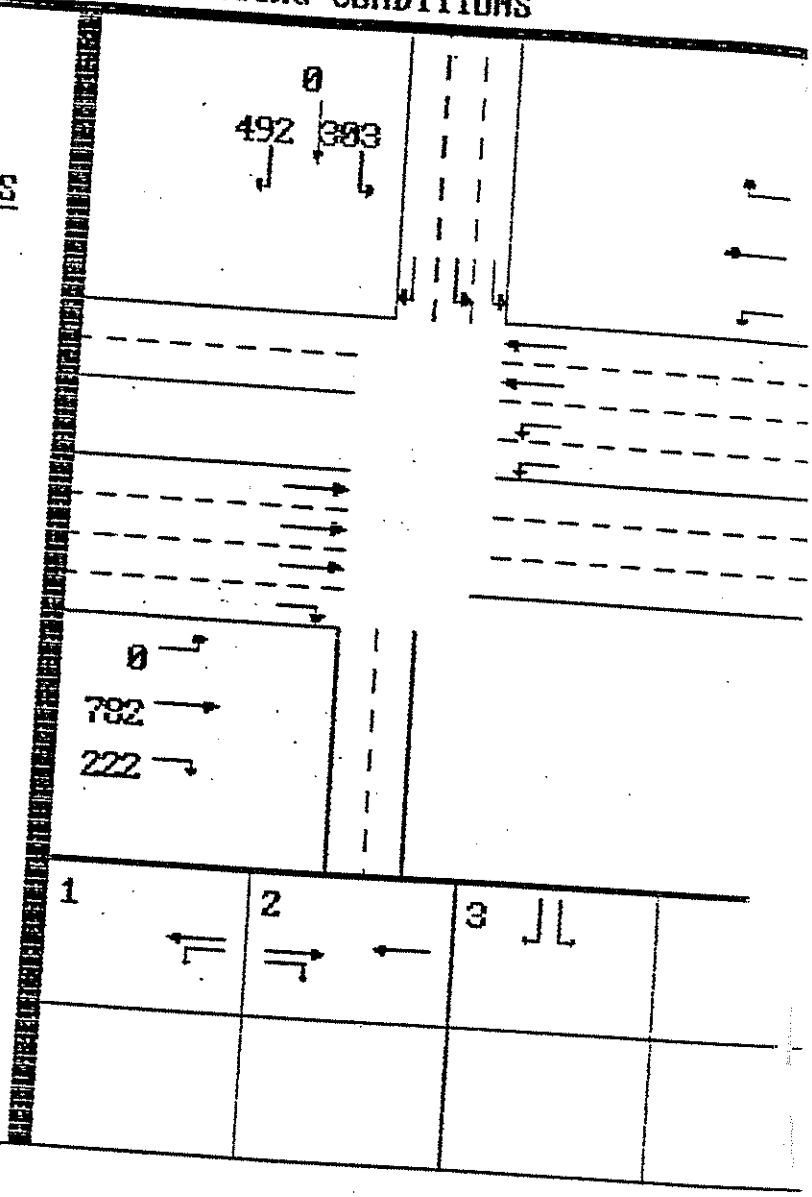
HCM Summary Results for Case: BOS8_A

AM PEAK

BONITA ROAD /I-805 SB R

EXISTING CONDITIONS

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	T	.18	.46	14.7	B
	*R	.20	.52	15.8	C
	All			15.0	B
WB	*L	.14	.62	27.4	D
	T	.27	.42	5.5	B
	All			13.3	B
SB	*L	.11	.37	21.6	C
	R	.00	.00	.0	A
	All			21.6	C
Intersect:		.45	.50	15.0	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: BOS8 P
****
INTERSECTION: BONITA ROAD /I-805 SB RAM TIME: PM PEAK
ANALYST: JHK DATE: 12/27/91
COMMENT: EXISTING CONDITIONS AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1240	318	0	50	4	3
WB	650	906	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	733	0	753	753	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12
NB								
SB	L	12	L	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	14.0	3
WB	0	2	Y	20	0	.90	N	14.0	3
NB	0	2	Y	20	0	.90	N	26.0	3
SB	0	2	Y	20	0	.90	N	26.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 10

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB		TR							
WB	LT	T							
NB									
SB			LR						
GREEN	25	32	26	0	0	0	0	0	0
YELLOW	3	4	4	0	0	0	0	0	
RED	2	2	2	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	a/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	T	.81	.35	T	.28	20.7	C	EB	21.9	C
	R	.83	.35	R	.29	27.0	D			
WB	L	.86	.27	L	.23	32.2	D	WB	17.0	(
	T	.51	.65	T	.33	6.1	B			
SB	L	.90	.29	L	.26	34.0	D	SB	34.0	
	R	.00	.29	R	.00	.0	A			

... SEC/VEH Xc = .86 LOS = C Sum(v/s)CR =

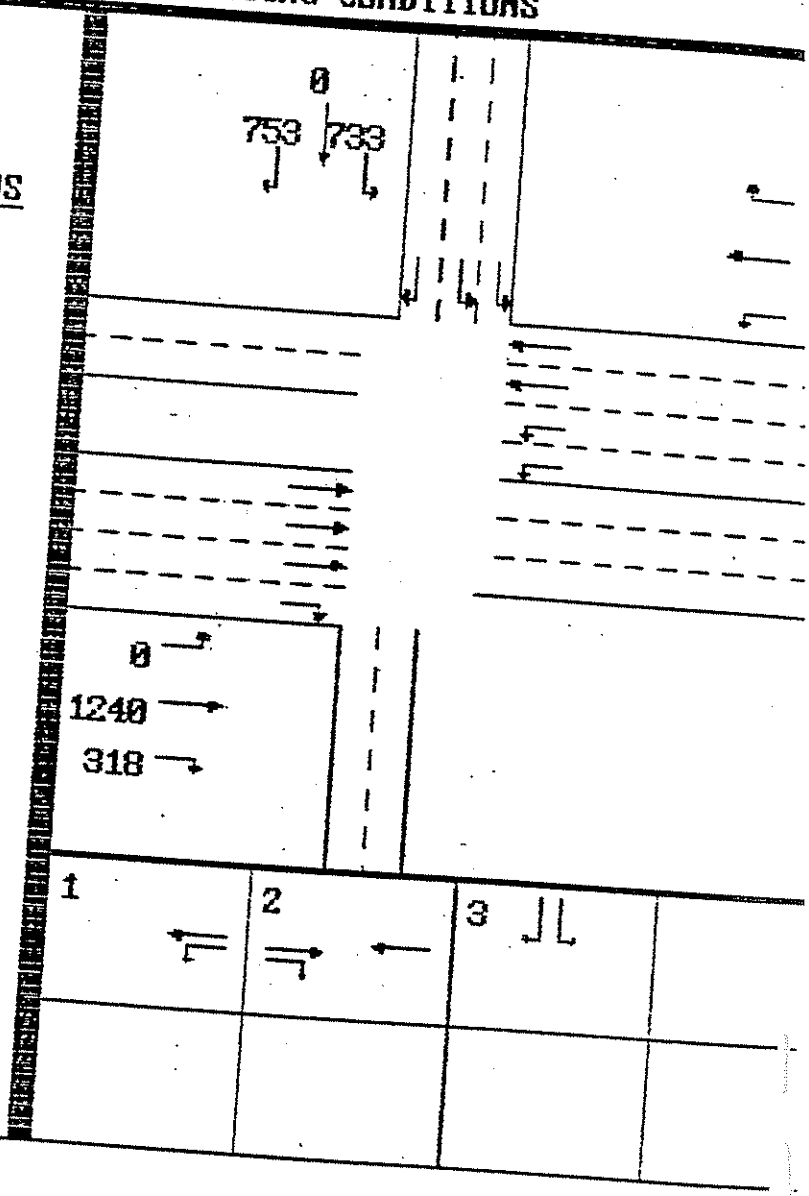
HCM Summary Results for Case: BOS8_P

PM PEAK

BONITA ROAD /I-885 SB

EXISTING CONDITIONS

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.28	.81	20.7	C
	*R	.29	.83	27.0	D
	All			21.9	C
WB	*L	.23	.86	32.2	D
	T	.33	.51	6.1	B
	All			17.8	C
SB	*L	.26	.90	34.0	D
	R	.00	.00	.0	A
	All			34.0	D
Intersect:		.78	.86	22.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BON8 A

****

INTERSECTION: BONITA ROAD /I-805 NB RAM TIME: AM PEAK

ANALYST: JHK DATE: 12/27/91

COMMENT: EXISTING CONDITIONS AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	408	576	0	0	50	4	2
WB	0	893	426	0	50	3	3
NB	197	0	423	0	50	3	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T 12
WB	T	12	T	12	TR	12	
NB	L	12	R	12	R	12	
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	14.0	3
WB	0	2	Y	20	0	.90	N	14.0	3
NB	0	2	Y	20	0	.90	N	26.0	3
SB	0	2	Y	20	0	.90	N	26.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB	LT	T							
WB		TR	TR						
NB			R	LR					
SB									
GREEN	22	23	7	28	0	0	0	0	
YELLOW	3	4	3	4	0	0	0	0	
RED	1	2	1	2	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	L
EB	L	.63	.23	L	.15	27.6	D	EB	17.0	
	T	.41	.52	T	.21	9.5	B			
WB	TR	.92	.37	TR	.34	24.7	C	WB	24.7	
NB	L	.42	.31	L	.13	21.1	C	NB	17.3	
	R	.53	.39	R	.21	15.6	C			

INTERSECT: DELAY = 20.6 SEC/VEH Xc = .76 LOS = C Sum(v/s)CR =

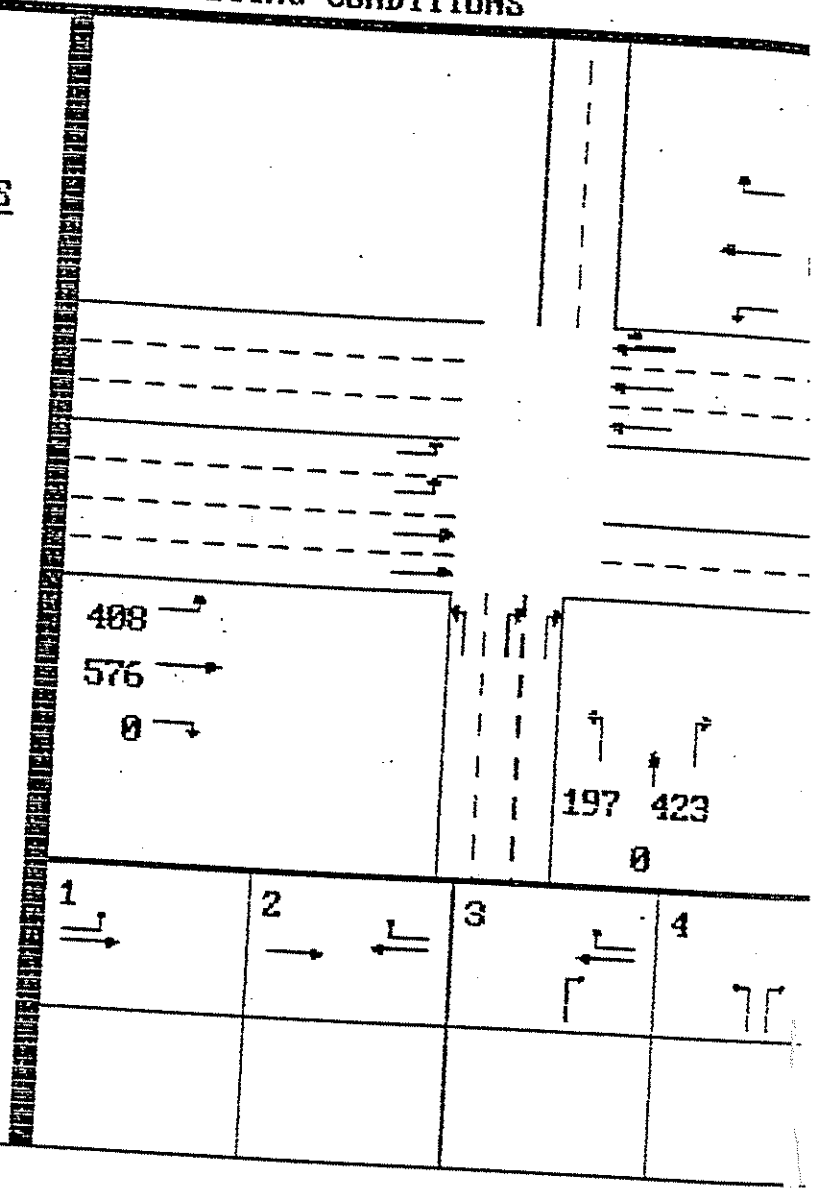
HCM Summary Results for Case: BON8_A

AM PEAK

BONITA ROAD /I-885 NB R

EXISTING CONDITIONS

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.15	.63	27.6	D
	T	.21	.41	9.5	B
	All			17.8	C
WB	*TR	.34	.92	24.7	C
	All			24.7	C
NB	L	.13	.42	21.1	C
	*R	.21	.53	15.6	C
	All			17.3	C
Intersect:		.69	.76	28.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: ZZZ

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INTERSECTION: BONITA ROAD /I-805 NB RAM TIME: PM PEAK

ANALYST: JHK DATE: 12/27/91

COMMENT: EXISTING CONDITIONS AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	457	1406	0	0	50	4	2
WB	0	1251	354	0	50	3	3
NB	236	0	763	0	50	3	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T 12
WB	T	12	T	12	TR	12	
NB	L	12	R	12	R	12	
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	14.0	3
WB	0	2	Y	20	0	.90	N	14.0	3
NB	0	2	Y	20	0	.90	N	26.0	3
SB	0	2	Y	20	0	.90	N	26.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 10

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	LT	T	TR						
WB		TR	R	LR					
NB									
SB									
GREEN	19	26	7	28	0	0	0	0	
YELLOW	3	4	3	4	0	0	0	0	
RED	1	2	1	2	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	L	.81	.20	L	.16	34.4	D	EB	30.3	D
	T	.99	.52	T	.52	28.9	D			
WB	TR	1.02	.40	TR	.41	36.8	D	WB	36.8	
NB	L	.50	.31	L	.15	22.0	C	NB	29.7	
	R	.96	.39	R	.37	31.9	D			

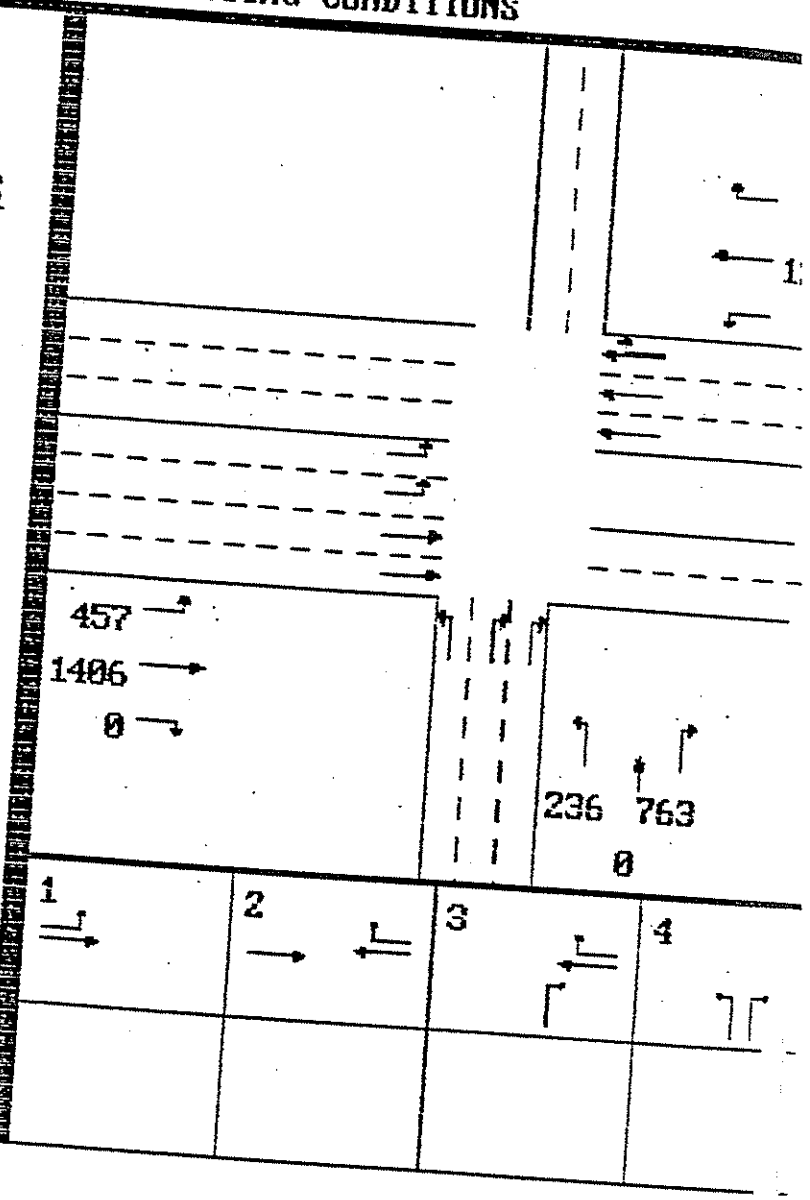
Xc = 1.04 LOS = D Sum(v/s)CR =

32.8 SEC/VEH

HCM Summary Results for Case: ZZZ
PM PEAK

BONITA ROAD /I-885 NB R
EXISTING CONDITIONS

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.16	.81	34.4	D
	T	.52	.99	28.9	D
	All			30.3	D
WB	*TR	.41	1.02	36.8	D
	All			36.8	D
NB	L	.15	.50	22.8	C
	*R	.37	.96	31.9	D
	All			29.7	D
Intersect:		.94	1.04	32.6	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BOPL A

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INTERSECTION: BONITA ROAD /PLAZA BONITA TIME: AM PEAK

ANALYST: JHK DATE: 12/27/91

COMMENT: EXISTING CONDITIONS AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	130	749	9	0	50	4	2
WB	3	1091	3	0	50	3	2
NB	15	0	6	0	50	1	2
SB	7	1	121	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR 12
WB	L	12	T	12	TR	12	
NB	LTR	12					
SB	L	12	TR	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	20.0	3
WB	0	2	Y	20	0	.90	N	20.0	3
NB	0	2	Y	20	0	.90	N	23.0	3
SB	0	2	Y	20	0	.90	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 12

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB		TR	LTR						
WB	LTR	TR		LTR					
NB	R		R		LTR				
SB				8	16	0	0	0	0
GREEN	28	20	28	3	3	0	0	0	0
YELLOW	2	2	4	1	1	0	0	0	0
RED	1	1	2						

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	L	.18	.26	L	.05	26.3	D	EB	18.2	C
	TR	.62	.45	TR	.28	16.8	C			
WB	L	.01	.23	L	.00	26.9	D	WB	30.0	I
	TR	.95	.43	TR	.40	30.0	D			
NB	LTR	.27	.08	LTR	.02	34.2	D	NB	34.2	
SB	L	.03	.14	L	.00	33.8	D	SB	19.7	
	TR	.16	.14	TR	.02	29.3	D			
	R	.21	.40	R	.08	15.2	C			

INTERSECT: DELAY = 24.5 SEC/VEH Xc = .61 LOS = C Sum(v/s)CR =

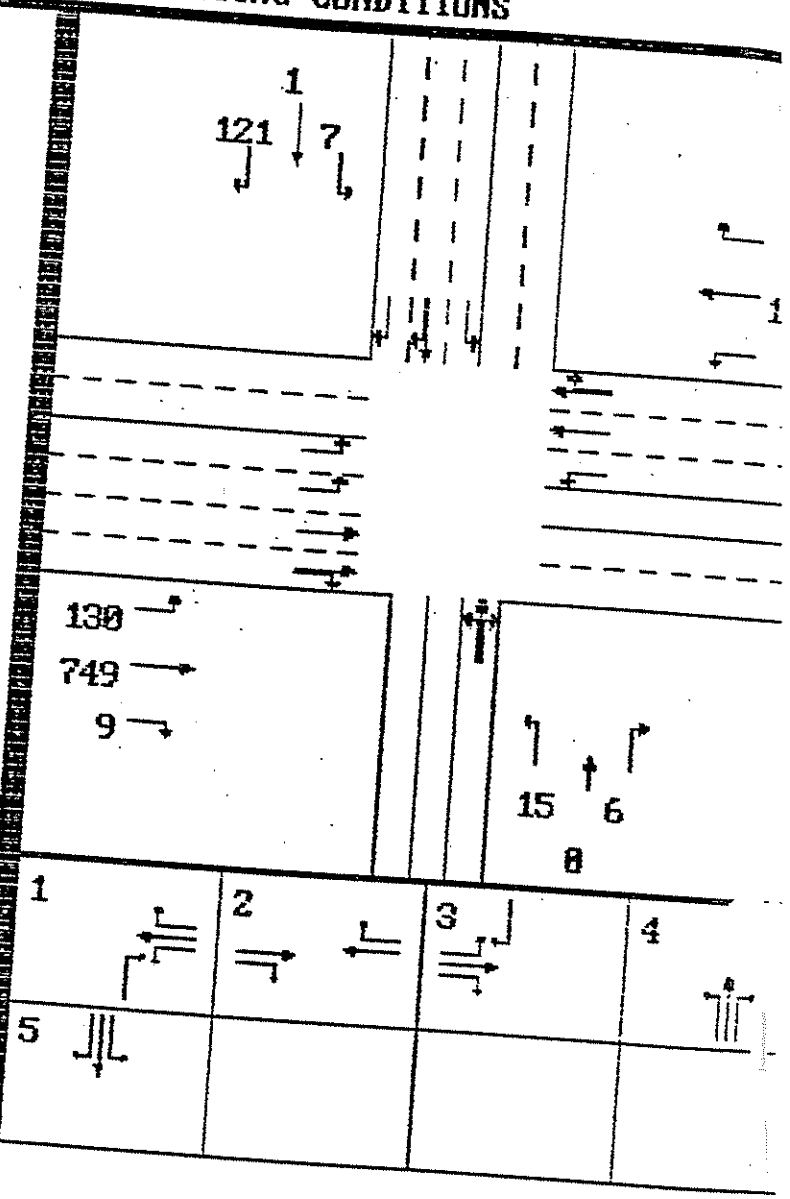
HCM Summary Results for Case: BOPL_A

AM PEAK

BONITA ROAD /PLAZA BON

EXISTING CONDITIONS

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.05	.18	26.3	D
	TR	.28	.62	16.8	C
	All			18.2	C
WB	L	.00	.01	26.9	D
	*TR	.40	.95	30.0	D
	All			30.0	D
NB	*LTR	.02	.27	34.2	D
	All			34.2	D
SB	L	.00	.03	33.8	D
	TR	.02	.16	29.3	D
	*R	.00	.21	15.2	C
	All			19.7	C
Intersect:		.55	.61	24.5	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BOPL P

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INTERSECTION: BONITA ROAD /PLAZA BONITA TIME: PM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: EXISTING CONDITIONS AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	600	1550	46	0	50	4	2
WB	9	1010	9	0	50	3	2
NB	15	4	12	0	50	1	2
SB	47	0	551	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	TR	12		
NB	LTR	12						
SB	L	12	TR	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	20.0	3
WB	0	2	Y	20	0	.90	N	20.0	3
NB	0	2	Y	20	0	.90	N	23.0	3
SB	0	2	Y	20	0	.90	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED C
EB		TR	LTR						
WB	LTR	TR							
NB	R			LTR					
SB			R		LTR				
GREEN	15	21	41	10	13	0	0	0	
YELLOW	2	2	4	3	3	0	0	0	
RED	1	1	2	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY L
EB	L	.58	.37	L	.21	23.8	C	EB	35.4
	TR	1.04	.57	TR	.59	39.8	D		
WB	L	.05	.13	L	.01	35.1	D	WB	95.9
	TR	1.15	.32	TR	.38	96.5	F		
NB	LTR	.32	.09	LTR	.03	33.4	D	NB	33.4
SB	L	.26	.12	L	.03	36.9	D	SB	29.4
	TR	.86	.12	TR	.10	52.9	E		
	R	.78	.48	R	.38	20.7	C		

INTERSECTION DELAY = 50.8 SEC/VEH Xc = 1.11 LOS = E Sum(v/s)CR =

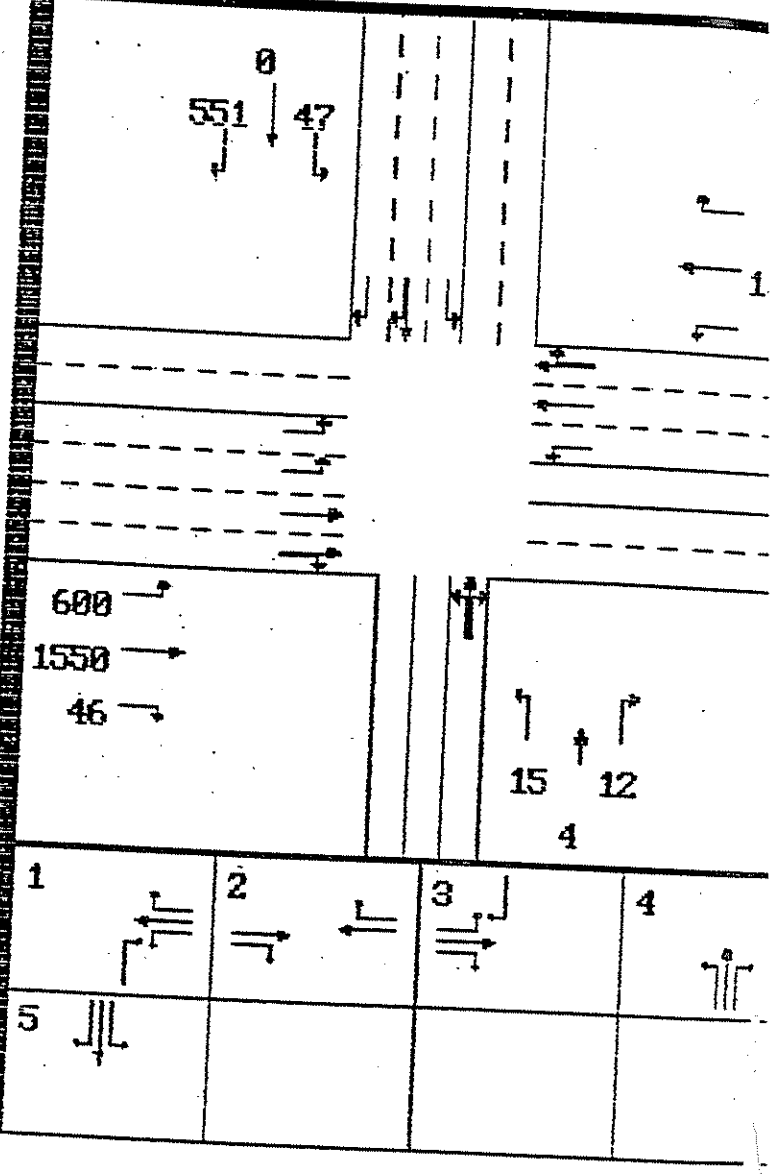
HCM Summary Results for Case: BOPL_P

PM PEAK

BONITA ROAD /PLAZA BONI

EXISTING CONDITIONS

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.21	.58	23.8	C
	*TR	.59	1.04	39.8	D
	All			35.4	D
WB	*L	.81	.85	35.1	D
	TR	.38	1.15	96.5	F
	All			95.9	F
NB	*LTR	.03	.32	33.4	D
	All			33.4	D
SB	L	.03	.26	36.9	D
	TR	.10	.86	52.9	E
	*R	.38	.78	28.7	C
	All			29.4	D
Intersect:		1.00	1.11	50.8	E



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: BOWI A
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INTERSECTION: Bonita Road /Willow Road TIME: AM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	108	716	18	0	50	3	2
WB	13	888	252	0	50	4	2
NB	27	9	31	0	50	1	1
SB	239	24	155	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12		
WB	L	12	T	12	T	12	R	12
NB	LTR	12						
SB	L	12	LT	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.88	N	17.0	3
WB	0	2	Y	20	0	.88	N	17.0	3
NB	0	2	Y	20	0	.84	N	23.0	3
SB	0	2	Y	20	0	.93	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED ON
EB	L	TR							
WB	L	TR							
NB				LTR					
SB			LTR						
GREEN	12	28	20	13	0	0	0	0	
YELLOW	4	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.47	.16	L	.07	27.3	D
	TR	.86	.32	TR	.28	23.1	C
WB	L	.06	.16	L	.01	24.6	C
	T	.92	.32	T	.30	26.5	D
	R	.73	.32	R	.24	21.5	C
NB	LTR	.44	.16	LTR	.07	23.3	C
SB	L	.49	.23	L	.11	23.5	C
	LT	.22	.23	LT	.05	18.1	C
	R	.59	.23	R	.14	21.8	C

APPROACH: DELAY LO
EB 23.6 C
WB 25.4
NB 23.3
SB 21.8

INTERSECT: DELAY = 24.2 SEC/VEH Xc = .67 LOS = C Sum(v/s)CR =

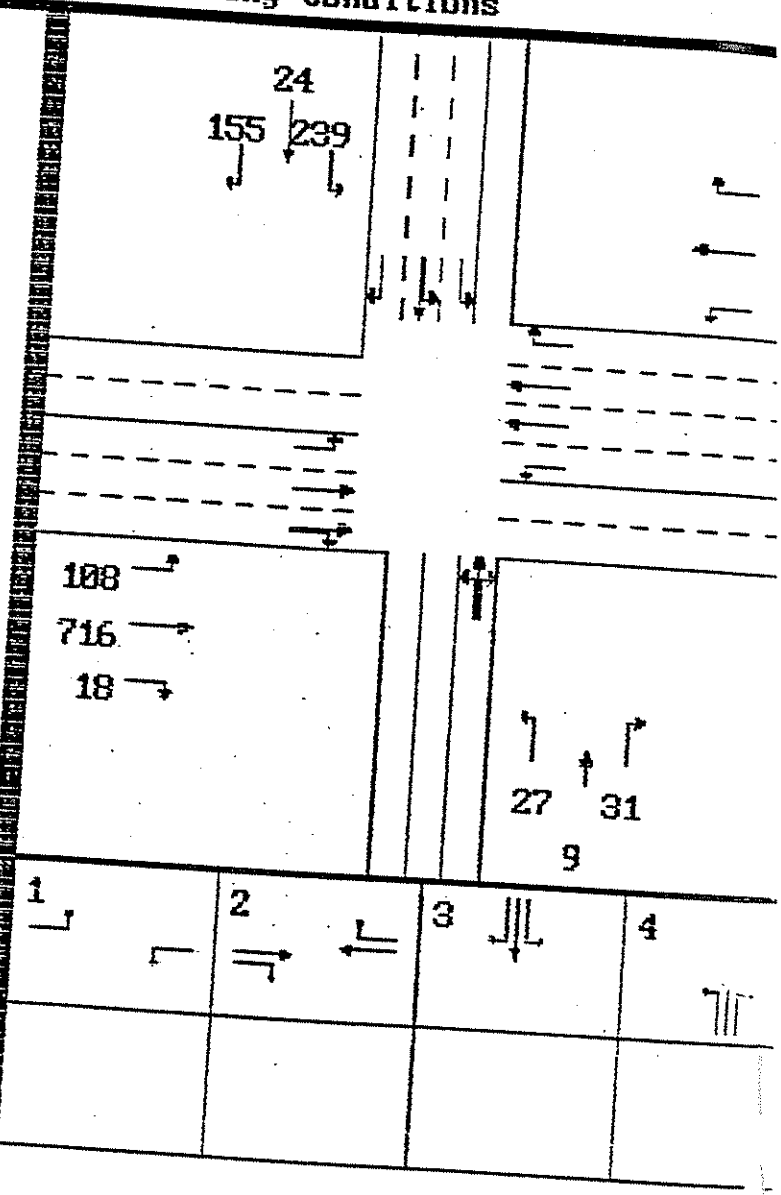
HCM Summary Results for Case: BOWI_A

AM PEAK

Bonita Road /Willow Roa

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.07	.47	27.3	D
	TR	.28	.86	23.1	C
	All			23.6	C
WB	L	.01	.06	24.6	C
	*T	.30	.92	26.5	D
	R	.24	.73	21.5	C
	All			25.4	D
NB	*LTR	.07	.44	23.3	C
	All			23.3	C
SB	L	.11	.49	23.5	C
	LT	.05	.22	18.1	C
	*R	.14	.59	21.8	C
	All			21.8	C
Intersect:		.58	.67	24.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BOWI P

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INTERSECTION: Bonita Road /Willow Road TIME: PM PEAK

DATE: 1/2/92

ANALYST: JHK AREA TYPE: NON-CBD

COMMENT: Existing Conditions

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	204	1361	19	0	50	3	2
WB	42	803	264	0	50	4	2
NB	30	21	25	0	50	1	1
SB	562	36	299	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12		
WB	L	12	T	12	T	12	R	12
NB	LTR	12						
SB	L	12	LT	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.86	N	17.0	3
WB	0	2	Y	20	0	.89	N	17.0	3
NB	0	2	Y	20	0	.79	N	23.0	3
SB	0	2	Y	20	0	.78	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB	L	TR							
WB	L	TR							
NB				LTR					
SB			LTR						
GREEN	11	40	26	6	0	0	0	0	
YELLOW	4	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	L
EB	L	1.08	.13	L	.14	106.9	F	EB	-	
	TR	1.30	.41	TR	.53	-	F			
WB	L	.21	.13	L	.03	29.7	D	WB	16.5	
	T	.65	.41	T	.27	15.9	C			
	R	.60	.41	R	.25	16.1	C			
NB	LTR	1.17	.07	LTR	.08	165.1	F	NB	165.1	
SB	L	1.17	.27	L	.32	131.0	F	SB	104.2	
	LT	.50	.27	LT	.14	20.5	C			
	R	1.17	.27	R	.32	117.5	F			

INTERSECT: DELAY = - SEC/VEH Xc = 1.22 LOS = F Sum(v/s)CR =

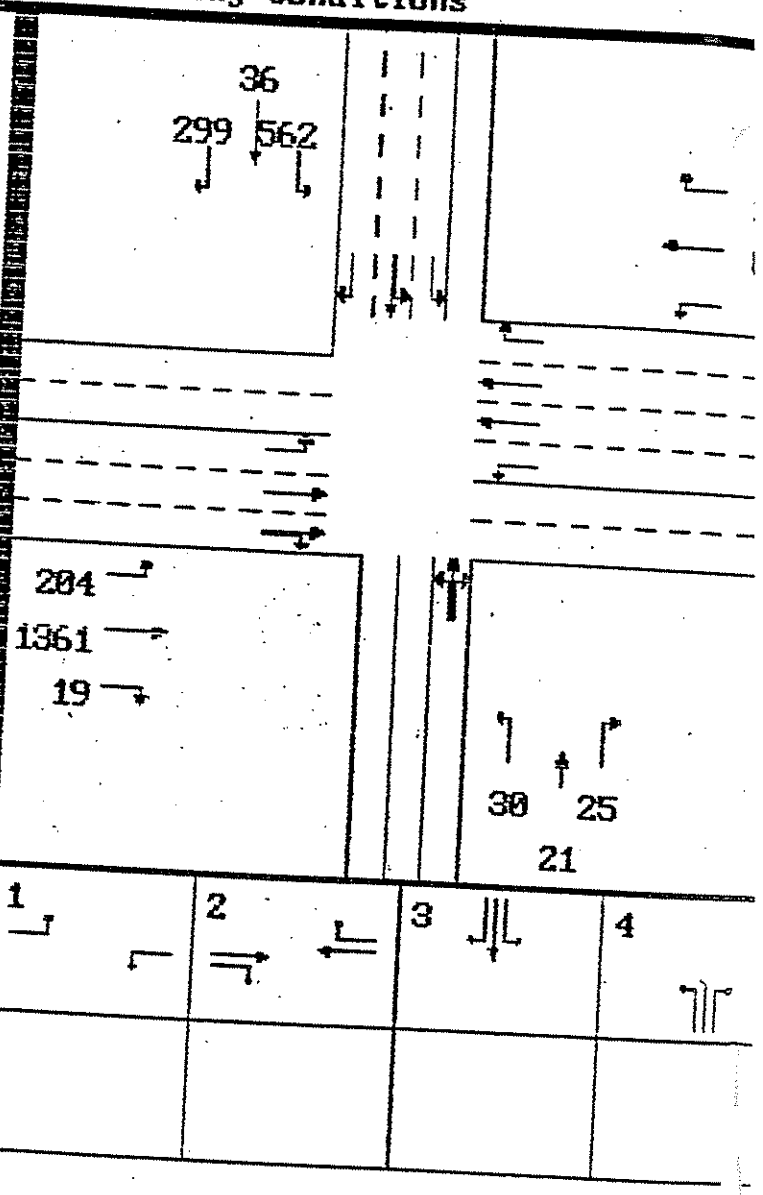
HCM Summary Results for Case: BOWI_P

PM PEAK

Bonita Road /Willow Roa

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.14	1.08	106.9	F
	*TR	.53	1.30	-	F
	All			-	F
WB	L	.03	.21	29.7	D
	T	.27	.65	15.9	C
	R	.25	.60	16.1	C
	All			16.5	C
NB	*LTR	.08	1.17	165.1	F
	All			165.1	F
SB	*L	.32	1.17	131.0	F
	LT	.14	.50	20.5	C
	R	.32	1.17	117.5	F
	All			104.2	F
Intersect:		1.07	1.22	-	F



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BOOT A

****

INTERSECTION: Bonita Road /Otay Lakes R TIME: AM PEAK

ANALYST: JHK DATE: 12-30-91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	389	387	0	50	3	2
WB	396	663	0	0	50	3	2
NB	426	0	139	0	50	3	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	R	12
WB	L	12	T	12	T	12
NB	L	12	L	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	20.0	3
WB	0	2	Y	20	0	.90	N	20.0	3
NB	0	2	Y	20	0	.90	N	20.0	3
SB	0	2	Y	20	0	.90	N	20.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: PED (

PHASE:	1	2	3	4	5	6	7	8
EB		TR	R					
WB	LT	T						
NB	R		LR					
SB								
GREEN	34	30	22	0	0	0	0	0
YELLOW	3	5	3	0	0	0	0	0
RED	1	1	1	0	0	0	0	0

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	T	.39	.33	T	.13	16.7	C	EB	13.9
	R	.63	.56	R	.35	10.9	B		
WB	L	.74	.35	L	.26	25.1	D	WB	11.4
	T	.34	.71	T	.24	3.6	A		
NB	L	.66	.23	L	.15	28.1	D	NB	23.0
	R	.22	.58	R	.13	6.5	B		

INTERSECTION DELAY = 14.9 SEC/VEH Xc = .84 LOS = B Sum(v/s)CR

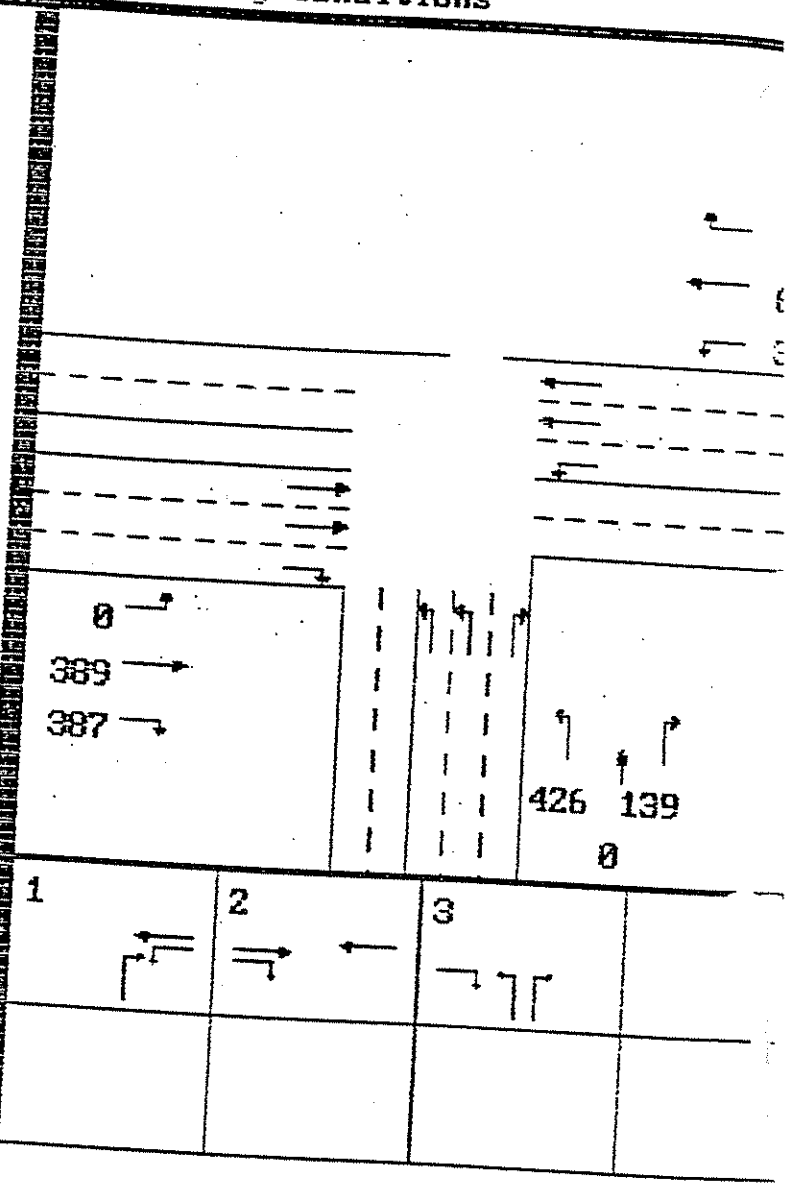
HCM Summary Results for Case: BOOT_A

AM PEAK

Bonita Road /Otay Lakes

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.13	.39	16.7	C
	*R	.35	.63	18.9	B
	All			13.9	B
WB	*L	.26	.74	25.1	D
	T	.24	.34	3.6	A
	All			11.4	B
NB	*L	.15	.66	28.1	D
	R	.13	.22	6.5	B
	All			23.0	C
Intersect:		.77	.84	14.9	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BOOT P

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INTERSECTION: Bonita Road /Otay Lakes R TIME: PM PEAK

ANALYST: JHK DATE: 12-30-91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	940	292	0	50	3	2
WB	294	503	0	0	50	3	2
NB	316	0	266	0	50	3	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	R 12
WB	L	12	T	12	T 12
NB	L	12	L	12	R 12
SB					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	20.0	3
WB	0	2	Y	20	0	.90	N	20.0	3
NB	0	2	Y	20	0	.90	N	20.0	3
SB	0	2	Y	20	0	.90	N	20.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 100

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR	R						
WB	LT	T							
NB	R		LR						
SB									
GREEN	30	32	24	0	0	0	0	0	0
YELLOW	3	5	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.88	.35	T	.31	24.3	C	EB	20.4	C
	R	.45	.60	R	.27	7.3	B			
WB	L	.62	.31	L	.19	24.1	C	WB	11.1	B
	T	.27	.69	T	.19	3.8	A			
NB	L	.45	.25	L	.11	24.4	C	NB	17.3	C
	R	.44	.56	R	.24	8.5	B			

. . 3 SEC/VEH X/C = .82 LOS = C Sum(v/s)Ch = .

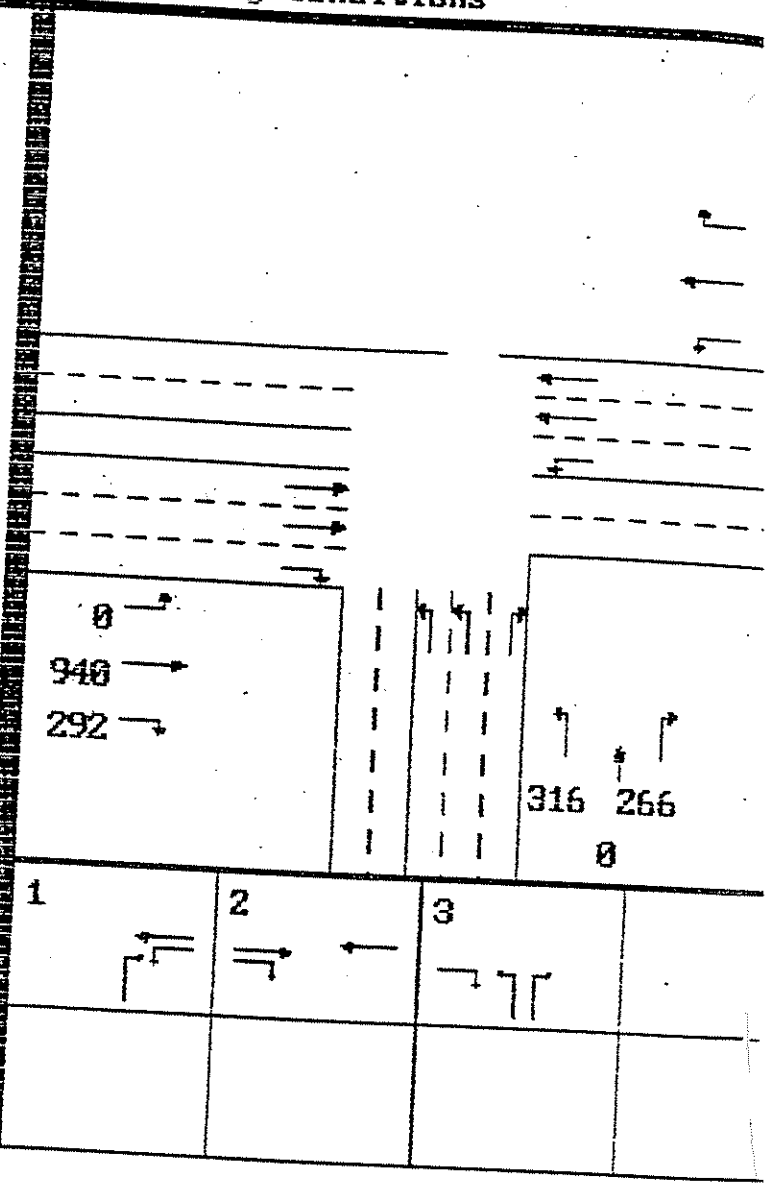
HCM Summary Results for Case: BOOT_P

PM PEAK

Bonita Road /Otay Lakes

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.31	.88	24.3	C
	R	.27	.45	7.3	B
	All			28.4	C
WB	*L	.19	.62	24.1	C
	T	.19	.27	3.8	A
	All			11.1	B
NB	L	.11	.45	24.4	C
	*R	.24	.44	8.5	B
	All			17.3	C
Intersect:		.74	.82	16.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: H S8 A
****
INTERSECTION: H Street /SB I-805 Ram TIME: AM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	743	131	0	50	3	2
WB	153	568	0	0	50	3	2
NB	0	0	448	0	50	2	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12
WB	L	12	T	12	T	12
NB	R	12	R	12		
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	17.0	3
WB	0	2	Y	20	0	.90	N	17.0	3
NB	0	2	Y	20	0	.90	N	20.0	3
SB	0	2	Y	20	0	.90	N	20.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 70

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR							
WB	LT	T							
NB	R		R						
SB									
GREEN	26	29	1	0	0	0	0	0	0
YELLOW	5	5	1	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	V/C	g/C	LANE GRP.	V/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.48	.46	TR	.22	8.7	B	EB	8.7	B
WB	L	.24	.41	L	.10	10.2	B	WB	2.3	A
	T	.23	.91	T	.21	.2	A			
NB	R	.53	.41	R	.22	10.3	B	NB	10.3	B

A = SEC/VEH Xc = .62 LOS = B Sum(V/s)CR =

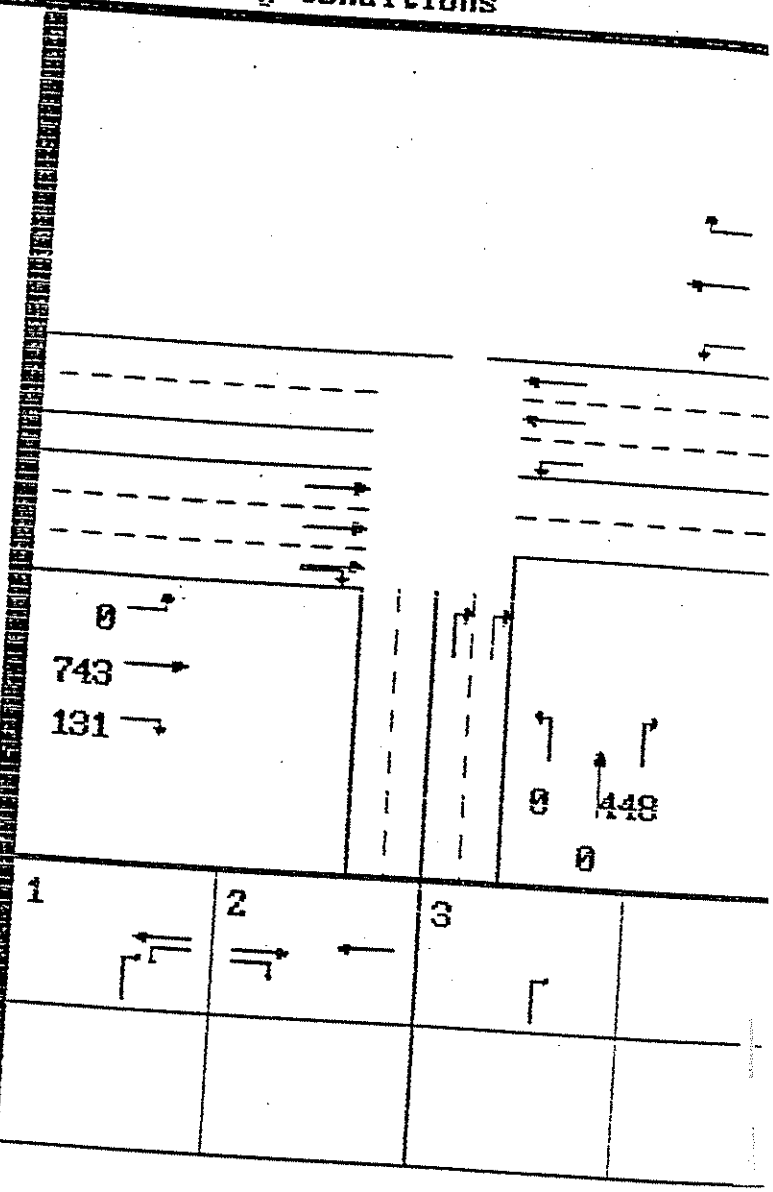
HCM Summary Results for Case: H_SB_A

AM PEAK

H Street /SB I-805

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*TR	.22	.48	8.7	B
	All			8.7	B
WB	*L	.18	.24	18.2	B
	T	.21	.23	.2	A
	All			2.3	A
NB	*R	.22	.53	18.3	B
	All			18.3	B
Intersect:		.54	.62	6.8	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: H SB P
****
INTERSECTION: H Street /SB I-805 Ram TIME: PM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1410	251	0	50	3	2
WB	229	568	0	0	50	3	2
NB	0	0	798	0	50	2	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR 12
WB	L	12	T	12	T 12
NB	R	12	R	12	
SB					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	0	0	.90	N	17.0	3
WB	0	2	Y	0	0	.90	N	17.0	3
NB	0	2	Y	0	0	.90	N	20.0	3
SB	0	2	Y	0	0	.90	N	20.0	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 70

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR							
WB	LT	T							
NB	R		R						
SB									
GREEN	26	29	1	0	0	0	0	0	0
YELLOW	5	5	1	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

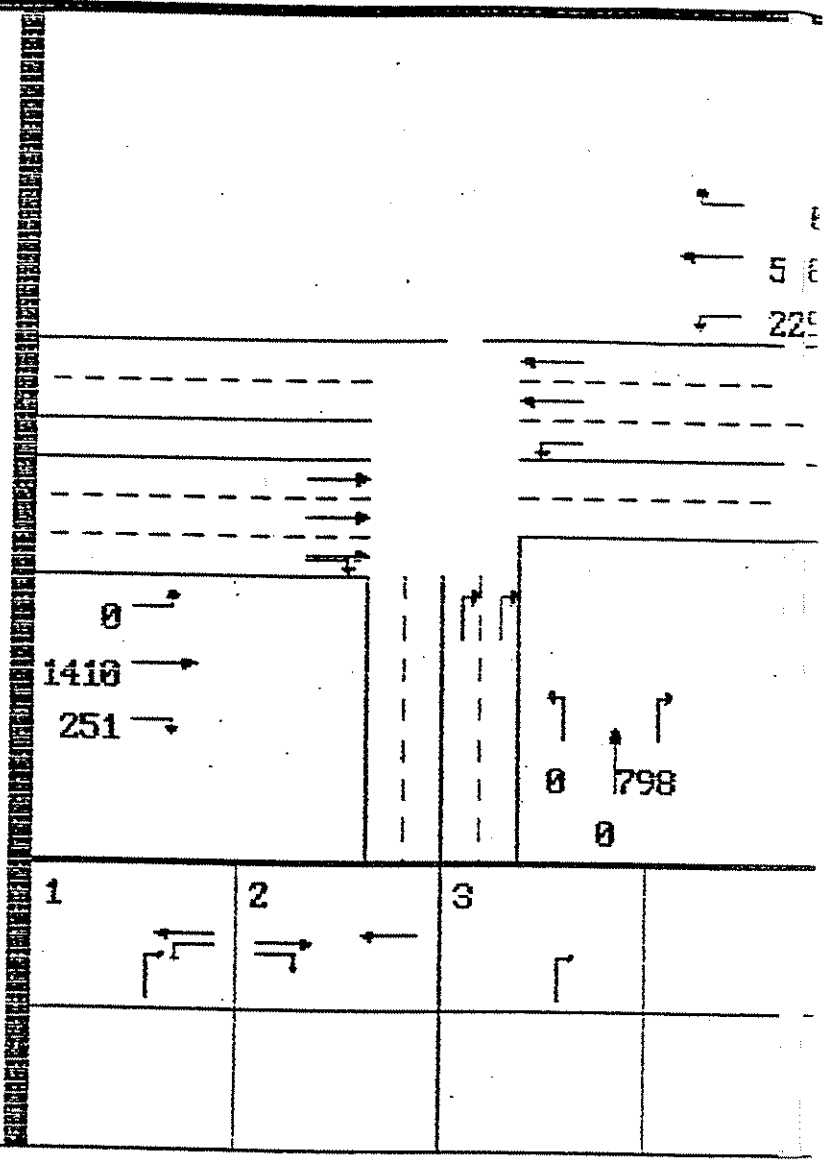
APP	LANE GRP.	V/C	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.88	.46	TR	.40	13.7	B	EB	13.7	B
WB	L	.36	.41	L	.15	10.9	B	WB	3.2	A
	T	.21	.91	T	.20	.2	A			
NB	R	.88	.41	R	.37	17.8	C	NB	17.8	C

INTER DELAY = 12.2 SEC/VEH Xc = 1.05 LOS = B Sum(v/s)CR = .

HCM Summary Results for Case: H_SB_P H Street /SB I-885 Ra

PM PEAK Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.40	.88	13.7	B
	All			13.7	B
WB	*L	.15	.36	18.9	B
	T	.20	.21	.2	A
	All			3.2	A
NB	*R	.37	.88	17.8	C
	All			17.8	C
Intersect:		.92	1.85	12.2	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: H N8 A
****
INTERSECTION: H Street /NB I-805 Ram TIME: AM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	579	0	0	50	2	1
WB	0	503	0	0	50	2	2
NB	197	0	142	0	50	3	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12		
WB	T	12	T	12		
NB	L	12	LR	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	20.0	3
WB	0	2	Y	20	0	.90	N	20.0	3
NB	0	2	Y	20	0	.90	N	17.0	3
SB	0	2	Y	20	0	.90	N	17.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	T								
WB	T								
NB		L R							
SB									
GREEN	40	19	0	0	0	0	0	0	0
YELLOW	4	5	0	0	0	0	0	0	
RED	1	1	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

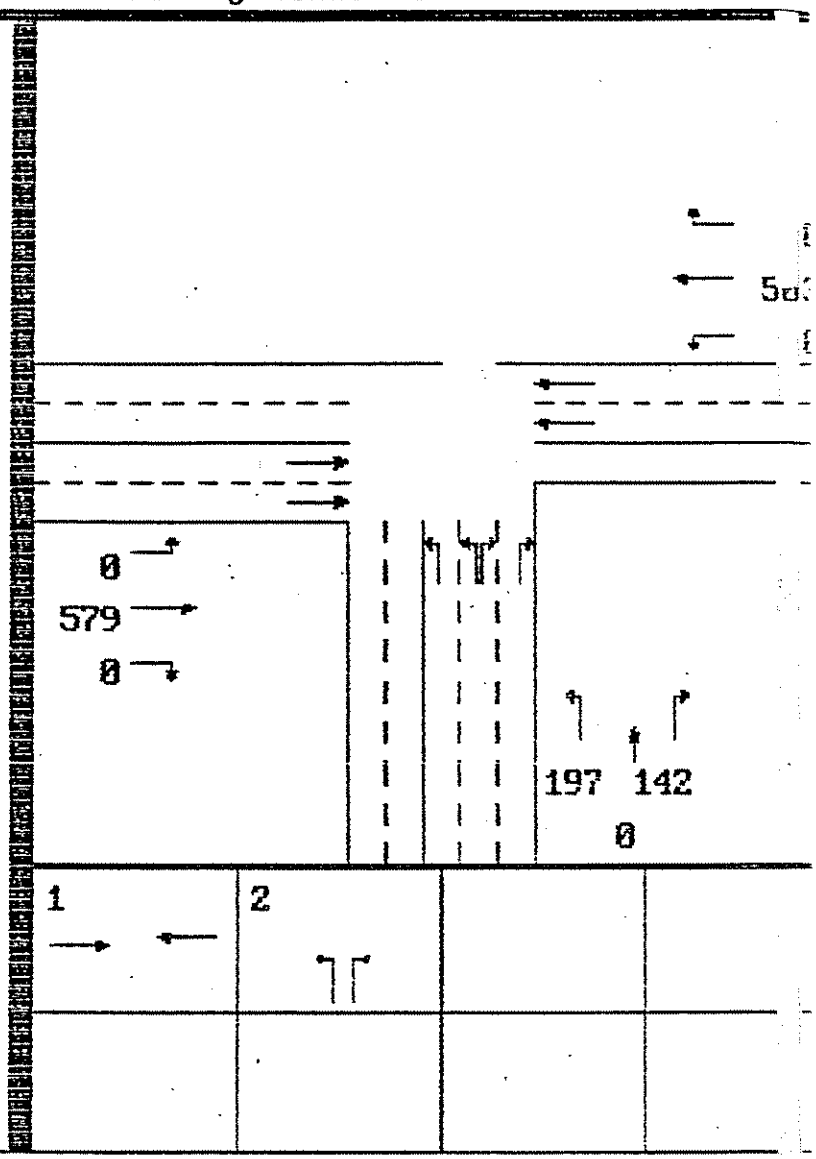
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.35	.60	T	.21	4.6	A	EB	4.6	A
WB	T	.31	.60	T	.19	4.5	A	WB	4.5	A
NB	L	.31	.31	L	.10	14.0	B	NB	12.6	B
	LR	.18	.31	LR	.06	11.3	B			
	R	.31	.31	R	.10	11.9	B			

34 LOS = B Sum(v/s)CR =

HCM Summary Results for Case: H_NB_A H Street /NB I-885 Ra

AM PEAK Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.21	.35	4.6	A
	All			4.6	A
WB	T	.19	.31	4.5	A
	All			4.5	A
NB	L	.10	.31	14.0	B
	LR	.06	.10	11.3	B
	*R	.10	.31	11.9	B
	All			12.6	B
Intersect:		.31	.34	6.4	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: H N8 P

****

INTERSECTION: H Street /NB I-805 Ram TIME: PM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1421	0	0	50	2	1
WB	0	568	0	0	50	2	2
NB	219	0	273	0	50	3	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	
WB	T	12	T	12	
NB	L	12	LR	12	R 12
SB					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	20.0	3
WB	0	2	Y	20	0	.90	N	20.0	3
NB	0	2	Y	20	0	.90	N	17.0	3
SB	0	2	Y	20	0	.90	N	17.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 7

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	T								
WB	T								
NB		L R							
SB									
GREEN	40	19	0	0	0	0	0	0	0
YELLOW	4	5	0	0	0	0	0	0	0
RED	1	1	0	0	0	0	0	0	0

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	T	.87	.60	T	.52	10.5	B	EB	10.5	B
WB	T	.35	.60	T	.21	4.6	A	WB	4.6	
NB	L	.34	.31	L	.11	14.2	B	NB	13.7	
	LR	.27	.31	LR	.08	11.7	B			
	R	.60	.31	R	.19	14.6	B			

= 7 SEC/VEH XC = .78 LOS = B Sum(v/s)CR =

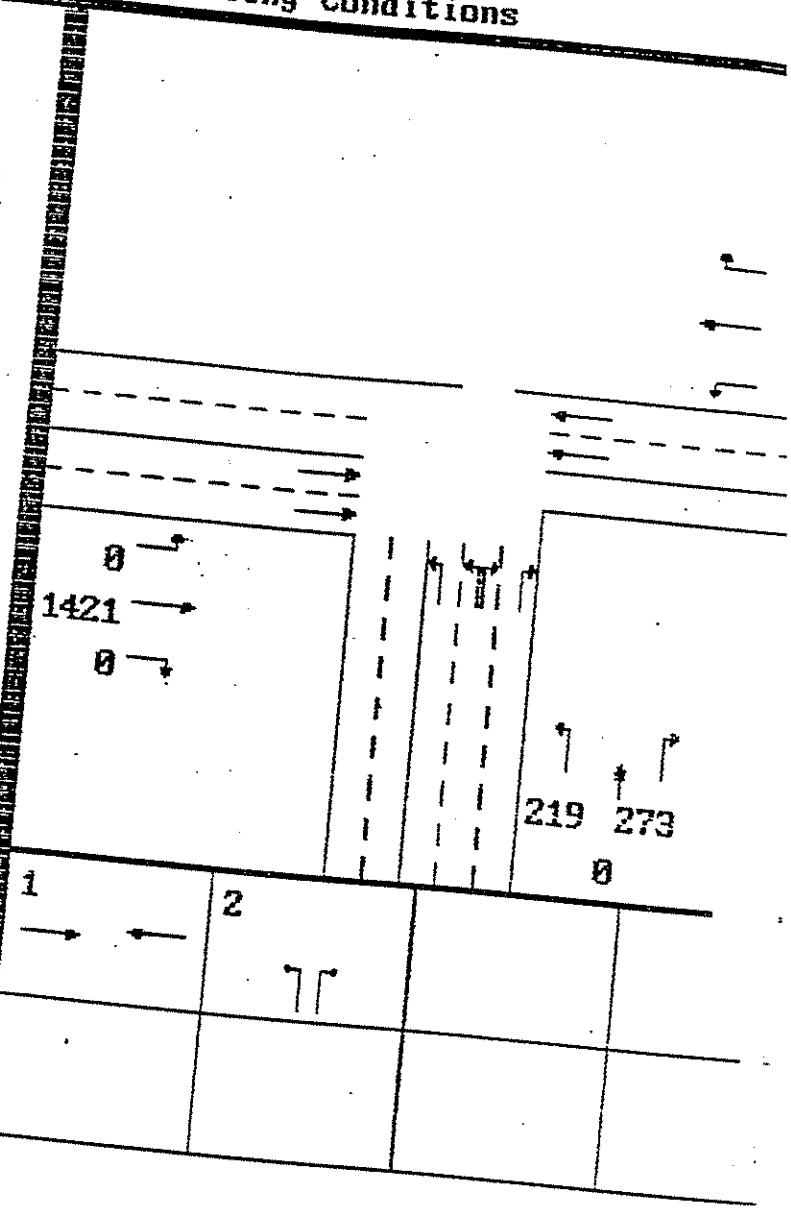
HCM Summary Results for Case: H_NB_P

PM PEAK

H Street /NB I-805

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*T	.52	.87	10.5	B
	All			10.5	B
WB	T	.21	.35	4.6	A
	All			4.6	A
NB	L	.11	.34	14.2	B
	LR	.08	.27	11.7	B
	*R	.19	.60	14.6	B
	All			13.7	B
Intersect:		.71	.78	9.7	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPOR

HCM SIGNALIZED INTERSECTION CASE: H HI A

****

INTERSECTION: H Street /Hidden Vista TIME: AM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	52	1245	95	0	50	6	3
WB	107	1743	15	0	50	5	3
NB	193	1	23	0	50	3	2
SB	37	17	175	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R 12
WB	L	12	L	12	T	12	T	12	TR	12	
NB	L	12	LT	12	R	12					
SB	L	12	LT	12	R	12					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.61	N	20.0	3
WB	0	2	Y	20	0	.94	N	20.0	3
NB	0	2	Y	20	0	.79	N	32.0	3
SB	0	2	Y	20	0	.82	N	32.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED (
EB	L	TR							
WB	L	TR							
NB			LTR						
SB				LTR					
GREEN	10	39	12	20	0	0	0	0	
YELLOW	3	4	4	4	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	L	.25	.11	L	.03	31.0	D	EB	35.0
	T	1.02	.41	T	.42	36.6	D		
	R	.31	.41	R	.13	13.0	B		
WB	L	.33	.11	L	.04	31.5	D	WB	33.9
	TR	1.01	.41	TR	.41	34.1	D		
NB	L	.77	.14	L	.11	41.3	E	NB	35.8
	LT	.26	.14	LT	.04	24.9	C		
	R	.17	.14	R	.02	24.5	C		
SB	L	.09	.22	L	.02	23.6	C	SB	30.2
	LT	.08	.22	LT	.02	20.0	C		
	R	.80	.22	R	.18	32.8	D		

= [illegible]/VEH XC = .84 LOS = D Sum(v/s)CR

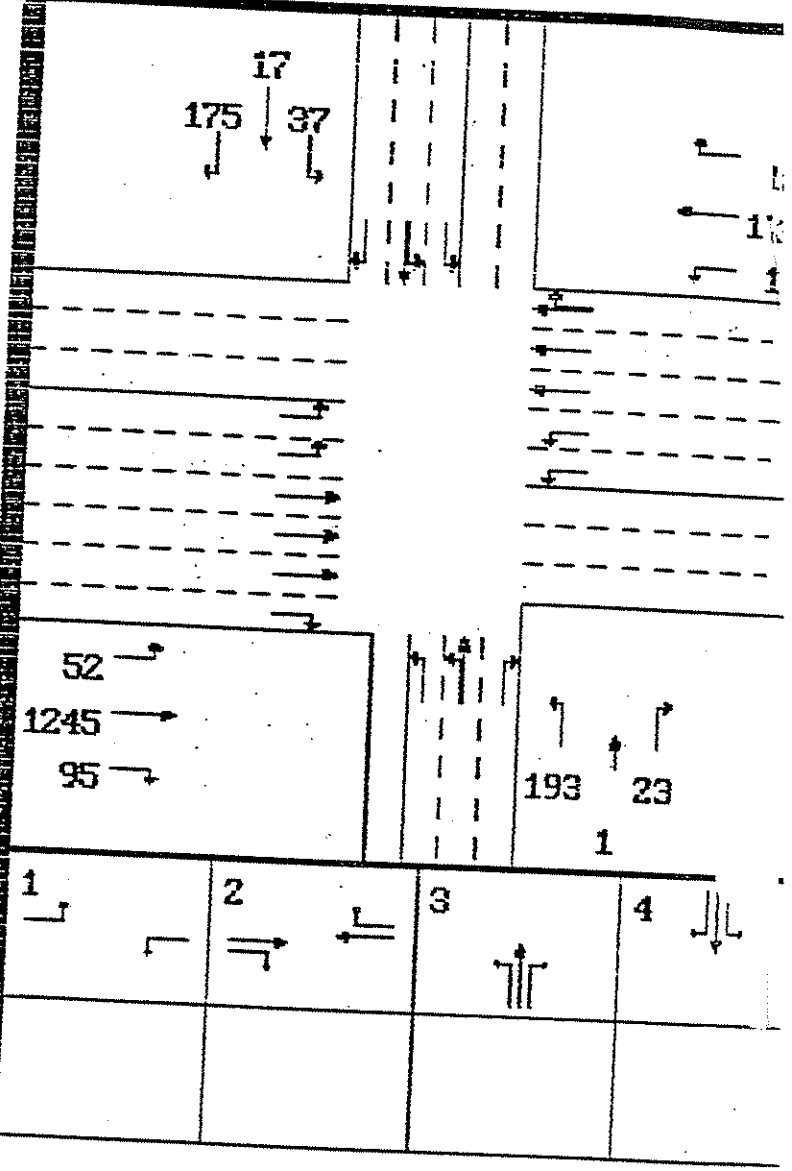
HCM Summary Results for Case: H_HI_A

AM PEAK

H Street /Hidden Vist.

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.03	.25	31.8	D
	*T	.42	1.02	36.6	D
	R	.13	.31	13.8	B
	All			35.8	D
WB	*L	.04	.33	31.5	D
	TR	.41	1.01	34.1	D
	All			33.9	D
NB	*L	.11	.77	41.3	E
	LT	.04	.26	24.9	C
	R	.02	.17	24.5	C
	All			35.8	D
SB	L	.02	.09	23.6	C
	LT	.02	.08	20.0	C
	*R	.18	.08	32.8	D
	All			30.2	D
Intersect:		.74	.84	34.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPOR
HCM SIGNALIZED INTERSECTION CASE: H HI P
****
INTERSECTION: H Street /Hidden Vista TIME: PM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	263	1784	291	0	50	6	3
WB	154	857	22	0	50	5	3
NB	629	37	179	0	50	3	2
SB	26	34	101	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R 12
WB	L	12	L	12	T	12	T	12	TR	12	
NB	L	12	LT	12	R	12					
SB	L	12	LT	12	R	12					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.87	N	20.0	3
WB	0	2	Y	20	0	.86	N	20.0	3
NB	0	2	Y	20	0	.93	N	32.0	3
SB	0	2	Y	20	0	.91	N	32.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED
EB	L	TR							
WB	L	TR							
NB			LTR						
SB				LTR					
GREEN	9	37	26	9	0	0	0	0	
YELLOW	3	4	4	4	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	a/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	L	.97	.10	L	.10	64.2	F	EB	51.9
	T	1.08	.39	T	.42	54.9	E		
	R	.71	.39	R	.28	19.4	C		
WB	L	.57	.10	L	.06	34.4	D	WB	18.5
	TR	.58	.39	TR	.23	15.8	C		
NB	L	1.07	.28	L	.30	81.2	F	NB	54.3
	LT	.44	.28	LT	.12	19.4	C		
	R	.57	.28	R	.16	21.3	C		
SB	L	.12	.11	L	.01	30.5	D	SB	40.3
	LT	.23	.11	LT	.02	26.3	D		
	R	.83	.11	R	.09	47.8	E		

Xc = 1.03 LOS = E Sum(V/s)CR

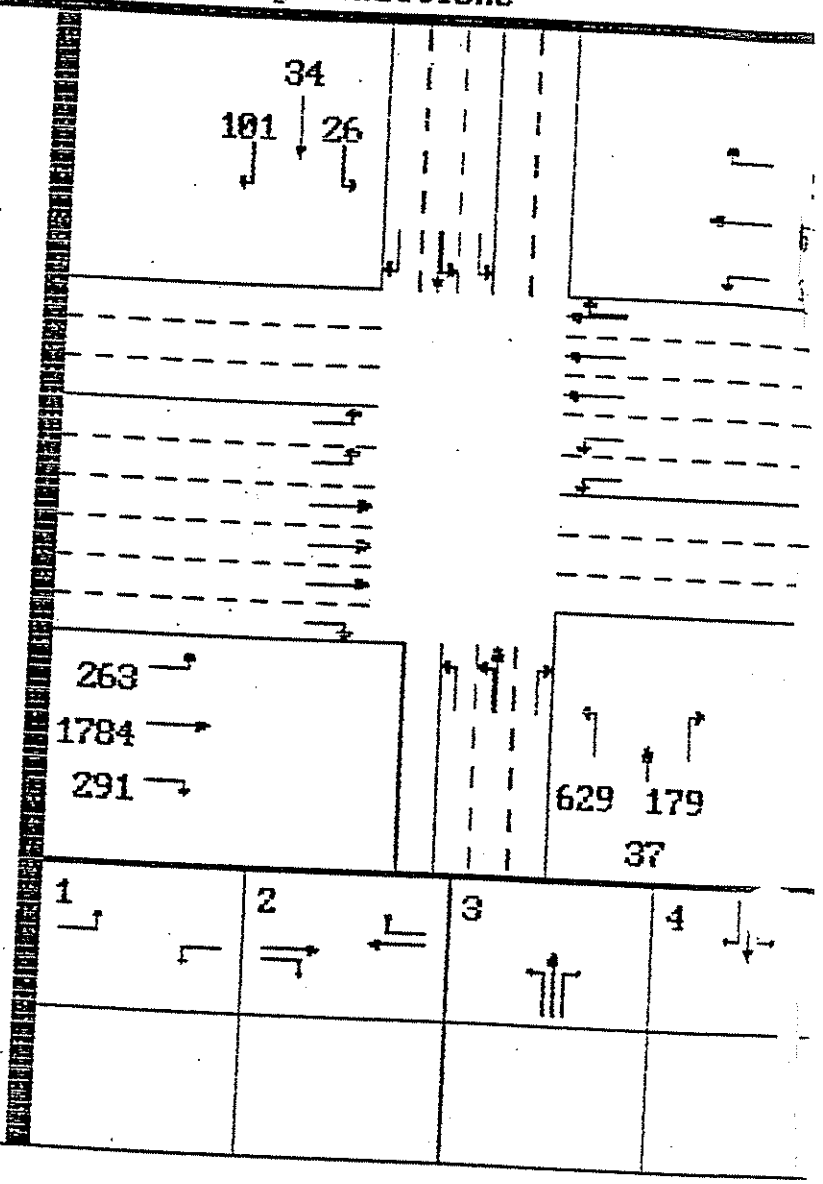
HCM Summary Results for Case: H_HI_P

PM PEAK

H Street /Hidden Vist

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.10	.97	64.2	F
	*T	.42	1.08	54.9	E
	R	.28	.71	19.4	C
	All			51.9	E
WB	L	.06	.57	34.4	D
	TR	.23	.58	15.8	C
	All			18.5	C
NB	*L	.30	1.07	81.2	F
	LT	.12	.44	19.4	C
	R	.16	.57	21.3	C
	All			54.3	E
SB	L	.01	.12	30.5	D
	LT	.02	.23	26.3	D
	*R	.09	.03	47.8	E
	All			40.3	E
Intersect:		.91	1.03	43.6	E



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: H PA A
****
INTERSECTION: H Street /Paseo del Re TIME: AM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	1	1042	40	0	50	5	3
WB	161	1442	3	0	50	5	3
NB	211	0	328	0	50	3	2
SB	0	0	0	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	TR 12
WB	L	12	L	12	T	12	T	12	TR 12
NB	L	12	T	12	TR	12			
SB	L	12	T	12	R	12			

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.72	N	20.0	3
WB	0	2	Y	20	0	.96	N	20.0	3
NB	0	2	Y	20	0	.74	N	29.0	3
SB	0	2	Y	20	0	.90	N	29.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB	L	TR							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	12	37	29	0	0	0	0	0	
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	a/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY L
EB	L	.00	.14	L	.00	25.0	D	EB	15.9
	TR	.79	.42	TR	.33	15.9	C		
WB	L	.37	.14	L	.05	26.7	D	WB	16.9
	TR	.79	.42	TR	.33	15.8	C		
NB	L	.51	.33	L	.17	18.9	C	NB	17.1
	TR	.52	.33	TR	.17	16.0	C		
SB	L	.00	.33	L	.00	.0	A	SB	.0
	T	.00	.33	T	.00	.0	A		
	R	.00	.33	R	.00	.0	A		

INTERSECT. DELAY = 16.5 SEC/VEH Xc = .62 LOS = C Sum(v/s)CR =

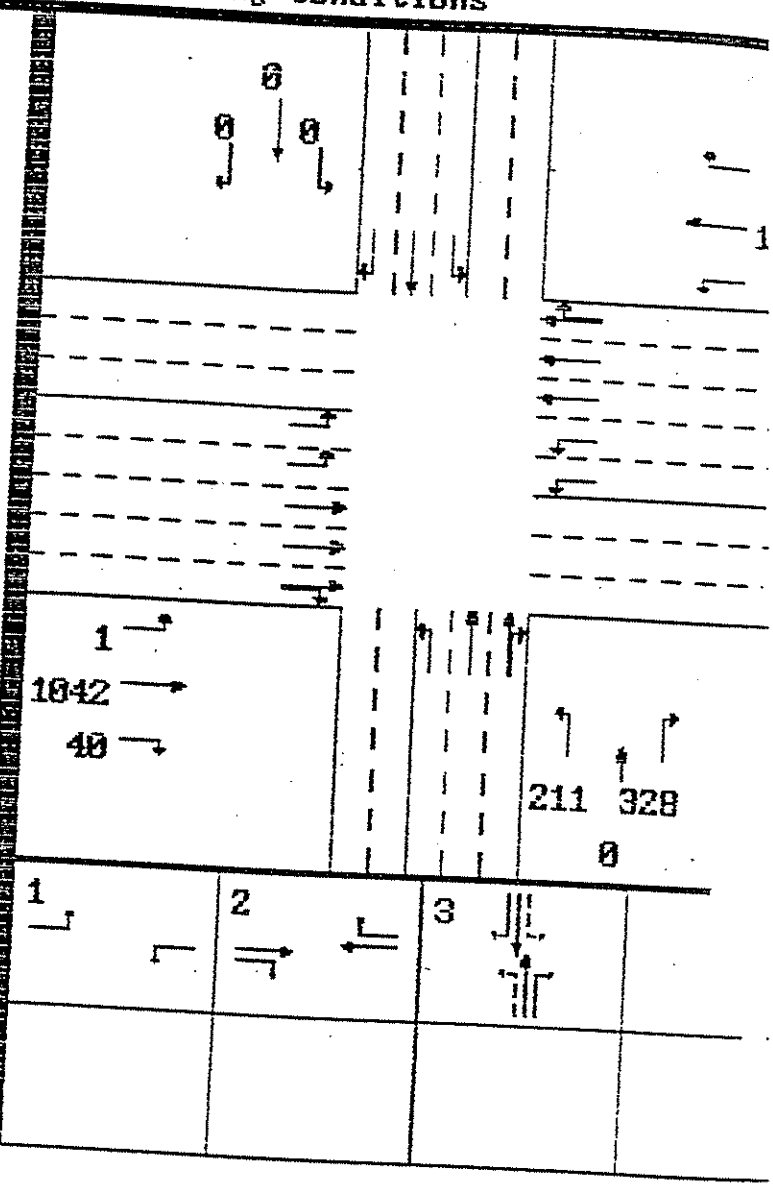
HCM Summary Results for Case: H_PA_A

AM PEAK

H Street /Paseo del

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.00	.00	25.0	D
	*TR	.33	.79	15.9	C
	All			15.9	C
WB	*L	.05	.37	26.7	D
	TR	.33	.79	15.8	C
	All			16.9	C
NB	L	.17	.51	18.9	C
	*TR	.17	.52	16.8	C
	All			17.1	C
SB	L	.00	.00	.0	A
	T	.00	.00	.0	A
	R	.00	.00	.0	A
	All			.0	
Intersect:		.56	.62	16.5	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: H PA P
****
INTERSECTION: H Street /Paseo del Re TIME: PM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	1	1585	213	0	50	5	3
WB	133	731	0	0	50	5	3
NB	122	2	169	0	50	3	2
SB	0	0	0	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	TR 12
WB	L	12	L	12	T	12	T	12	TR 12
NB	L	12	T	12	TR	12			
SB	L	12	T	12	R	12			

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.87	N	20.0	3
WB	0	2	Y	20	0	.86	N	20.0	3
NB	0	2	Y	20	0	.65	N	29.0	3
SB	0	2	Y	20	0	.90	N	29.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1

PHASE:	1	2	3	4	5	6	7	8	PED ON
EB	L	TR							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	15	44	29	0	0	0	0	0	
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE) APPROACH: DELAY L

APP	LANE GRP.	v/c	a/C	LANE GRP.	v/s	DELAY	LOS		
EB	L	.00	.16	L	.00	26.8	D	EB	38.0
	TR	1.04	.45	TR	.47	38.0	D		
WB	L	.31	.16	L	.05	28.3	D	WB	14.3
	TR	.42	.45	TR	.19	12.1	B		
NB	L	.37	.30	L	.11	21.2	C	NB	19.1
	TR	.34	.30	TR	.10	17.7	C		
SB	L	.00	.30	L	.00	.0	A	SB	.0
	T	.00	.30	T	.00	.0	A		
	R	.00	.30	R	.00	.0	A		

[illegible] 20.0 SEC/VEH XC = .69 LOS = D Sum(v/s)CR =

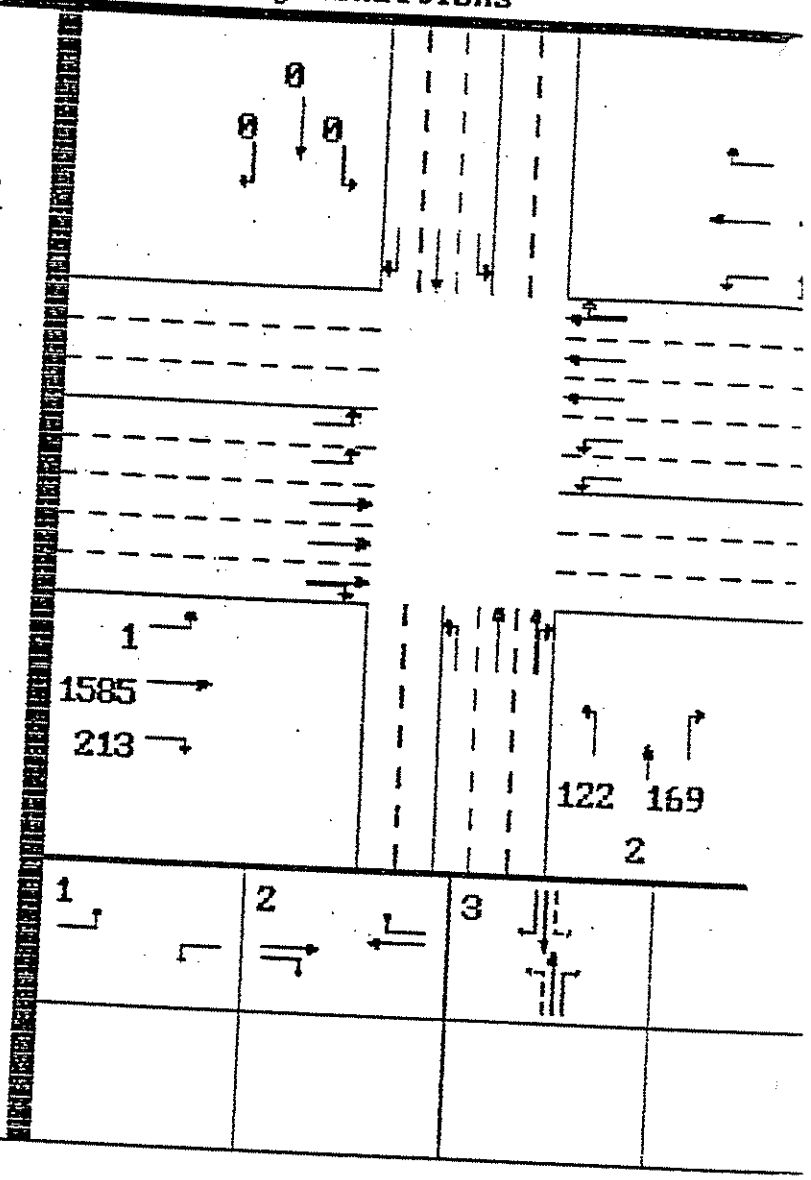
HCM Summary Results for Case: H_PA_P

PM PEAK

H Street /Paseo del

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.00	.00	26.8	D
	*TR	.47	1.04	38.0	D
	All			38.0	D
WB	*L	.05	.31	28.3	D
	TR	.19	.42	12.1	B
	All			14.5	B
NB	*L	.11	.37	21.2	C
	TR	.10	.34	17.7	C
	All			19.1	C
SB	L	.00	.00	.0	A
	T	.00	.00	.0	A
	R	.00	.00	.0	A
	All			.0	
Intersect:		.63	.69	29.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: H OT A
****
INTERSECTION: H Street /Otay Lakes R TIME: AM Peak
ANALYST: JHK DATE: 12/30/91
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	188	178	40	0	50	4	2
WB	86	603	133	0	50	4	2
NB	170	266	376	376	50	4	2
SB	109	420	240	240	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	R	12
WB	L	12	T	12	T	12	R	12
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.91	N	23.0	3
WB	0	2	Y	20	0	.80	N	23.0	3
NB	0	2	Y	20	0	.62	N	23.0	3
SB	0	2	Y	20	0	.82	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1

PHASE:	1	2	3	4	5	6	7	8	PED ON
EB	L	TR							
WB	L	TR							
NB			L	TR					
SB			L	TR					
GREEN	15	25	20	23	0	0	0	0	
YELLOW	3	4	2	4	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.76	.16	L	.12	38.8	D
	T	.21	.27	T	.06	18.3	C
	R	.13	.27	R	.04	17.9	C
WB	L	.40	.16	L	.06	29.2	D
	T	.82	.27	T	.22	25.6	D
	R	.51	.27	R	.14	20.9	C
NB	L	.81	.20	L	.16	38.3	D
	T	.51	.25	T	.13	21.1	C
	R	.00	.25	R	.00	.0	A
SB	L	.39	.20	L	.08	26.8	D
	T	.60	.25	T	.15	22.1	C
	R	.00	.25	R	.00	.0	A

APPROACH: DELAY LO

EB	27.5	I
WB	25.3	
NB	27.6	
SB	23.0	

Sum(v/s)CR =

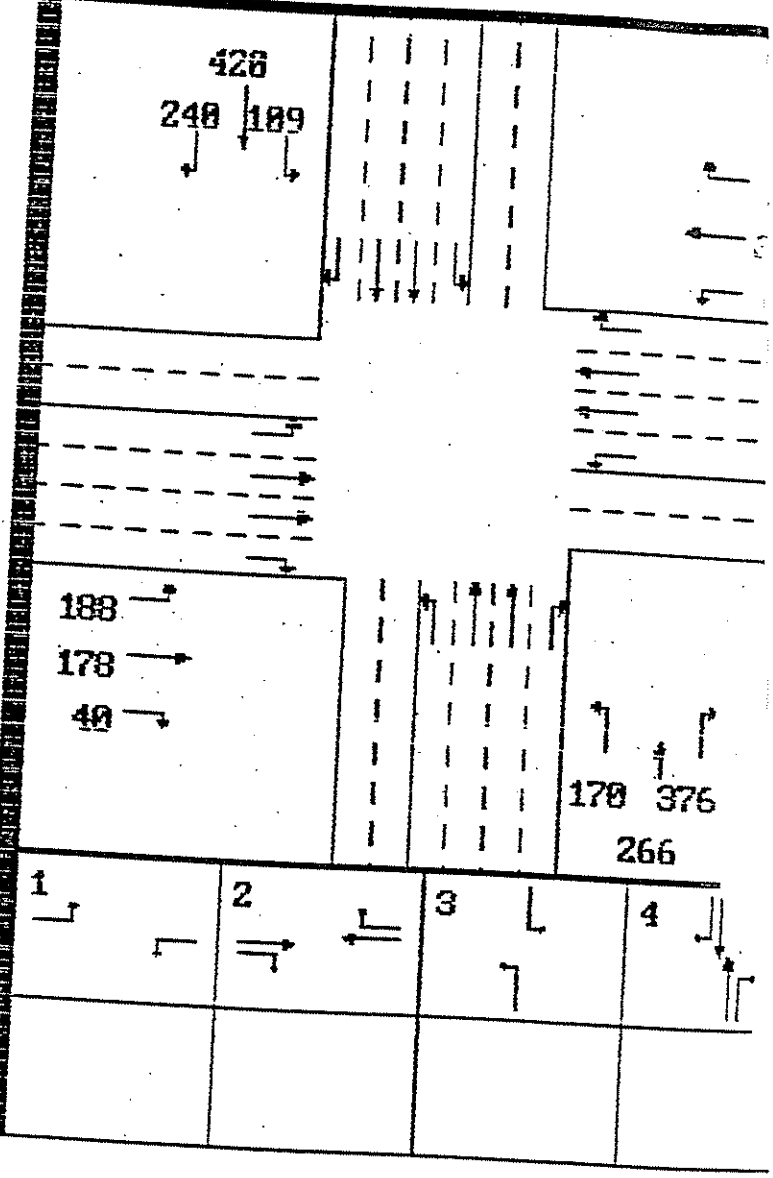
HCM Summary Results for Case: H_OT_A

AM Peak

H Street /Otay Lakes

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.12	.76	38.8	D
	T	.06	.21	18.3	C
	R	.04	.13	17.9	C
	All			27.5	D
WB	L	.06	.40	29.2	D
	*T	.22	.82	25.6	D
	R	.14	.51	20.9	C
	All			25.3	D
NB	*L	.16	.81	38.3	D
	T	.13	.51	21.1	C
	R	.00	.00	.0	A
	All			27.6	D
SB	L	.00	.39	26.8	D
	*T	.15	.60	22.1	C
	R	.00	.00	.0	A
	All			23.0	C
Intersect:		.66	.75	25.7	D



HCM/Cinema /1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HN8A1
****
INTERSECTION: H Street /NB I-805 Ram TIME: A.M. PEAK
DATE: 12/30/91
ANALYST: JHK AREA TYPE: NON-CBD
COMMENT: INTERIM W/O PROPOSED PROJECT

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1848	0	0	50	3	3
WB	0	1258	0	0	50	2	2
NB	231	0	202	0	50	3	2
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12		
NB	L	12	LR	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	N	17.5	4
WB	0	2	N	0	0	.90	N	17.5	4
NB	0	2	N	0	0	.90	N	17.5	3
SB	0	2	N	0	0	.90	N	17.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB		LR							
SB									
GREEN	61	41	0	0	0	0	0	0	0
YELLOW	3	3	0	0	0	0	0	0	
RED	1	1	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

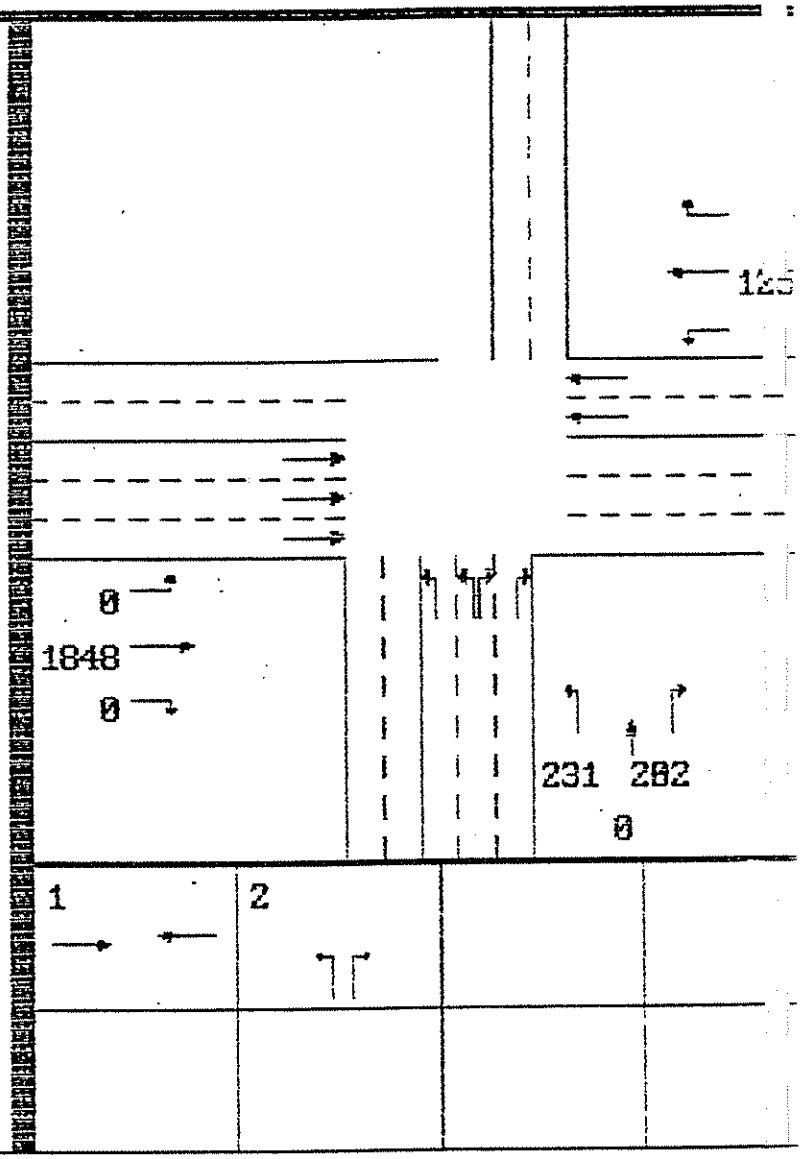
APP	LANE GRP.	V/C	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.75	.56	T	.42	10.3	B	EB	10.3	B
WB	T	.73	.56	T	.41	10.3	B	WB	10.3	B
NB	L	.25	.38	L	.10	17.7	C	NB	16.0	C
	LR	.26	.38	LR	.10	15.1	C			
	R	.26	.38	R	.10	15.1	C			

OVERVIEW: V/C = .55 LOS = B Sum(v/s)CP = .52

HCM Summary Results for Case: HM0A1 H Street /NB I-805 Ra

A.M. PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.42	.75	10.3	B
	All			10.3	B
WB	T	.41	.73	10.3	B
	All			10.3	B
NB	L	.10	.25	17.7	C
	*LR	.10	.26	15.1	C
	R	.10	.26	15.1	C
	All			16.0	C
Intersect:		.52	.55	11.0	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HS8P1
****
INTERSECTION: H STREET /SB I-805 RAM TIME: PM PEAK
ANALYST: KK DATE: 02-13-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1658	237	0	50	4	3
WB	209	1255	0	0	50	3	2
NB	0	0	2028	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	
NB	R	12	R	12	R	12	
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED C
EB		TR							
WB	LT	T							
NB	R		R						
SB									
GREEN	53	42	3	0	0	0	0	0	
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	T	.97	.39	T	.38	27.2	D	EB	25.4
	R	.44	.39	R	.17	11.9	B		
WB	L	.28	.49	L	.14	12.6	B	WB	2.1
	T	.45	.91	T	.41	.4	A		
NB	R	1.03	.53	R	.55	36.3	D	NB	36.3

... = 23.5 SEC/VEH Xc = 1.16 LOS = C Sum(v/s)CR

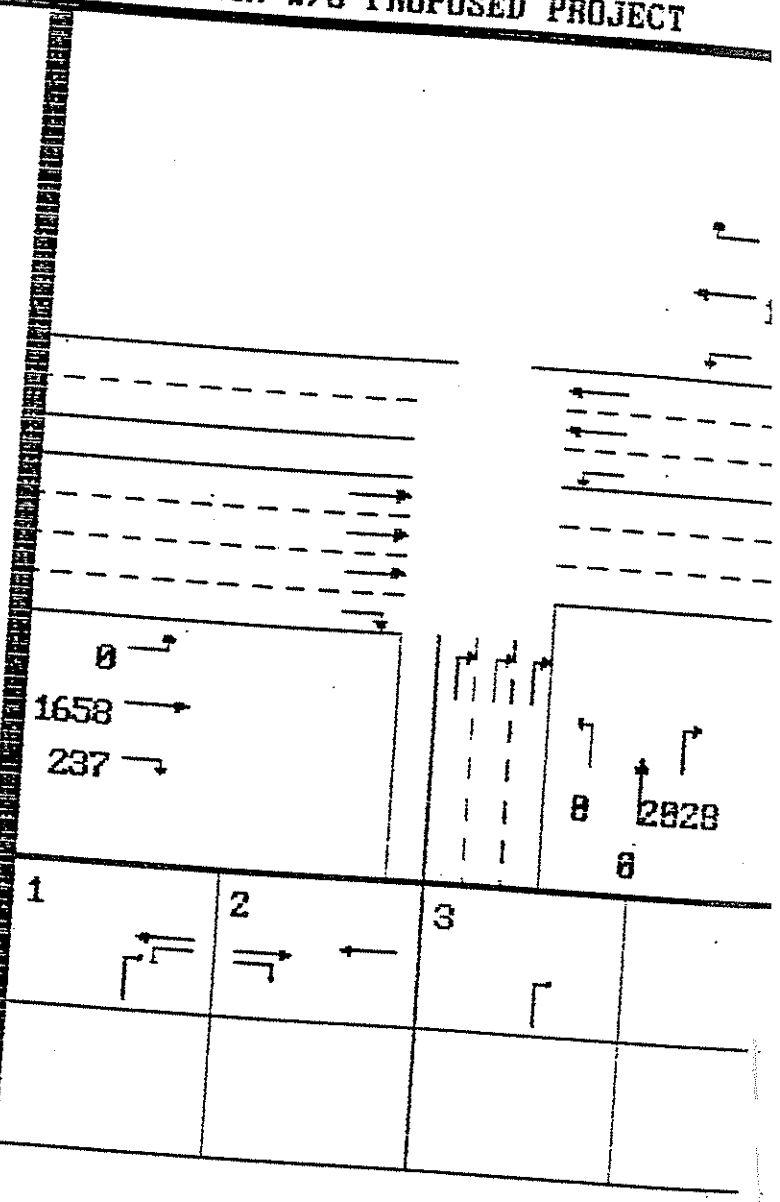
HCM Summary Results for Case: HS8P1

PM PEAK

H STREET /SB I-805

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.38	.97	27.2	D
	R	.17	.44	11.9	B
	All			25.4	D
WB	*L	.14	.28	12.6	B
	T	.41	.45	.4	A
	All			2.1	A
NB	*R	.55	1.83	36.3	D
	All			36.3	D
Intersect:		1.86	1.16	23.5	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HS8A1

****

INTERSECTION: H STREET /SB I-805 RAMP TIME: AM PEAK

ANALYST: KK DATE: 02-13-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1648	281	0	50	4	3
WB	432	1057	0	0	50	3	2
NB	0	0	831	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	
NB	R	12	R	12	R	12	
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 1

SIGNAL SETTINGS: ACTUATED PED ON

PHASE:	1	2	3	4	5	6	7	8
EB		TR						
WB	LT	T						
NB	R		R					
SB								
GREEN	46	46	6	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0
RED	0	0	0	0	0	0	0	0

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	T	.88	.43	T	.38	19.7	C
	R	.48	.43	R	.21	11.0	B
WB	L	.66	.43	L	.28	20.8	C
	T	.39	.88	T	.35	.6	A
NB	R	.45	.49	R	.22	11.9	B

APPROACH: DELAY LOS

EB	18.5	WB	6.2
NB	11.9		

LOS = 3 Sum(v/s)CR =

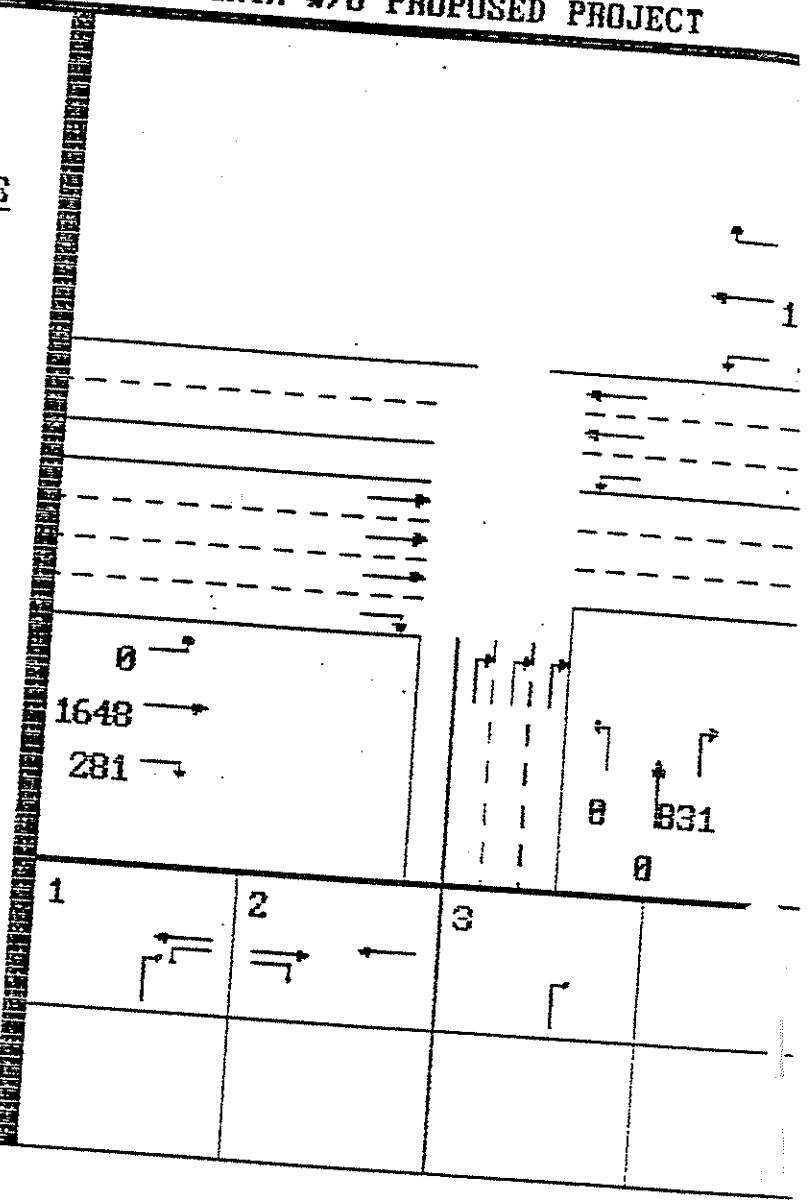
HCM Summary Results for Case: HS8A1

AM PEAK

H STREET /SB I-805 R

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*T	.38	.88	19.7	C
	R	.21	.48	11.0	B
	All			18.5	C
WB	*L	.28	.66	28.8	C
	T	.35	.39	.6	A
	All			6.2	B
NB	*R	.22	.45	11.9	B
	All			11.9	B
Intersect:		.88	.96	13.0	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: BOOLP1

****

INTERSECTION: BONITA DRIVE/OTAY LAKES R TIME: PM PEAK

ANALYST: KK DATE: 02-11-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1196	422	0	50	3	2
WB	422	749	0	0	50	4	2
NB	419	0	379	0	50	3	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	R	12		
WB	L	12	L	12	T	12	T	12
NB	L	12	L	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	4
SB	0	2	N	0	0	.90	Y	23.5	4

OPERATIONAL ANALYSIS CYCLE LENGTH: 1

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ON
EB		TR	P	R					
WB	LT	T	P						
NB	R			LR	P				
SB									
GREEN	20	48	30	0	0	0	0	0	
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	V/C	g/C	LANE GRP.	V/s	DELAY	LOS	APPROACH:	DELAY	L
EB	L	.88	.45	L	.39	19.8	C	EB	15.7	
	R	.45	.70	R	.32	3.5	A			
WB	L	.79	.19	L	.15	36.8	D	WB	15.7	
	T	.37	.66	T	.25	3.9	A			
NB	L	.53	.28	L	.15	25.8	D	NB	20.2	
	R	.63	.45	R	.28	13.7	B			

LOS = C Sum V/s/CR =

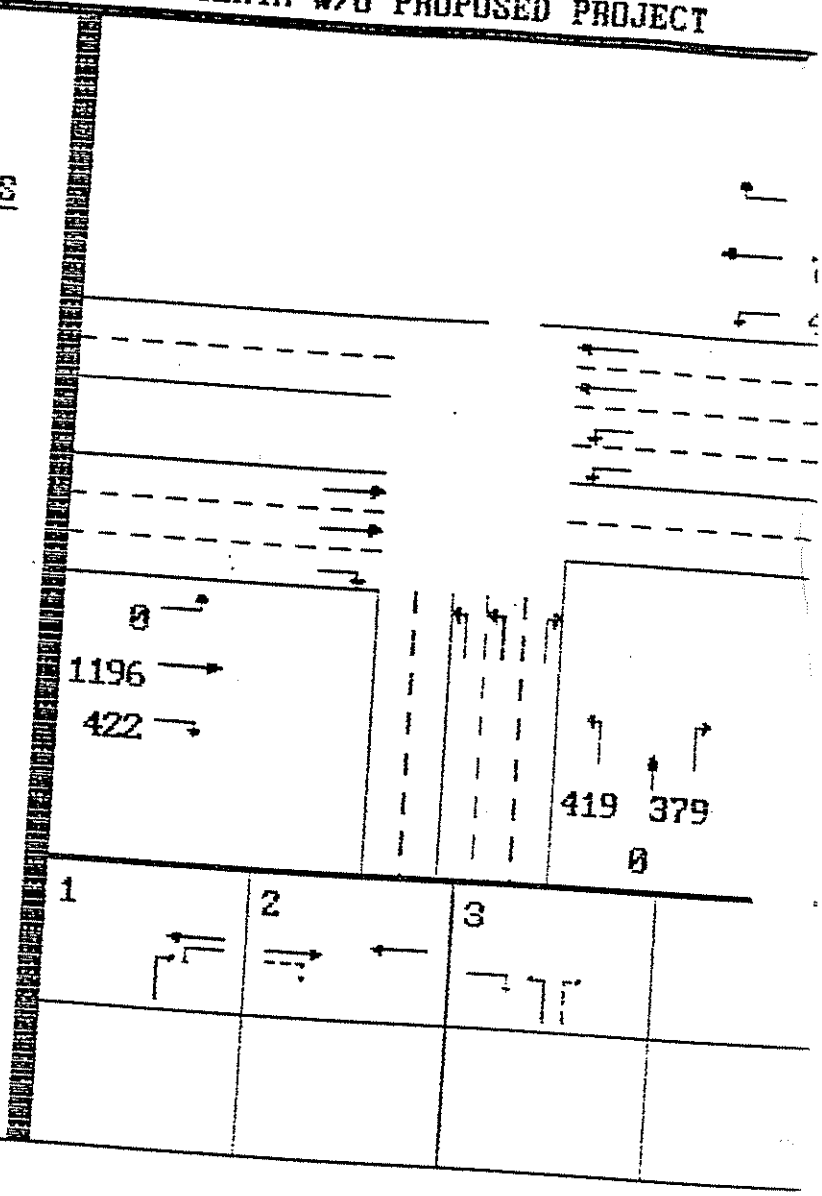
HCM Summary Results for Case: BOOLP1

PM PEAK

BONITA DRIVE/OTAY LAKES

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.39	.88	19.8	C
	R	.32	.45	3.5	A
	All			15.7	C
WB	*L	.15	.79	36.8	D
	T	.25	.37	3.9	A
	All			15.7	C
NB	L	.15	.53	25.8	D
	*R	.28	.63	13.7	B
	All			28.2	C
Intersect:		.82	.90	16.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPOR
HCM SIGNALIZED INTERSECTION CASE: BOOLA1
****
INTERSECTION: BONITA DRIVE/OTAY LAKES R TIME: AM PEAK
ANALYST: KK DATE: 02-11-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	489	620	0	50	3	2
WB	591	992	0	0	50	4	2
NB	568	0	201	0	50	3	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	R	12		
WB	L	12	L	12	T	12	T	12
NB	L	12	L	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	4
SB	0	2	N	0	0	.90	Y	23.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED (
EB		TR P	R						
WB	LT	T P							
NB	R		LR P						
SB									
GREEN	28	33	37	0	0	0	0	0	
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	T	.52	.31	T	.16	14.9	B	EB	11.8
	R	.74	.63	R	.46	9.2	B		
WB	L	.80	.26	L	.21	32.4	D	WB	16.1
	T	.54	.60	T	.32	6.3	B		
NB	L	.59	.35	L	.20	23.0	C	NB	18.6
	R	.26	.58	R	.15	5.4	B		

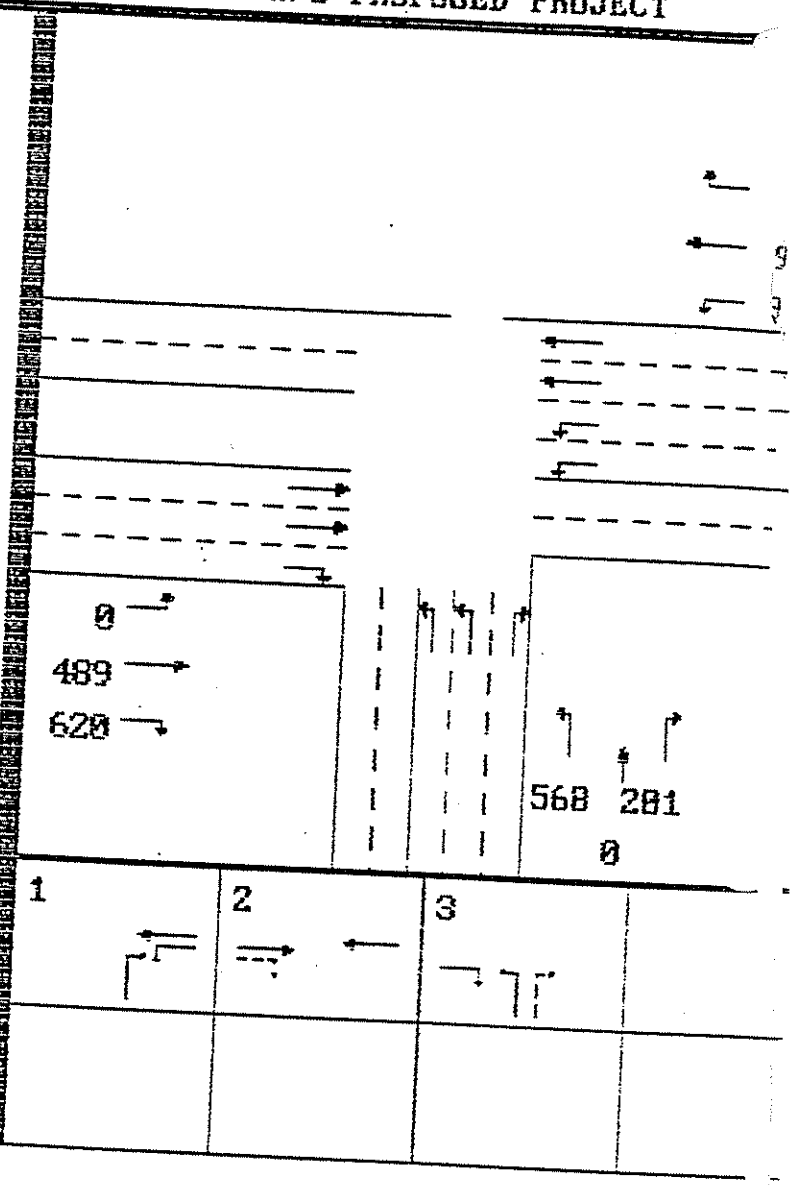
HCM Summary Results for Case: BOOLA1

AM PEAK

BONITA DRIVE/OTAY LAKES

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	T	.16	.52	14.9	B
	*R	.46	.74	9.2	B
	All			11.8	B
WB	*L	.21	.80	32.4	D
	T	.32	.54	6.3	B
	All			16.1	C
NB	*L	.20	.59	23.0	C
	R	.15	.26	5.4	B
	All			18.6	C
Intersect:		.87	.95	15.3	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: BONIP1
****
INTERSECTION: Bonita Road /Willow St. TIME: PM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	453	1137	43	0	50	4	2
WB	50	848	299	0	50	4	2
NB	33	24	28	0	50	1	1
SB	604	38	316	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	T	12	R	12
NB	LTR	12						
SB	L	12	LT	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 110

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR			R				
WB		TR	LTR						
NB				LTR					
SB					LTR				
GREEN	27	11	14	10	28	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.63	.25	L	.16	28.8	D	EB	32.0	D
	TR	.99	.39	TR	.39	33.2	D			
WB	L	.24	.14	L	.03	32.4	D	WB	35.0	D
	T	1.02	.27	T	.28	44.4	E			
	R	.41	.54	R	.22	7.3	B			
NB	LTR	.64	.10	LTR	.06	36.0	D	NB	36.0	D
SB	L	.81	.26	L	.21	36.3	D	SB	34.1	D
	LT	.78	.26	LT	.21	29.3	D			
	R	.88	.26	R	.23	36.8	D			

INTERSECTION DELAY = 33.8 SEC/VEH Xc = .82 LOS = D Sum(v/s)CR = .7

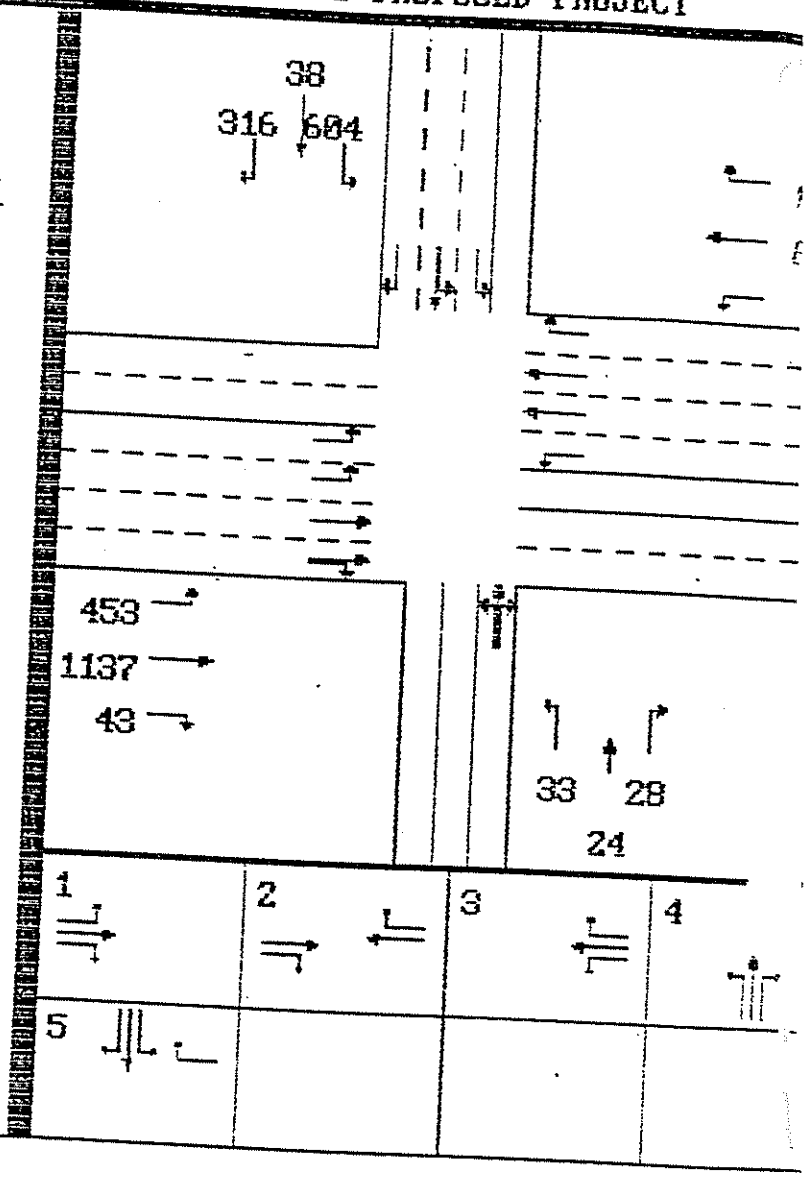
HCM Summary Results for Case: BOWIP1

PM PEAK

Bonita Road /Willow St.

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.16	.63	28.8	D
	TR	.39	.99	33.2	D
	All			32.8	D
WB	L	.03	.24	32.4	D
	*T	.28	1.02	44.4	E
	R	.22	.41	7.3	B
	All			35.0	D
NB	*LTR	.06	.64	36.0	D
	All			36.0	D
SB	L	.21	.81	36.3	D
	LT	.21	.78	29.3	D
	*R	.23	.88	36.8	D
	All			34.1	D
Intersect:		.73	.82	33.5	D



HCM-Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: BONIA1 SUMMARY REPORT

****

INTERSECTION: Bonita Road -WILLOW STREE TIME: A.M. PEAK

ANALYST: JHK DATE: 1/2/92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	116	775	21	0	50	4	2
WB	16	1201	343	0	50	4	2
NB	36	25	37	0	50	1	1
SB	298	29	161	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	T	12	R	12
NB	LTR	12						
SB	L	12	LT	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR							
WB		TR	LTR		R				
NB				LTR					
SB	R				LTR				
GREEN	16	26	14	11	23	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

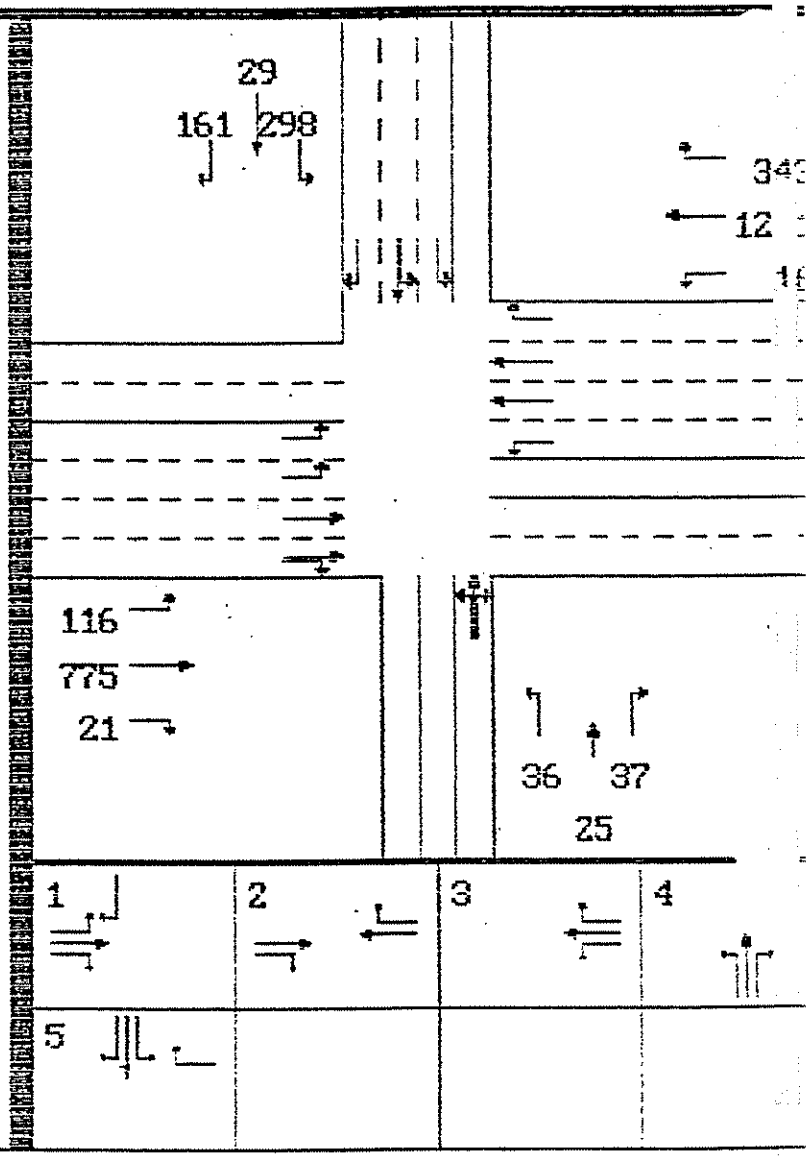
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	V/C	g/C	LANE GRP.	V/C	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.15	L	.04	31.2	D	EB	15.8	C
	TR	.61	.43	TR	.26	13.6	B			
WB	L	.08	.14	L	.01	31.5	D	WB	22.8	C
	T	.96	.41	T	.39	27.6	D			
	R	.40	.63	R	.25	4.9	A			
NB	LTR	.68	.11	LTR	.07	36.8	D	NB	36.8	D
SB	L	.58	.22	L	.13	31.0	D	SB	24.1	C
	T	.40	.22	LT	.04	24.1	C			
	R	.52	.37	R	.12	15.9	C			

HCM Summary Results for Case: BOWIA1 Bonita Road /WILLOW STREE

A.M. PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.04	.27	31.2	D
	TR	.26	.61	13.6	B
	All			15.8	C
WB	L	.01	.08	31.5	D
	*T	.39	.96	27.6	D
	R	.25	.40	4.9	A
	All			22.8	C
NB	*LTR	.07	.68	36.8	D
	All			36.8	D
SB	*L	.13	.58	31.0	D
	LT	.09	.40	24.1	C
	R	.12	.32	15.9	C
	All			24.1	C
Intersect:		.64	.71	21.3	C



HCM/Cinema v1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: BOPLP1 SUMMARY REPORT

****

INTERSECTION: BONITA ROAD /PLAZA BONITA TIME: PM PEAK
ANALYST: JHK & ASSOCIATES DATE: 02-13-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	627	1650	46	0	50	4	2
WB	12	1149	12	0	50	3	2
NB	17	5	4	0	50	1	1
SB	49	7	650	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	TR	12		
NB	LTR	12						
SB	L	12	TR	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11[illegible]

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	L	LTR	TR						
WB	L		TR						
NB				LTR					
SB	R			LTR					
GREEN	18	5	53	18	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

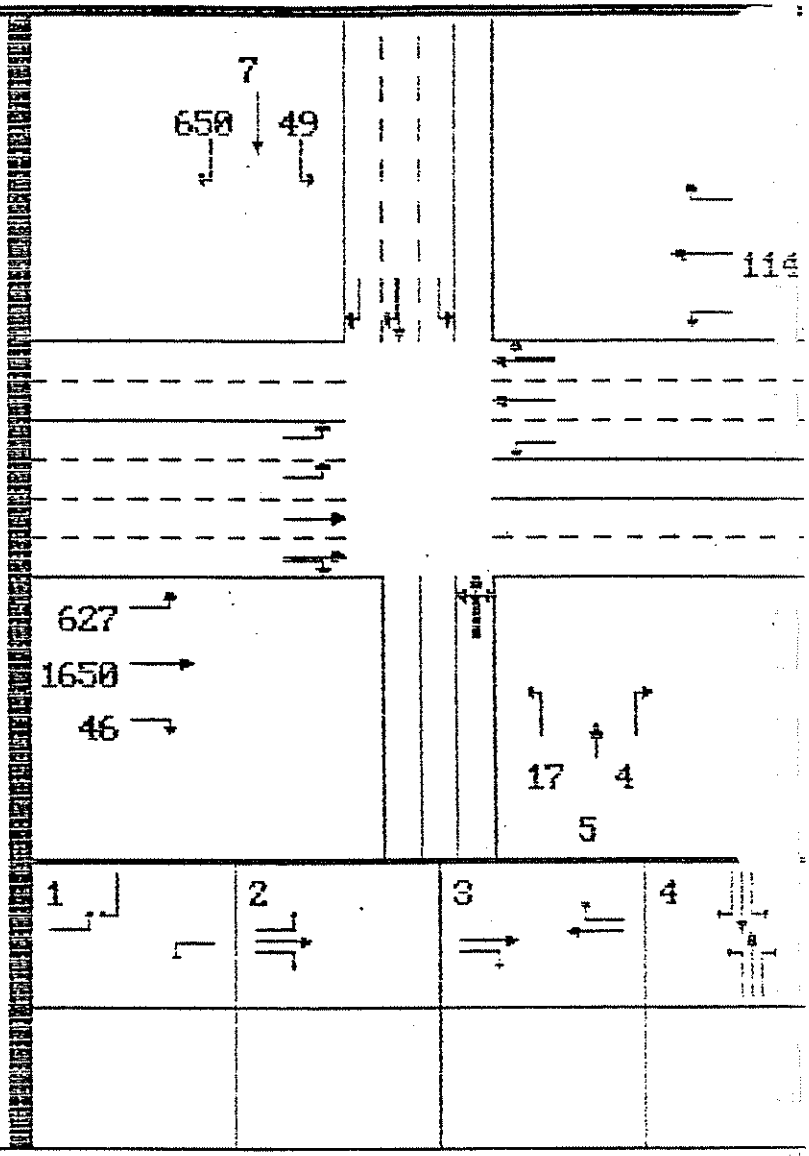
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.88	.25	L	.22	37.3	D	EB	25.9	D
	TR	.97	.57	TR	.56	21.7	C			
WB	L	.04	.17	L	.01	28.8	D	WB	13.7	B
	TR	.78	.49	TR	.38	13.6	B			
NB	LTR	.47	.17	LTR	.08	29.8	D	NB	29.8	D
SB	L	.18	.17	L	.03	29.6	D	SB	40.8	E
	TR	.94	.17	TR	.16	52.5	E			
	R	.93	.35	R	.32	36.2	D			

[illegible] DELAY = [illegible] LOS = [illegible] [illegible] = [illegible]

HCM Summary Results for Case: BOPLP1 BONITA ROAD /PLAZA BONITA

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.22	.88	37.3	D
	TR	.56	.97	21.7	C
	All			25.9	D
WB	L	.01	.04	28.8	D
	*TR	.38	.78	13.6	B
	All			13.7	B
NB	LTR	.08	.47	29.8	D
	All			29.8	D
SB	L	.03	.18	29.6	D
	TR	.16	.94	52.5	E
	*R	.32	.93	36.2	D
	All			40.8	E
Intersect:		.92	1.01	24.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: BOPLA1

****

INTERSECTION: BONITA ROAD /PLAZA BONITA TIME: AM PEAK
ANALYST: JHK & ASSOCIATES DATE: 02-13-92
COMMENT: INTERIN W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	412	877	32	0	50	4	2
WB	14	1356	28	0	50	3	2
NB	8	2	6	0	50	1	1
SB	29	4	260	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	TR	12		
NB	LTR	12						
SB	L	12	TR	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	19.8	4
WB	0	2	N	0	0	.90	Y	19.8	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONL.
EB	L	LTR	TR						
WB	L		TR						
NB				LTR					
SB				LTR					
GREEN	9	10	57	18	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

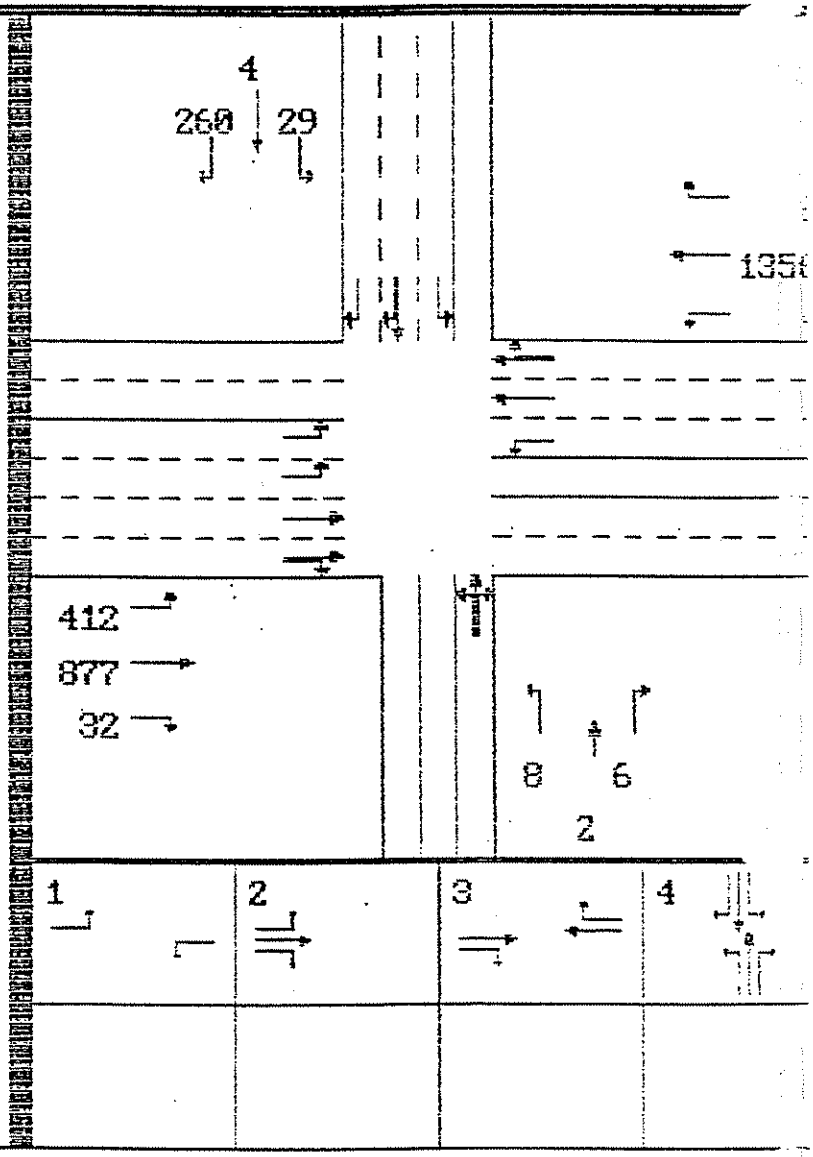
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.67	.22	L	.15	31.7	D	EB	13.0	B
	TR	.46	.65	TR	.30	4.5	A			
WB	L	.10	.09	L	.01	34.9	D	WB	16.0	C
	TR	.86	.53	TR	.45	15.8	C			
NB	LTR	.22	.17	LTR	.04	25.5	D	NB	25.5	D
SB	L	.11	.17	L	.02	29.2	D	SB	28.7	D
	TR	.56	.17	TR	.10	28.5	D			
	R	.56	.17	R	.10	28.7	D			

[illegible] DELAY = 15.9 SEC/VEH Xc = .76 LOS = C Sum(v/s)CR = .7[illegible]

HCM Summary Results for Case: BOPLA1 BONITA ROAD /PLAZA BONITA

AM PEAK INTERIN W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.15	.67	31.7	D
	TR	.38	.46	4.5	A
	All			13.8	B
WB	L	.01	.18	34.9	D
	*TR	.45	.86	15.8	C
	All			16.8	C
NB	LTR	.04	.22	25.5	D
	All			25.5	D
SB	L	.02	.11	29.2	D
	TR	.18	.56	28.5	D
	*R	.18	.56	28.7	D
	All			28.7	D
Intersect:		.78	.76	15.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEST SUMMARY REPORT

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INTERSECTION: BONITA ROAD /I-805 NB RAM TIME: PM PEAK
ANALYST: JHK DATE: 12/27/91
COMMENT: INTERIM W/O PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	562	1519	0	0	50	4	2
WB	0	1380	447	0	50	3	3
NB	410	0	804	0	50	3	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB	L	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	TR						
NB			R	LR					
SB									
GREEN	20	31	18	25	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	1.05	.19	L	.20	74.8	F	EB	38.4	D
	T	.98	.51	T	.50	25.0	C			
WB	TR	.88	.49	TR	.43	17.2	C	WB	17.2	C
NB	L	1.14	.24	L	.27	120.8	F	NB	55.2	E
	R	.86	.41	R	.35	23.3	C			

INTERSECT: DELAY = 34.5 SEC/VEH Xc = 1.07 LOS = D Sum(v/s)CR = .98

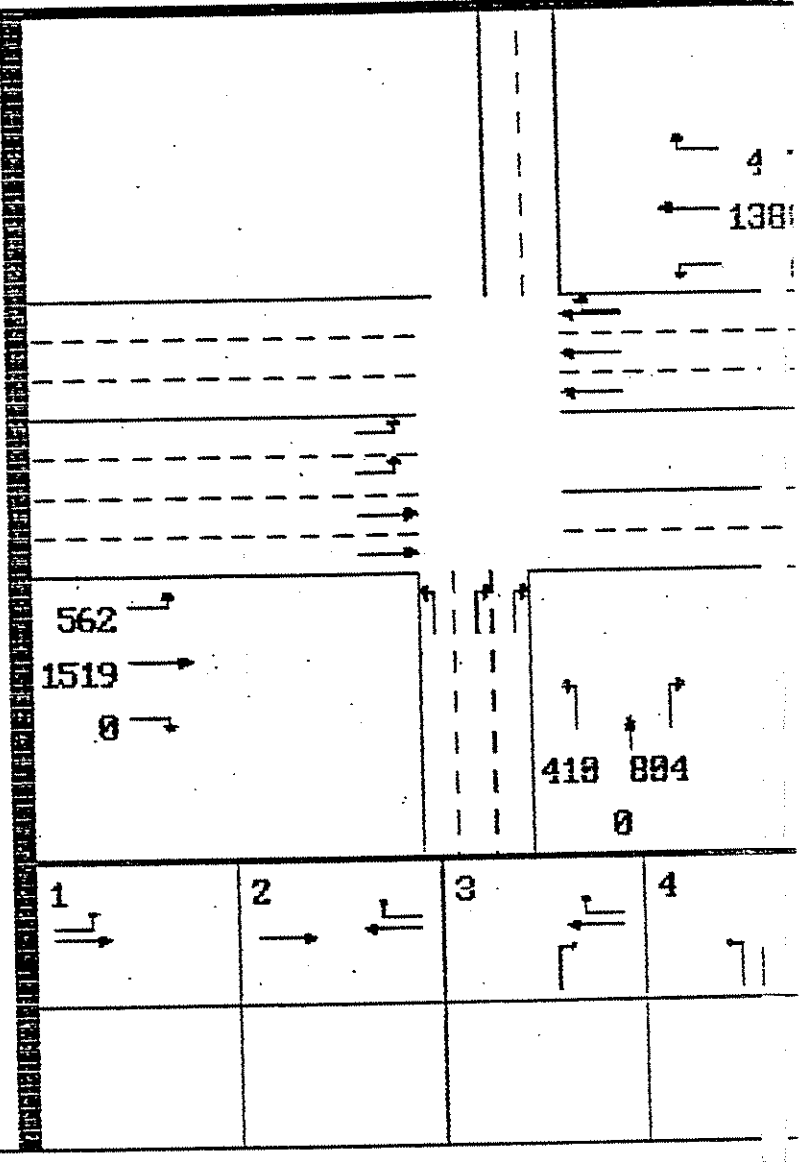
HCM Summary Results for Case: TEST

BONITA ROAD /I-805 NB RAM

PM PEAK

INTERIM W/O PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.20	1.05	74.8	F
	T	.50	.98	25.0	C
	All			38.4	D
WB	*TR	.43	.88	17.2	C
	All			17.2	C
NB	L	.27	1.14	120.8	F
	*R	.35	.86	23.3	C
	All			55.2	E
Intersect:		.98	1.07	34.5	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: BON8A1 SUMMARY REPORT

****

INTERSECTION: Bonita Road /I-805 NB Ram TIME: A.M. PEAK
DATE: 12/27/91
ANALYST: JHK
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	427	769	0	0	50	4	2
WB	0	1104	520	0	50	3	3
NB	203	0	552	0	50	3	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB	L	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	TR						
NB			R	LR					
SB									
GREEN	20	31	18	25	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

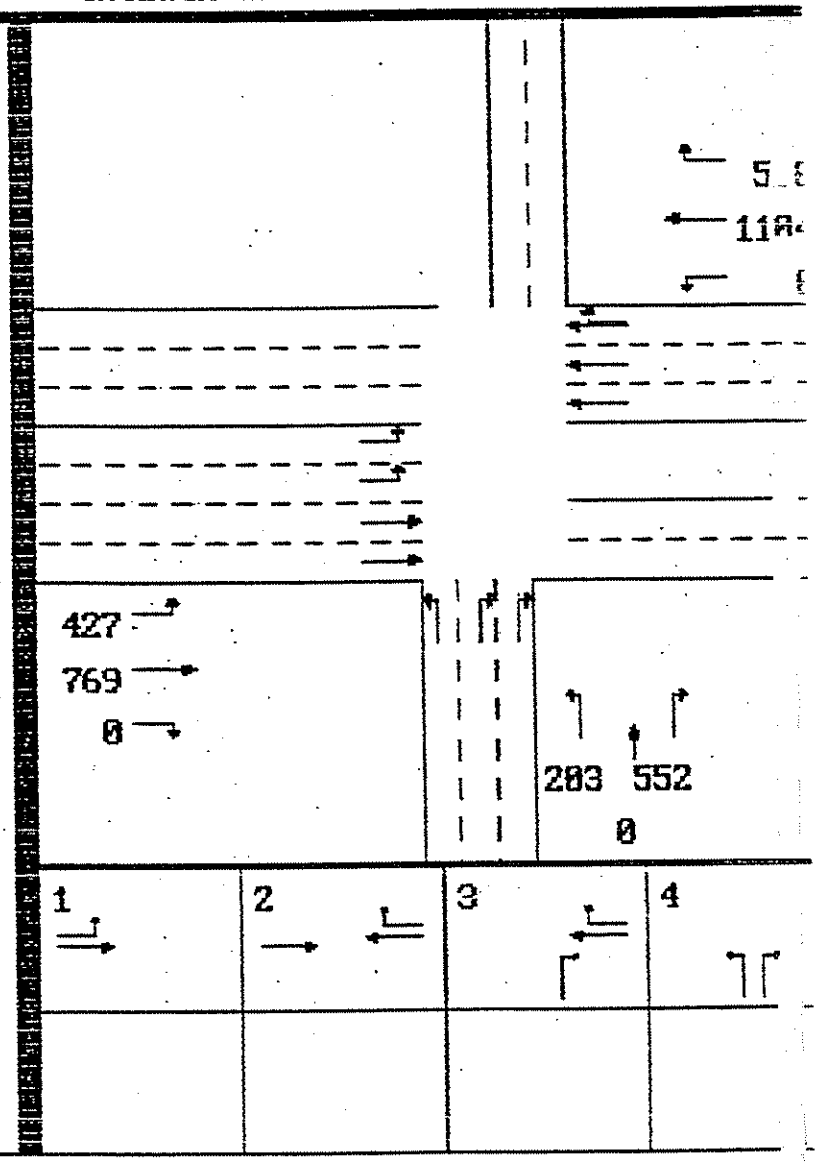
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.80	.19	L	.15	37.2	D	EB	18.7	C
	T	.49	.51	T	.25	8.5	B			
WB	TR	.80	.49	TR	.39	13.6	B	WB	13.6	B
NB	L	.56	.24	L	.13	29.5	D	NB	20.2	C
	R	.59	.41	R	.24	16.9	C			

INTERSECT: DELAY = 16.6 SEC/VEH Xc = .85 LOS = C Sum(v/s)CR = .78

HCM Summary Results for Case: BONBA1 Bonita Road /I-805 NB Ram

A.M. PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.15	.80	37.2	D
	T	.25	.49	8.5	B
	All			18.7	C
WB	*TR	.39	.88	13.6	B
	All			13.6	B
NB	L	.13	.56	29.5	D
	*R	.24	.59	16.9	C
	All			20.2	C
Intersect:		.78	.85	16.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: BOS8P1
****
INTERSECTION: BONITA RD /I-805 SB RAM TIME: PM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1220	268	0	50	4	3
WB	726	1064	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	861	0	800	800	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12
NB								
SB	L	12	L	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	26.5	3
SB	0	2	N	0	0	.90	Y	26.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR	R						
WB	LT	T							
NB									
SB			LR						
GREEN	28	30	40	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

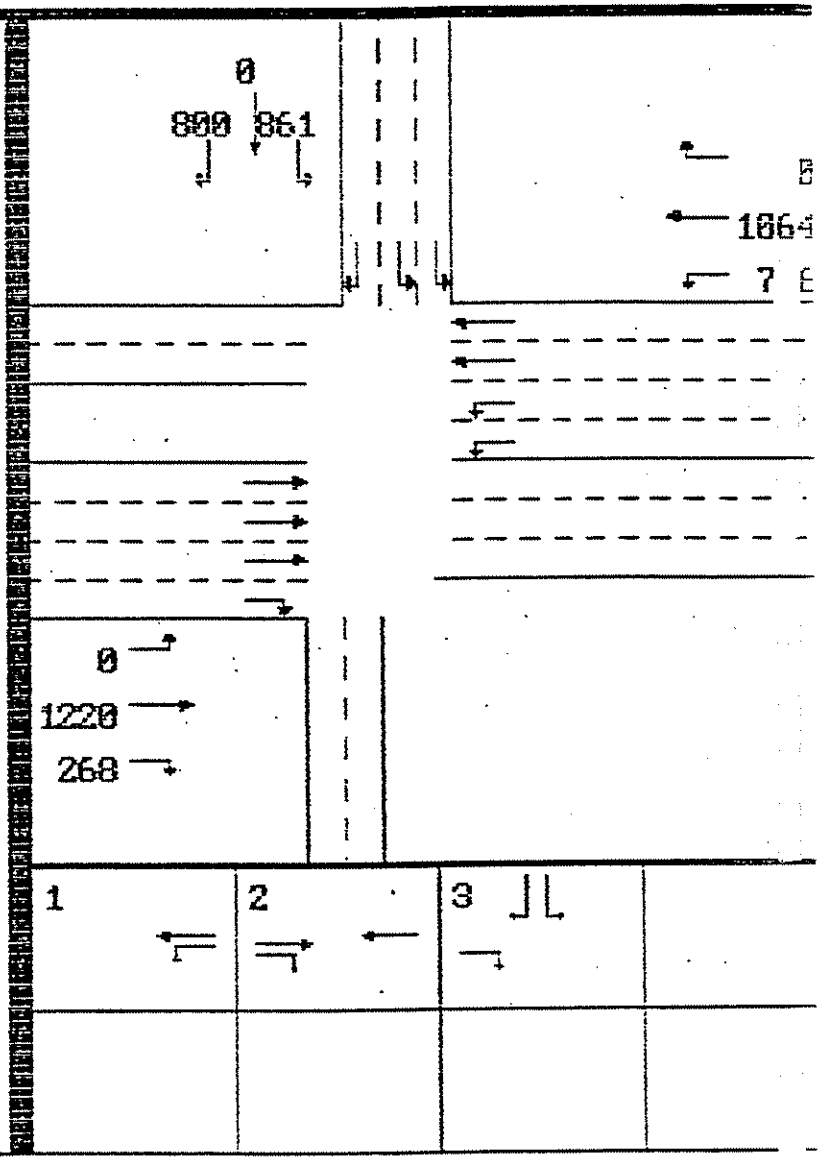
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.99	.28	T	.28	35.6	D	EB	30.3	D
	R	.30	.65	R	.20	3.9	A			
WB	L	.98	.26	L	.26	49.9	E	WB	25.4	D
	T	.61	.57	T	.35	8.6	B			
SB	L	.82	.37	L	.31	27.0	D	SB	27.0	D
	R	.00	.37	R	.00	.0	A			

INTERSECT: DELAY = 27.5 SEC/VEH Xc = .92 LOS = D Sum(v/s)CR = .8

HCM Summary Results for Case: BOS8P1 BONITA RD /I-805 SB RAM

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.28	.99	35.6	D
	R	.20	.38	3.9	A
	All			38.3	D
WB	*L	.26	.98	49.9	E
	T	.35	.61	8.6	B
	All			25.4	D
SB	*L	.31	.82	27.8	D
	R	.00	.00	.0	A
	All			27.8	D
Intersect:		.84	.92	27.5	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: BOS8A1 SUMMARY REPORT

****

INTERSECTION: BONITA RD /I-805 SB RAM TIME: AM PEAK
DATE: 02-14-92
ANALYST: KK
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	855	250	0	50	4	3
WB	457	850	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	341	0	538	538	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12
NB								
SB	L	12	L	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	26.5	3
SB	0	2	N	0	0	.90	Y	26.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR	R						
WB	LT	T							
NB									
SB			LR						
GREEN	34	34	30	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

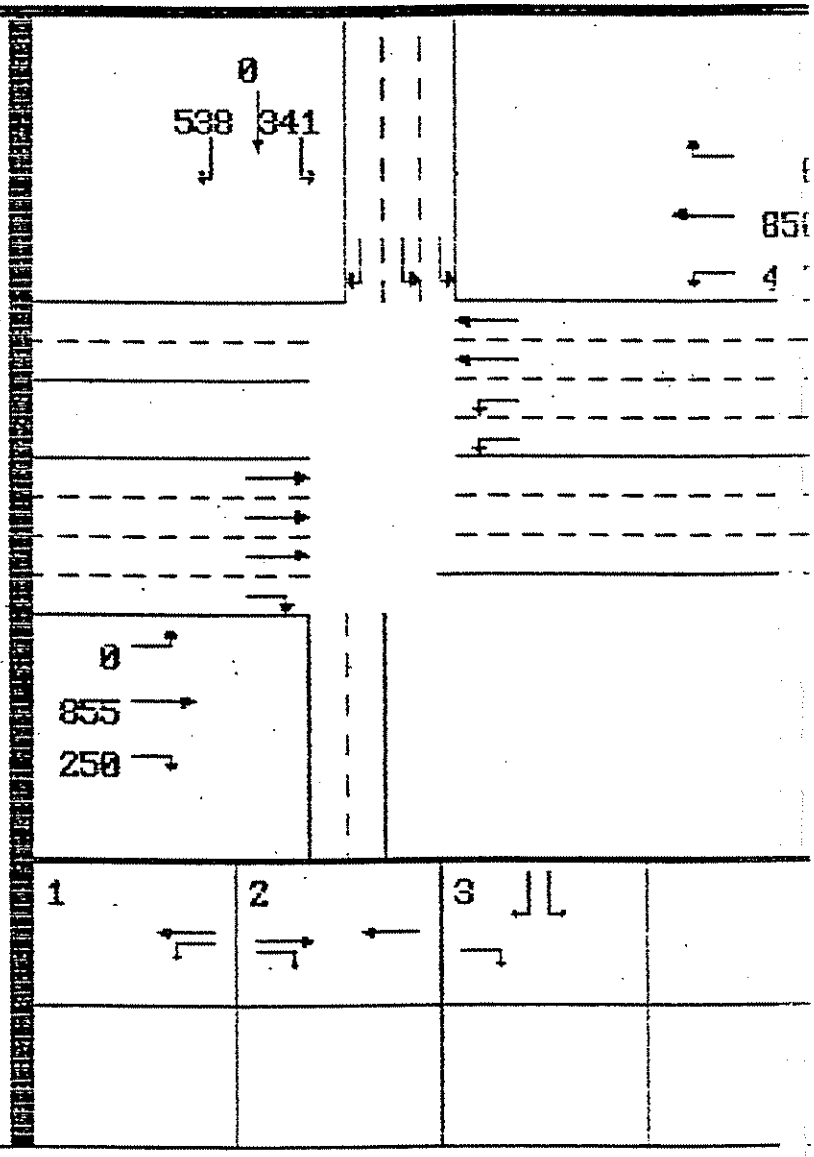
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.61	.32	T	.20	17.5	C	EB	14.9	B
	R	.31	.60	R	.18	5.1	B			
WB	L	.51	.32	L	.16	23.6	C	WB	10.9	B
	T	.42	.66	T	.28	4.1	A			
SB	L	.43	.28	L	.12	24.7	C	SB	24.7	C
	R	.00	.28	R	.00	.0	A			

INTERSECT: DELAY = 14.2 SEC/VEH Xc = .52 LOS = B Sum(v/s)CR = .48

HCM Summary Results for Case: BOS8A1 BONITA RD /I-805 SB RAM

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.20	.61	17.5	C
	R	.18	.31	5.1	B
	All			14.9	B
WB	*L	.16	.51	23.6	C
	T	.28	.42	4.1	A
	All			18.9	B
SB	*L	.12	.43	24.7	C
	R	.08	.08	.8	A
	All			24.7	C
Intersect:		.48	.52	14.2	B



APPENDIX C

SIGNALIZED INTERSECTIONS CAPACITY ANALYSIS WORKSHEETS

INTERIM (PRE-SR 125) BASE CONDITION

HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEME P

****

INTERSECTION: Tel. Canyon /Med. Cen. Dr TIME: PM PEAK

ANALYST: JHK DATE: 1/2/92

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1002	166	0	50	3	2
WB	15	432	0	0	50	3	2
NB	399	0	64	0	50	4	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12	
WB	L	12	T	12	T	12	
NB	L	12	L	12	R	12	R 12
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.60	N	23.0	3
WB	0	2	Y	20	0	.82	N	23.0	3
NB	0	2	Y	20	0	.89	N	20.0	3
SB	0	2	Y	20	0	.90	N	20.0	3

OPERATIONAL ANALYSIS

SIGNAL SETTINGS: ACTUATED CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB		TR							
WB	LT	T							
NB	R		LR						
SB									
GREEN	11	33	20	0	0	0	0	0	
YELLOW	3	5	5	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

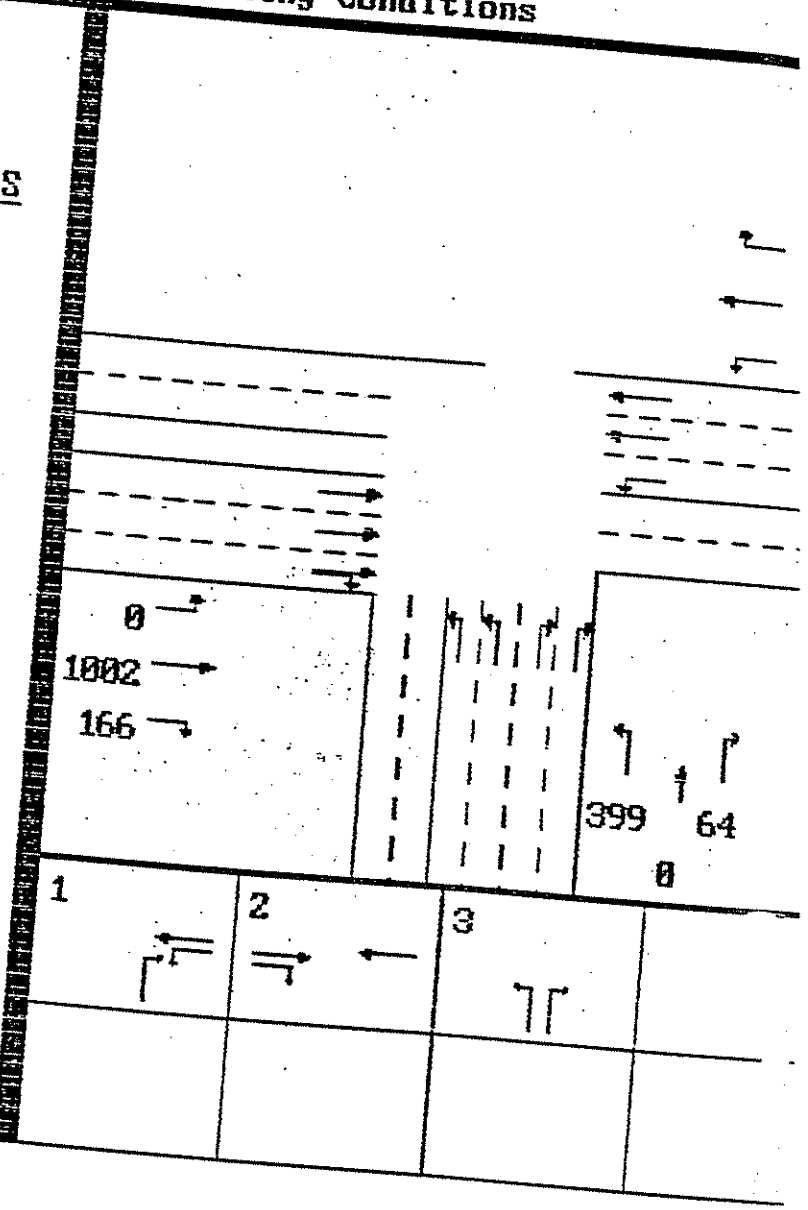
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	TR	.98	.45	TR	.44	23.2	C	EB	23.2
WB	L	.07	.15	L	.01	22.2	C	WB	4.7
	T	.27	.64	T	.17	4.1	A		
NB	L	.50	.29	L	.14	18.4	C	NB	17.0
	R	.07	.44	R	.03	8.4	B		

INTERSECT: DELAY = 18.9 SEC/VEH Xc = .67 LOS = C Sum(v/s)CR

HCM Summary Results for Case: TEME_P
PM PEAK

Tel. Canyon /Med. Cen.
Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.44	.98	23.2	C
	All			23.2	C
WB	*L	.81	.87	22.2	C
	T	.17	.27	4.1	A
	All			4.7	A
NB	*L	.14	.58	18.4	C
	R	.83	.87	8.4	B
	All			17.8	C
Intersect:		.59	.67	18.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEME A

****

INTERSECTION: Tel. Canyon /Med. Cen. Dr TIME: AM PEAK

ANALYST: JHK DATE: 1/2/92

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	857	310	0	50	3	2
WB	40	494	0	0	50	3	2
NB	124	0	22	0	50	4	0
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12		
NB	L	12	L	12	R	12	R	12
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.60	N	23.0	3
WB	0	2	Y	20	0	.82	N	23.0	3
NB	0	2	Y	20	0	.89	N	20.0	3
SB	0	2	Y	20	0	.90	N	20.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED (
EB		TR							
WB	LT	T							
NB	R		LR						
SB									
GREEN	10	34	20	0	0	0	0	0	
YELLOW	3	5	5	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	TR	.97	.46	TR	.45	21.6	C	EB	21.6
WB	L	.21	.14	L	.03	23.4	C	WB	5.6
	T	.31	.64	T	.20	4.3	A		
NB	L	.15	.29	L	.04	16.2	C	NB	15.'
	R	.03	.43	R	.01	8.6	B		

SEC/VEH Xc = .59 LOS = C Sum(v/s)CR

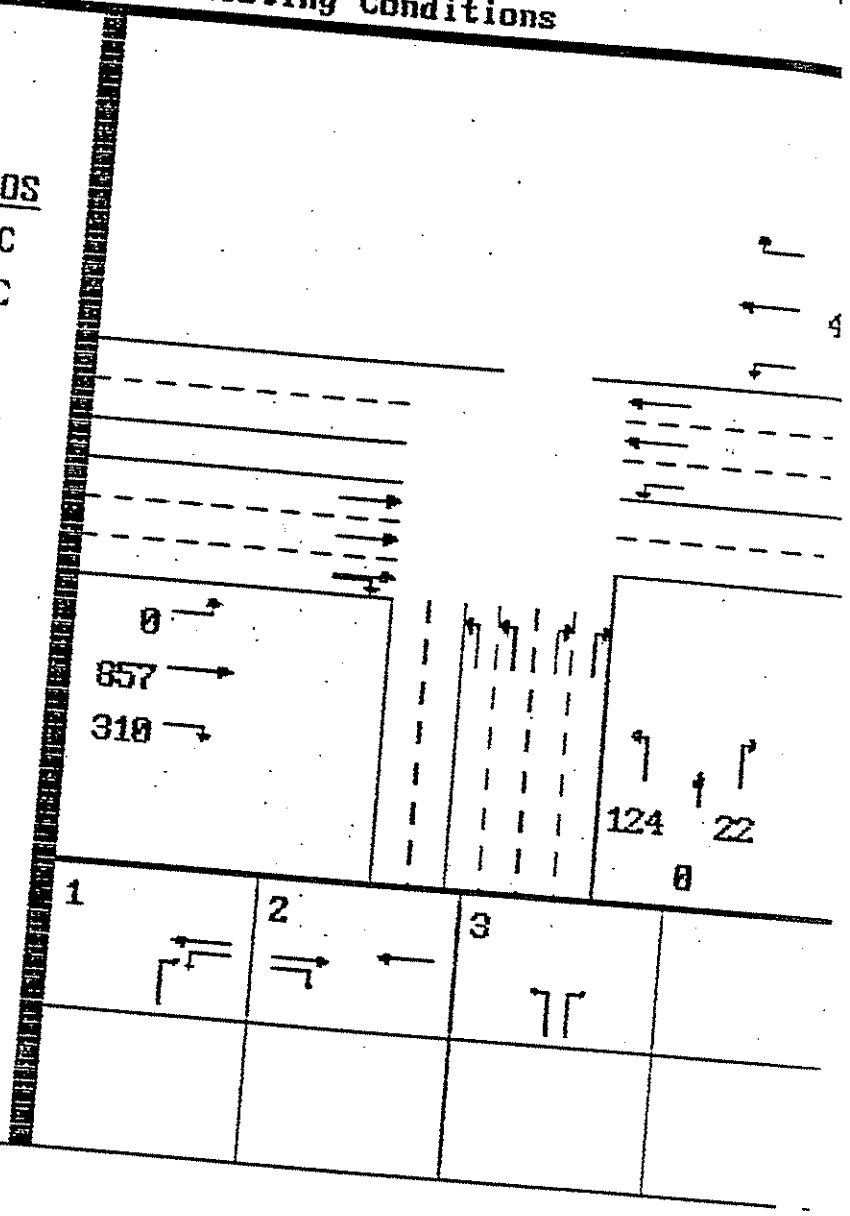
HCM Summary Results for Case: TEME_A

AM PEAK

Tel. Canyon /Med. Cen.

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*TR	.45	.97	21.6	C
	All			21.6	C
WB	*L	.03	.21	23.4	C
	T	.20	.31	4.3	A
	All			5.6	B
NB	*L	.04	.15	16.2	C
	R	.01	.03	8.6	B
	All			15.0	C
Intersect:		.52	.59	17.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEPA P

****

INTERSECTION: Tel. Canyon /Paseo del Re TIME: PM PEAK

ANALYST: JHK DATE: 1/2/92

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	181	1224	7	0	50	4	3
WB	0	685	29	0	50	3	2
NB	15	0	2	0	50	2	1
SB	35	1	155	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR 12
WB	L	12	T	12	TR	12	
NB	LT	12	R	12			
SB	L	12	T	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.84	N	17.0	3
WB	0	2	Y	20	0	.82	N	17.0	3
NB	0	2	Y	20	0	.71	N	23.0	3
SB	0	2	Y	20	0	.90	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED (
EB	LTRP	LTR							
WB		LTR							
NB			LTR						
SB			LTR						
GREEN	10	32	23	0	0	0	0	0	
YELLOW	3	5	4	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (WEIGHTED AVERAGE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	Lper	.50	.44	L	.09	20.9	C
	Lpro	.50	.17	TR	.32	5.9	B
	TR	.53	.61				
WB	L	.00	.44	L	.00	.0	A
	TR	.66	.44	TR	.29	12.2	B
NB	LT	.06	.31	LT	.02	12.4	B
	R	.01	.31	R	.00	12.2	B
SB	L	.08	.31	L	.02	14.7	B
	T	.00	.31	T	.00	12.2	B
	R	.45	.31	R	.14	14.8	B

APPROACH: DELAY

EB 7.6

WB 12.2

NB 12.

SB 14

SEC/VEH Xc = .56 LOS = B Sum(v/s)CP

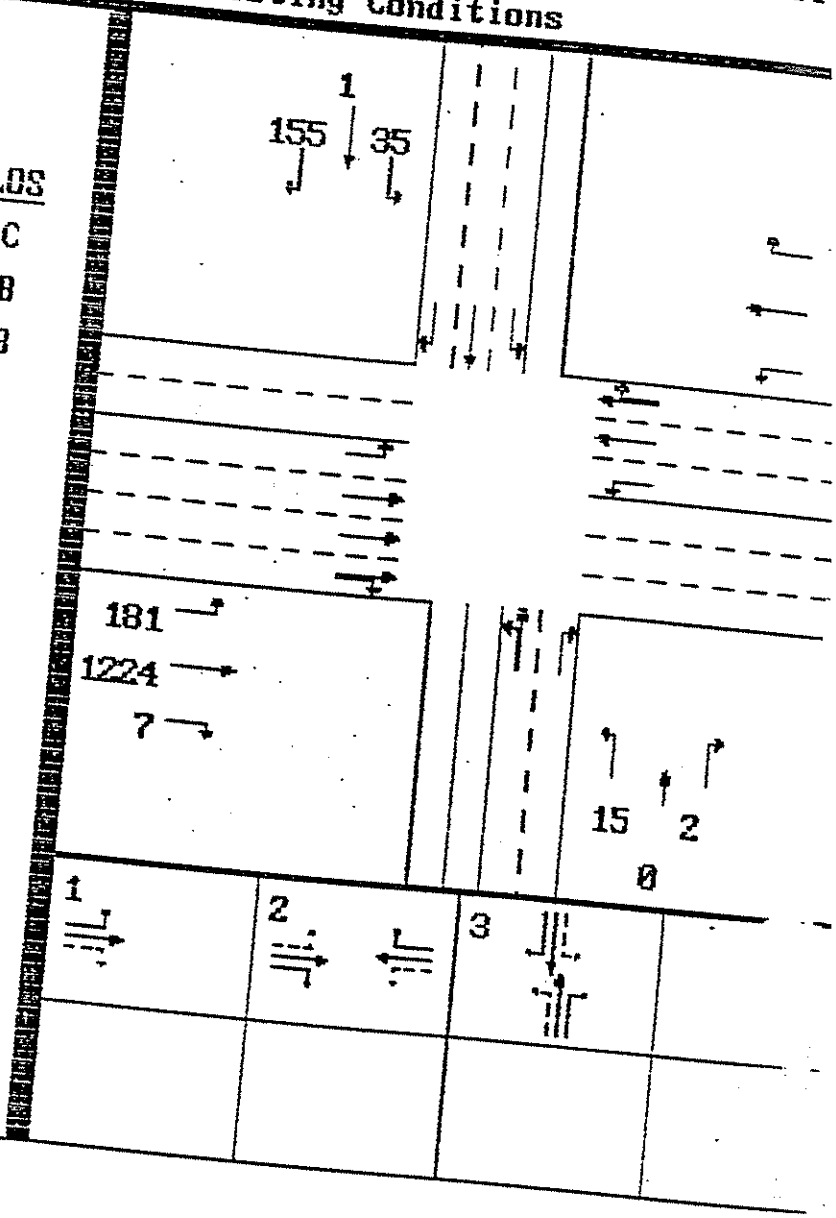
HCM Summary Results for Case: TEPA_P

PM PEAK

Tel. Canyon /Paseo del

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.09	.50	28.9	C
	TR	.32	.53	5.9	B
	All			7.6	B
WB	L	.00	.00	.0	A
	*TR	.29	.66	12.2	B
	All			12.2	B
NB	LT	.02	.06	12.4	B
	R	.00	.01	12.2	B
	All			12.4	B
SB	L	.02	.00	14.7	B
	T	.00	.00	12.2	B
	*R	.14	.45	14.0	B
	All			14.7	B
Intersect:		.52	.56	9.6	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TEPA A
****
INTERSECTION: Tel. Canyon /Paseo del Re TIME: AM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	171	1058	8	0	50	4	3
WB	2	848	34	0	50	3	2
NB	4	2	0	0	50	2	1
SB	41	5	182	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR 12
WB	L	12	T	12	TR	12	
NB	LT	12	R	12			
SB	L	12	T	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.69	N	17.0	3
WB	0	2	Y	20	0	.89	N	17.0	3
NB	0	2	Y	20	0	.50	N	23.0	3
SB	0	2	Y	20	0	.89	N	23.0	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 8

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	LTRP	LTR							
WB		LTR							
NB			LTR						
SB			LTR						
GREEN	10	32	23	0	0	0	0	0	0
YELLOW	3	5	4	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (WEIGHTED AVERAGE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	Lper	.64	.44				
	Lpro	.64	.17	L	.11	25.6	D
	TR	.56	.61	TR	.34	6.0	B
WB	L	.02	.44	L	.01	9.7	B
	TR	.75	.44	TR	.33	13.7	B
NB	LT	.03	.31	LT	.01	12.3	B
	R	.00	.31	R	.00	.0	A
SB	L	.09	.31	L	.03	14.8	B
	T	.01	.31	T	.00	12.3	B
	R	.54	.31	R	.17	15.7	C

APPROACH: DELAY LOS
EB 8.5 B
WB 13.6 B
NB 12.3 B
SB 15.5 C

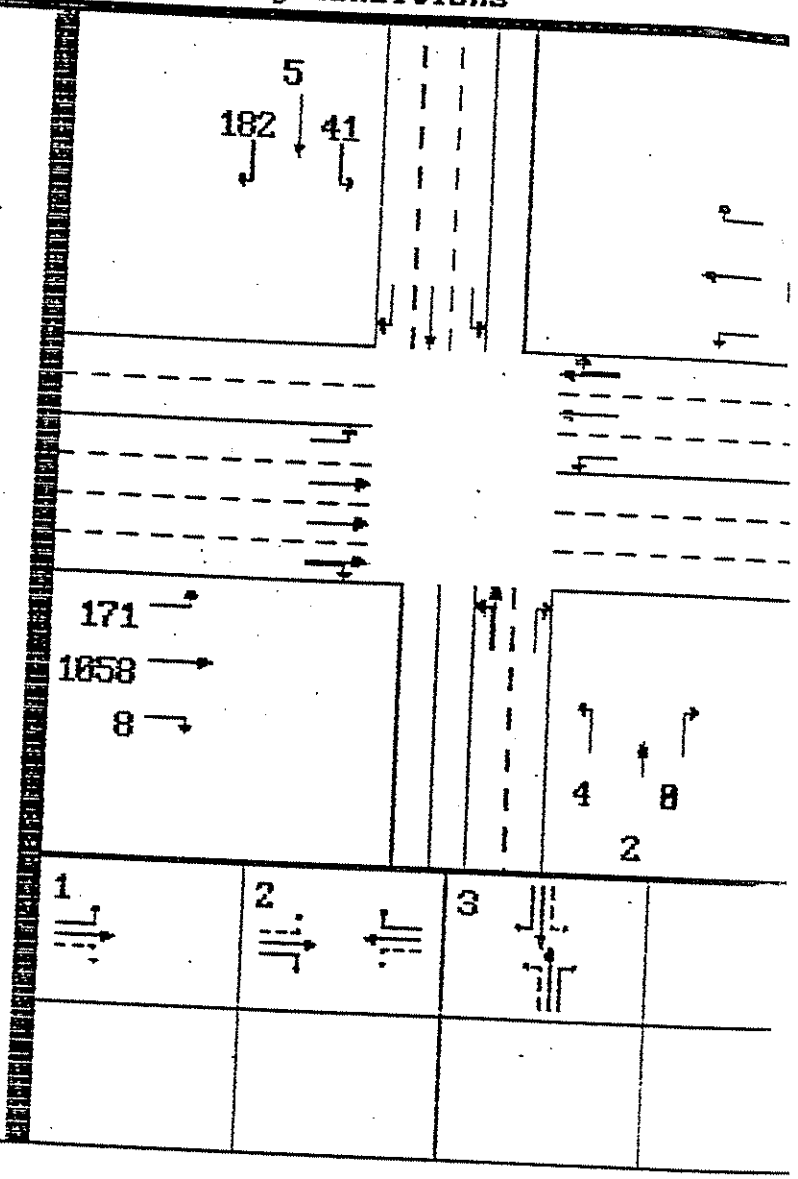
HCM Summary Results for Case: TEPA_A

AM PEAK

Tel. Canyon /Paseo del

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.11	.64	25.6	D
	TR	.34	.56	6.8	B
	All			8.5	B
WB	L	.01	.02	9.7	B
	*TR	.33	.75	13.7	B
	All			13.6	B
NB	LT	.01	.03	12.3	B
	R	.00	.00	.0	A
	All			12.3	B
SB	L	.03	.09	14.8	B
	T	.00	.01	12.3	B
	*R	.17	.54	15.7	C
	All			15.5	C
Intersect:		.61	.66	10.7	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEOL P

****

INTERSECTION: Tel. Canyon /Oleander Ave TIME: PM PEAK

ANALYST: JHK DATE: 1/2/92

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	139	1161	283	0	50	4	3
WB	82	698	34	0	50	4	3
NB	179	73	72	0	50	2	1
SB	123	135	34	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR	12
WB	L	12	T	12	T	12	TR	12
NB	L	12	TR	12				
SB	L	12	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.82	N	14.0	3
WB	0	2	Y	20	0	.90	N	14.0	3
NB	0	2	Y	20	0	.91	N	26.0	3
SB	0	2	Y	20	0	.80	N	26.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED
EB	L	TR							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	15	35	26	0	0	0	0	0	
YELLOW	2	5	4	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	L	.60	.17	L	.10	29.0	D	EB	23.3
	TR	.95	.42	TR	.40	22.9	C		
WB	L	.32	.17	L	.05	25.3	D	WB	13.2
	TR	.43	.42	TR	.18	11.9	B		
NB	L	.58	.31	L	.18	21.7	C	NB	19.
	TR	.39	.31	TR	.12	16.0	C		
SB	L	.41	.31	L	.13	19.0	C	SB	17
	TR	.49	.31	TR	.15	16.9	C		

[illegible] 8 SEC/VEH Xc = .76 LOS = C Sum(v/s)C

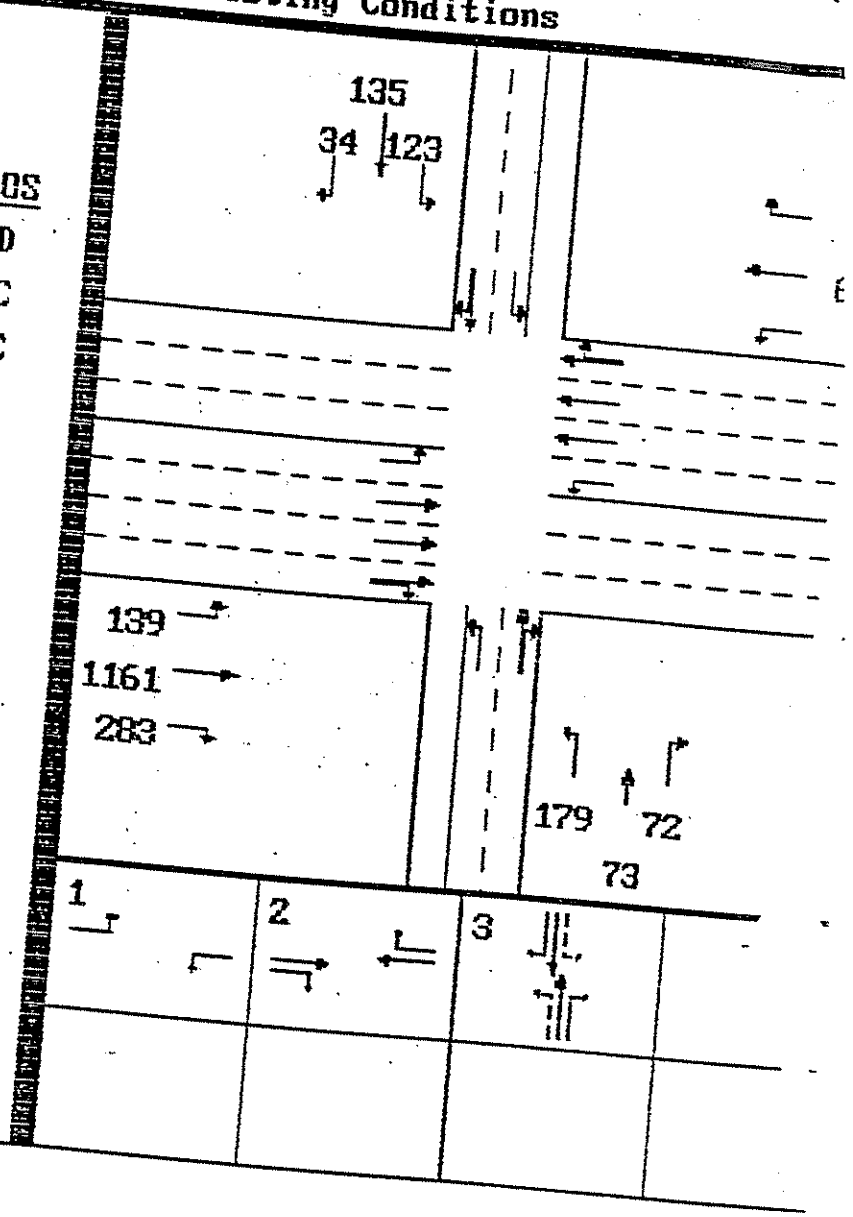
HCM Summary Results for Case: TEOL_P

PM PEAK

Tel. Canyon /Oleander A

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.10	.60	29.0	D
	*TR	.40	.95	22.9	C
	All			23.3	C
WB	L	.05	.32	25.3	D
	TR	.18	.43	11.9	B
	All			13.2	B
NB	*L	.10	.58	21.7	C
	TR	.12	.39	16.0	C
	All			19.2	C
SB	L	.13	.41	19.0	C
	TR	.15	.49	16.9	C
	All			17.8	C
Intersect:		.68	.76	19.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TEDL A
****
INTERSECTION: Tel. Canyon /Oleander Ave TIME: AM PEAK
DATE: 1/2/92
ANALYST: JHK AREA TYPE: NON-CBD
COMMENT: Existing Conditions

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	27	1299	85	0	50	4	3
WB	102	927	23	0	50	4	3
NB	244	71	103	0	0	2	1
SB	34	68	48	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR	12
WB	L	12	T	12	T	12	TR	12
NB	L	12	TR	12				
SB	L	12	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.71	N	14.0	3
WB	0	2	Y	20	0	.94	N	14.0	3
NB	0	2	Y	20	0	.90	N	26.0	3
SB	0	2	Y	20	0	.89	N	26.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 90

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	15	35	26	0	0	0	0	0	0
YELLOW	2	5	4	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.13	.17	L	.02	24.3	C	EB	36.2	D
	TR	1.03	.42	TR	.44	36.4	D			
WB	L	.39	.17	L	.06	25.8	D	WB	13.9	B
	TR	.53	.42	TR	.22	12.7	B			
NB	L	.67	.31	L	.21	23.5	C	NB	20.7	C
	TR	.48	.31	TR	.15	16.8	C			
SB	L	.11	.31	L	.03	16.8	C	SB	15.7	C
	TR	.31	.31	TR	.10	15.4	C			

= SEC/VEH X/C = .79 LOS = D Sum(v/s)CR =

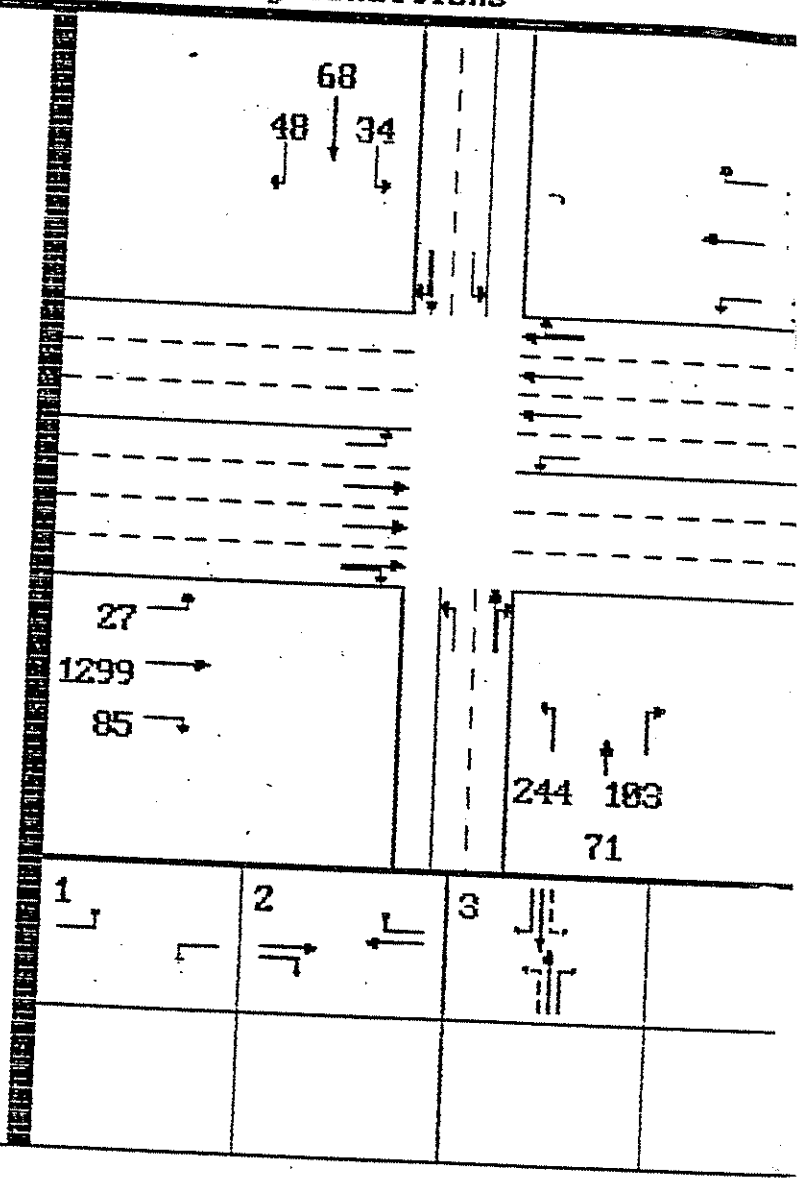
HCM Summary Results for Case: TEOL_A

AM PEAK

Tel. Canyon /Oleander Av

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.02	.13	24.3	C
	*TR	.44	1.03	36.4	D
	All			36.2	D
WB	*L	.06	.39	25.8	D
	TR	.22	.53	12.7	B
	All			13.9	B
NB	*L	.21	.67	23.5	C
	TR	.15	.48	16.8	C
	All			20.7	C
SB	L	.03	.11	16.8	C
	TR	.10	.31	15.4	C
	All			15.7	C
Intersect:		.71	.79	26.8	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEHA P

****

INTERSECTION: Tel. Canyon /Halecrest Dr TIME: PM PEAK

ANALYST: JHK DATE: 1/2/92

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	304	1848	0	0	50	4	3
WB	0	1229	12	0	50	3	2
NB	0	0	0	0	50	0	1
SB	46	0	77	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T 12
WB	T	12	T	12	TR	12	
NB							
SB	L	12	R	12			

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.97	N	14.0	3
WB	0	2	Y	20	0	.89	N	14.0	3
NB	0	2	Y	20	0	.90	N	23.0	3
SB	0	2	Y	20	0	.90	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED
EB	LT	T							
WB		TR							
NB			LR						
SB									
GREEN	26	27	23	0	0	0	0	0	
YELLOW	4	4	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	L	.59	.31	L	.18	21.2	C	EB	7.8
	T	.63	.67	T	.42	5.8	B		
WB	TR	.96	.32	TR	.31	28.0	D	WB	28.0
SB	L	.11	.27	L	.03	19.0	C	SB	17.
	R	.27	.27	R	.07	16.9	C		

[illegible] SEC/VEH Xc = .63 LOS = C Sum(v/s)CR

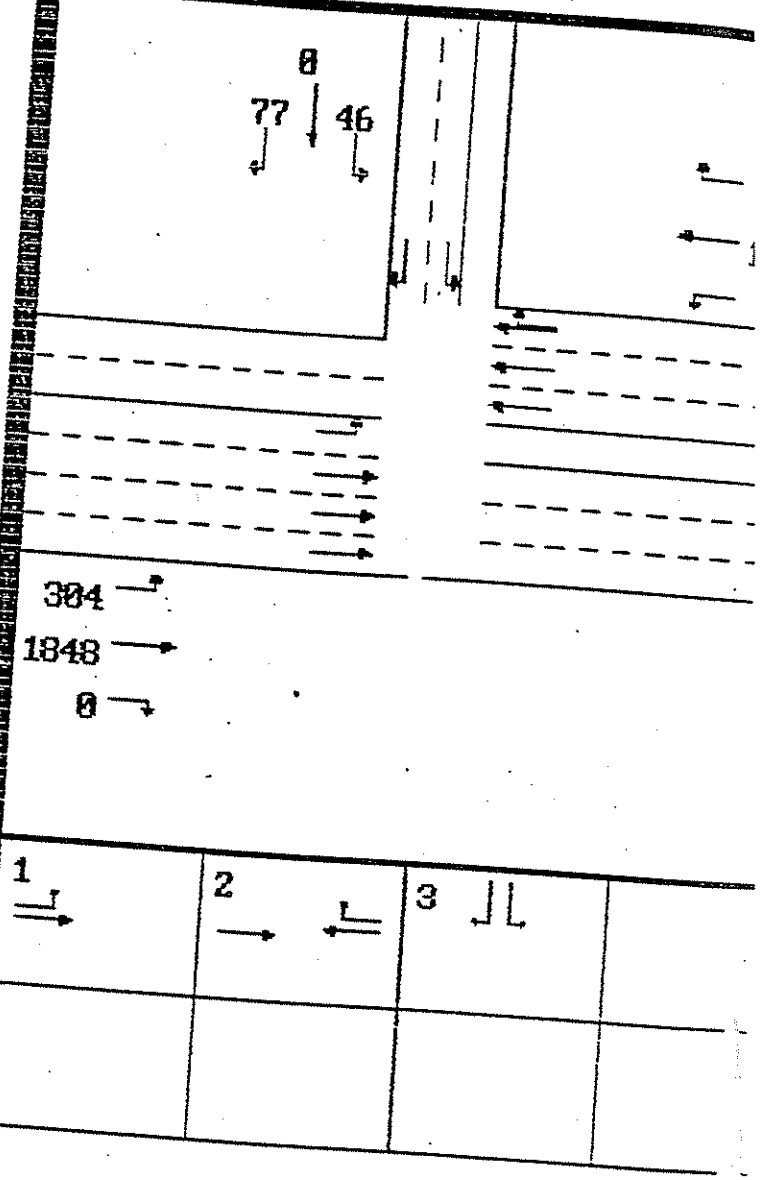
HCM Summary Results for Case: TEHA_P

PM PEAK

Tel. Canyon /Halecrest

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.18	.59	21.2	C
	T	.42	.63	5.8	B
	All			7.8	B
WB	*TR	.31	.96	28.0	D
	All			28.0	D
SB	L	.03	.11	19.0	C
	*R	.07	.27	16.9	C
	All			17.7	C
Intersect:		.56	.63	15.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TEHA A
****
INTERSECTION: Tel. Canyon /Halecrest Dr TIME: AM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	91	1332	0	0	50	4	3
WB	0	1324	17	0	50	3	2
NB	0	0	0	0	50	0	1
SB	29	0	124	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.67	N	14.0	3
WB	0	2	Y	20	0	.85	N	14.0	3
NB	0	2	Y	20	0	.90	N	23.0	3
SB	0	2	Y	20	0	.56	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 90

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR							
NB									
SB			LR						
GREEN	22	31	23	0	0	0	0	0	0
YELLOW	4	4	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.30	.27	L	.08	20.1	C	EB	6.9	B
	T	.66	.67	T	.44	6.1	B			
WB	TR	.95	.37	TR	.35	25.5	D	WB	25.5	D
SB	L	.12	.27	L	.03	19.0	C	SB	21.9	C
	R	.68	.27	R	.18	22.5	C			

[illegible] Xc = .67 LOS = C Sum(v/s)CR = .6[illegible]

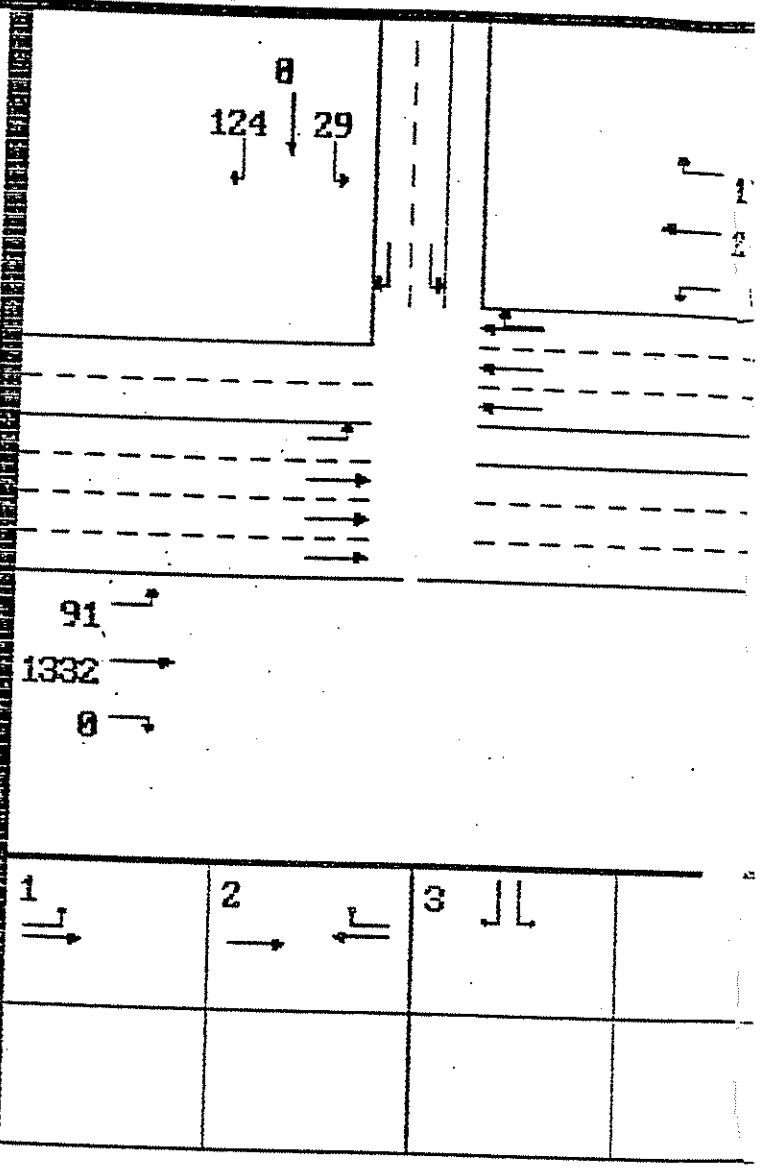
HCM Summary Results for Case: TEHA_A

AM PEAK

Tel. Canyon /Halecrest D

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.08	.30	20.1	C
	*T	.44	.66	6.1	B
	All			6.9	B
WB	TR	.35	.95	25.5	D
	All			25.5	D
SB	L	.03	.12	19.8	C
	*R	.18	.68	22.5	C
	All			21.9	C
Intersect:		.62	.67	15.3	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEN8 P

****

INTERSECTION: Tel. Canyon /NB I-805 Ram TIME: PM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	618	1422	0	0	50	4	2
WB	0	743	490	0	50	3	2
NB	147	0	587	587	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T 12
WB	T	12	TR	12	R	12	
NB	LT	12	R	12			
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	11.0	3
WB	0	2	Y	20	0	.90	N	11.0	3
NB	0	2	Y	20	0	.90	N	23.0	3
SB	0	2	Y	20	0	.90	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED C
EB	LT	T							
WB		TR							
NB			LTR						
SB									
GREEN	21	32	23	0	0	0	0	0	
YELLOW	4	4	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	L	.86	.26	L	.22	30.7	D	EB	14.9
	T	.78	.67	T	.52	8.0	B		
WB	TR	.77	.38	TR	.29	17.5	C	WB	20.6
	R	.89	.38	R	.34	28.4	D		
NB	LT	.36	.27	LT	.10	17.5	C	NB	17.5
	R	.00	.27	R	.00	.0	A		

= 0 SEC/VEH Xc = .73 LOS = C Sum(v/s)CR

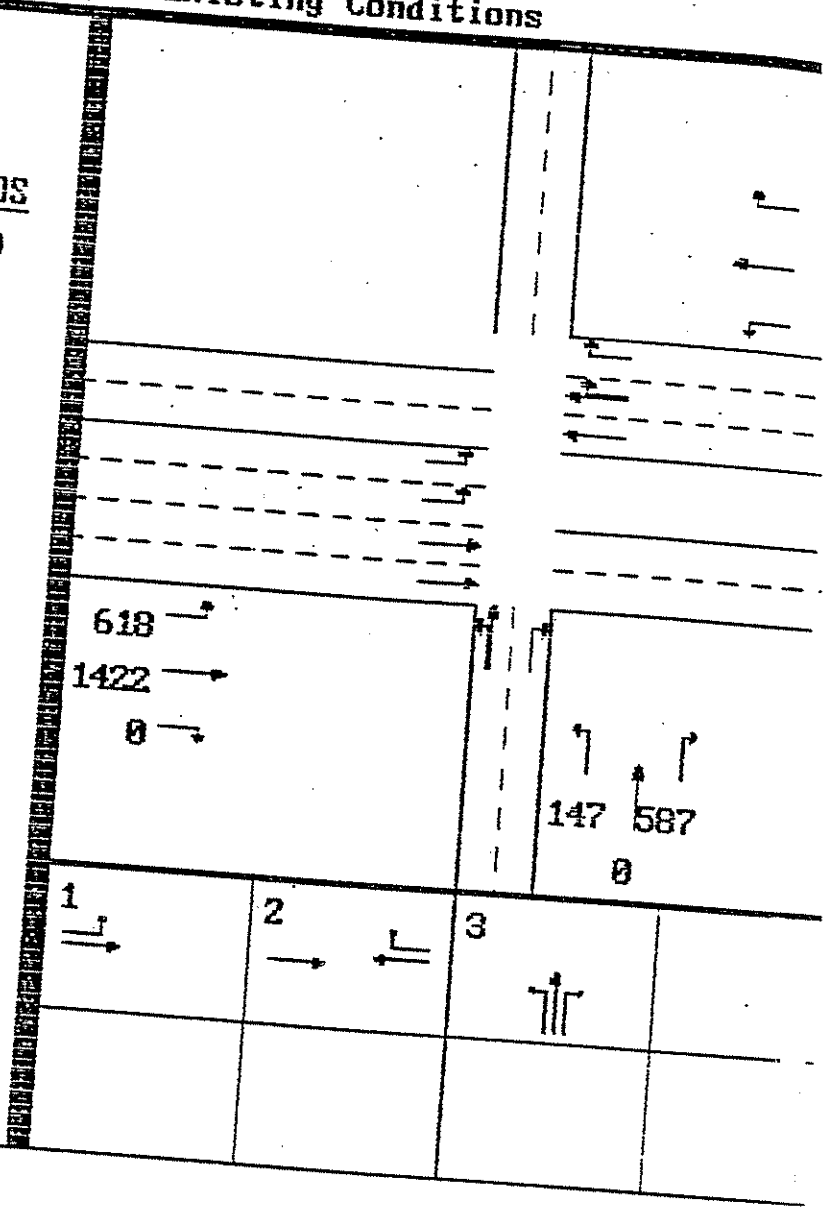
HCM Summary Results for Case: TEN8_P

PM PEAK

Tel. Canyon /NB I-805 R

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.22	.86	30.7	D
	T	.52	.79	8.0	B
	All			14.9	B
WB	TR	.29	.77	17.5	C
	*R	.34	.89	28.4	D
	All			20.6	C
NB	*LT	.10	.36	17.5	C
	R	.00	.00	.0	A
	All			17.5	C
Intersect:		.65	.73	17.0	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEN8 A

****

INTERSECTION: Tel. Canyon /NB I-805 Ram TIME: AM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	607	696	0	0	50	4	2
WB	0	547	667	0	50	3	2
NB	172	0	541	541	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T 12
WB	T	12	TR	12	R	12	
NB	LT	12	R	12			
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	11.0	3
WB	0	2	Y	20	0	.90	N	11.0	3
NB	0	2	Y	20	0	.90	N	23.0	3
SB	0	2	Y	20	0	.90	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED
EB	LT	T							
WB		TR							
NB			LTR						
SB									
GREEN	16	37	23	0	0	0	0	0	
YELLOW	4	4	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	L	1.08	.20	L	.22	79.7	F	EB	39.5
	T	.38	.67	T	.26	4.4	A		
WB	TR	.56	.43	TR	.24	12.6	B	WB	30.6
	R	1.06	.43	R	.46	57.4	E		
NB	LT	.42	.27	LT	.11	18.0	C	NB	18.0
	R	.00	.27	R	.00	.0	A		

[illegible] SEC/VEH XC = .87 LOS = D Sum(v/s)CR

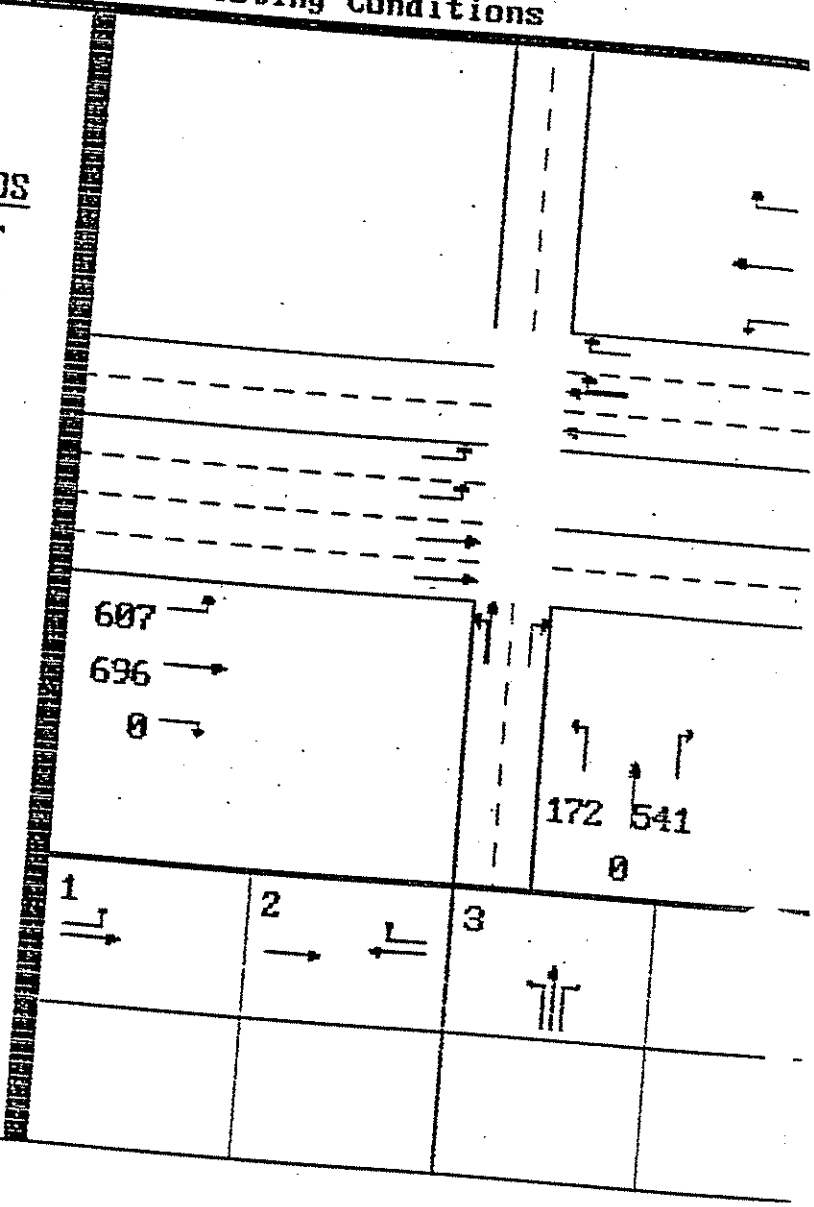
HCM Summary Results for Case: TEN8_A

AM PEAK

Tel. Canyon /NB I-805

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.22	1.08	79.7	F
	T	.26	.38	4.4	A
	All			39.5	D
WB	TR	.24	.56	12.6	B
	*R	.46	1.06	57.4	E
	All			30.6	D
NB	*LT	.11	.42	18.8	C
	R	.08	.08	.8	A
	All			18.8	C
Intersect:		.79	.87	34.2	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: H RU P

****

INTERSECTION: H Street /Rutgers TIME: PM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	308	476	92	0	50	3	2
WB	14	253	33	0	50	3	2
NB	55	84	28	0	50	3	2
SB	62	74	167	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12
WB	L	12	T	12	TR	12
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.74	N	20.0	3
WB	0	2	Y	20	0	.93	N	20.0	3
NB	0	2	Y	20	0	.72	N	20.0	3
SB	0	2	Y	20	0	.80	N	20.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1

PHASE:	1	2	3	4	5	6	7	8	PED ONI
EB	L	TR							
WB	L	TR							
NB			L	TR					
SB			L	TR					
GREEN	25	24	14	20	0	0	0	0	
YELLOW	2	4	3	4	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

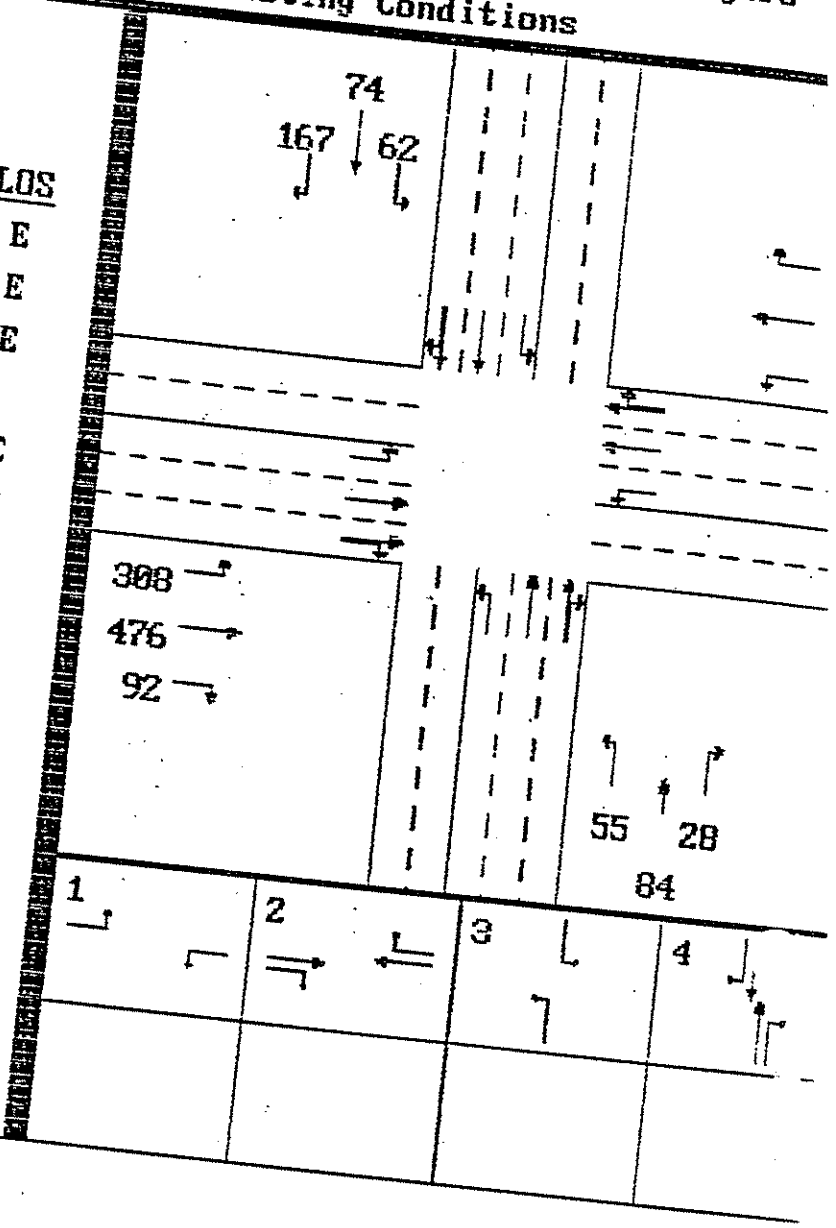
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	L
EB	L	.98	.25	L	.25	58.0	E	EB	49.2	
	TR	1.00	.26	TR	.26	44.6	E			
WB	L	.04	.25	L	.01	21.6	C	WB	19.9	
	TR	.40	.26	TR	.10	19.9	C			
NB	L	.30	.15	L	.04	29.0	D	NB	23.4	
	TR	.24	.22	TR	.05	20.8	C			
SB	L	.31	.15	L	.05	29.0	D	SB	23.9	
	TR	.51	.22	TR	.11	22.6	C			

= SEC/VEH Xc = .75 LOS = D Sum(v/s)CR

HCM Summary Results for Case: H_RU_P
PM PEAK

H Street /Rutgers
Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.25	.98	58.0	E
	*TR	.26	1.00	44.6	E
	All			49.2	E
WB	L	.01	.04	21.6	C
	TR	.10	.40	19.9	C
	All			19.9	C
NB	L	.04	.30	29.8	D
	TR	.05	.24	28.8	C
	All			23.4	C
SB	*L	.05	.31	29.8	D
	*TR	.11	.51	22.6	C
	All			23.9	C
Intersect:		.66	.75	37.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPOR

HCM SIGNALIZED INTERSECTION CASE: H RU A

****

INTERSECTION: H Street /Rutgers TIME: AM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: Existing Conditions AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	106	96	37	0	50	3	2
WB	30	559	37	0	50	3	2
NB	103	29	11	0	50	3	2
SB	28	92	426	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR 12
WB	L	12	T	12	TR 12
NB	L	12	T	12	TR 12
SB	L	12	T	12	TR 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.74	N	20.0	3
WB	0	2	Y	20	0	.93	N	20.0	3
NB	0	2	Y	20	0	.72	N	20.0	3
SB	0	2	Y	20	0	.80	N	20.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED
EB	L	TR							
WB	L	TR							
NB			L	TR					
SB			L	TR					
GREEN	13	29	14	27	0	0	0	0	
YELLOW	2	4	3	4	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	L	.65	.13	L	.08	36.0	D	EB	24.8
	TR	.20	.31	TR	.06	16.4	C		
WB	L	.15	.13	L	.02	29.3	D	WB	21.
	TR	.69	.31	TR	.21	20.8	C		
NB	L	.56	.15	L	.08	32.1	D	NB	27.
	TR	.07	.29	TR	.02	16.6	C		
SB	L	.14	.15	L	.02	28.1	D	SB	26
	TR	.84	.29	TR	.24	26.4	D		

... 24.4 SEC/VEH Xc = .71 LOS = C Sum(v/s)C

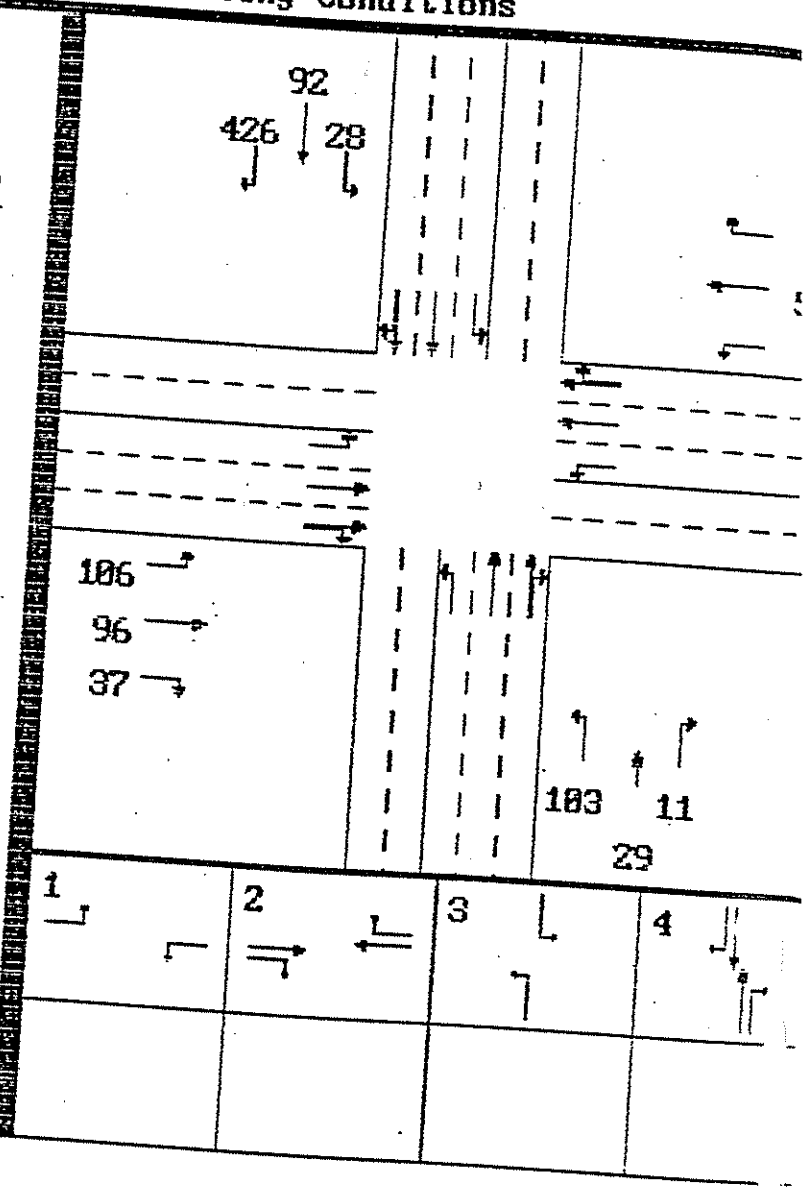
HCM Summary Results for Case: H_RU_A

AM PEAK

H Street /Rutgers

Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.08	.65	36.0	D
	TR	.06	.20	16.4	C
	All			24.8	C
WB	L	.02	.15	29.3	D
	*TR	.21	.69	20.8	C
	All			21.2	C
NB	*L	.08	.56	32.1	D
	TR	.02	.07	16.6	C
	All			27.6	D
SB	L	.02	.14	28.1	D
	*TR	.24	.84	26.4	D
	All			26.5	D
Intersect:		.63	.71	24.4	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: H OT P

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INTERSECTION: H Street /Otay Lakes R TIME: PM Peak
DATE: 12/30/91
ANALYST: JHK AREA TYPE: NON-CBD
COMMENT: Existing Conditions

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	169	236	86	0	50	4	2
WB	41	309	93	0	50	4	2
NB	183	497	295	295	50	4	2
SB	247	442	228	228	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	R 12
NB	L	12	T	12	T	12	R 12
SB	L	12	T	12	T	12	R 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.91	N	23.0	3
WB	0	2	Y	20	0	.80	N	23.0	3
NB	0	2	Y	20	0	.62	N	23.0	3
SB	0	2	Y	20	0	.82	N	23.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 100

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	TR					
SB			L	TR					
GREEN	15	23	20	25	0	0	0	0	0
YELLOW	3	4	2	4	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

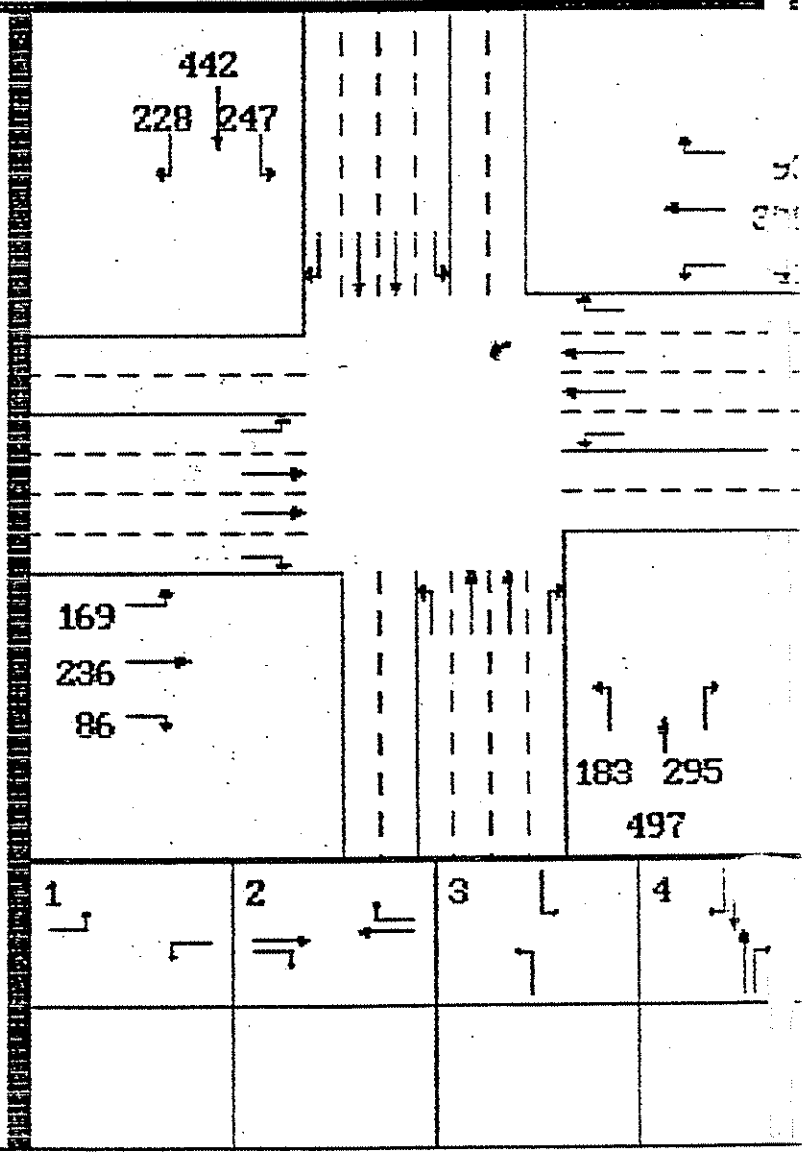
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.69	.16	L	.11	34.9	D
	T	.31	.25	T	.08	19.7	C
	R	.31	.25	R	.08	19.9	C
WB	L	.19	.16	L	.03	27.7	D
	T	.45	.25	T	.11	20.7	C
	R	.38	.25	R	.10	20.4	C
NB	L	.87	.20	L	.17	44.0	E
	T	.88	.27	T	.24	28.0	D
	R	.00	.27	R	.00	.0	A
SB	L	.89	.20	L	.18	46.1	E
	T	.59	.27	T	.16	21.1	C
	R	.00	.27	R	.00	.0	A

APPROACH:	DELAY	LOS
EB	24.9	C
WB	21.3	C
NB	32.2	D
SB	29.8	D

HCM Summary Results for Case: H_OT_P H Street /Otay Lakes I

PM Peak Existing Conditions

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.11	.69	34.9	D
	T	.08	.31	19.7	C
	R	.08	.31	19.9	C
	All			24.9	C
WB	L	.03	.19	27.7	D
	*T	.11	.45	28.7	C
	R	.10	.38	28.4	C
	All			21.3	C
NB	L	.17	.87	44.0	E
	*T	.24	.88	28.8	D
	R	.00	.00	.0	A
	All			32.2	D
SB	*L	.18	.89	46.1	E
	T	.16	.59	21.1	C
	R	.00	.00	.0	A
	All			29.8	D
Intersect:		.64	.72	28.2	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HN8P1

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INTERSECTION: H Street /NB I-805 Ram TIME: PM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	3286	0	0	50	3	3
WB	0	1151	0	0	50	2	2
NB	313	0	429	0	50	3	2
SB	0	0	0	0	50	0	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12		
NB	L	12	LR	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	17.5	3
SB	0	2	N	0	0	.90	Y	17.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	T								
WB	T								
NB		LR							
SB									
GREEN	76	26	0	0	0	0	0	0	
YELLOW	3	3	0	0	0	0	0	0	
RED	1	1	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	o/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	T	1.07	.70	T	.75	36.7	D	EB	36.7	D
WB	T	.54	.70	T	.38	3.9	A	WB	3.9	
NB	L	.60	.25	L	.15	29.7	D	NB	29.7	
	LR	.74	.25	LR	.18	28.8	D			
	R	.77	.25	R	.19	30.4	D			

INTERSECT. DELAY = 28.6 SEC/VEH Xc = .99 LOS = D Sum(V/s)CR =

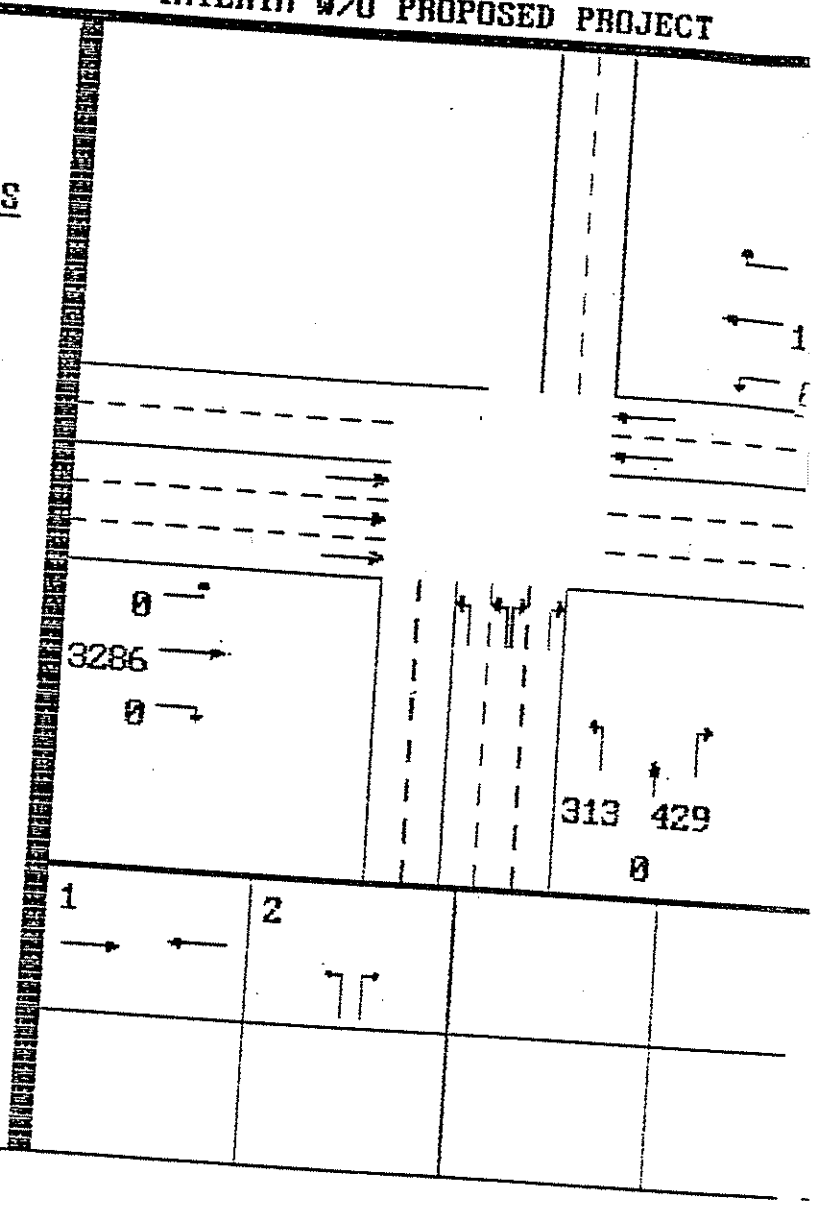
HCM Summary Results for Case: HN8P1

PM PEAK

H Street /NB I-805 R

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*T	.75	1.07	36.7	D
	All			36.7	D
WB	T	.38	.54	3.9	A
	All			3.9	A
NB	L	.15	.60	29.7	D
	LR	.18	.74	28.8	D
	*R	.19	.77	30.4	D
	All			29.7	D
Intersect:		.94	.99	28.6	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HHIA1

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INTERSECTION: H STREET /HIDDEN VISTA TIME: AM PEAK

ANALYST: KK DATE: 02-14-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	26	1893	105	0	50	6	4
WB	33	2628	15	0	50	5	4
NB	193	1	23	0	50	3	1
SB	37	17	175	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	T	12	TR	12	
NB	L	12	LTR	12	R	12					
SB	L	12	LTR	12	R	12					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	19.8	4
WB	0	2	N	0	0	.90	Y	19.8	4
NB	0	2	N	0	0	.90	Y	35.3	3
SB	0	2	N	0	0	.90	Y	35.3	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 11

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	L	TR	R						
WB	L	TR							
NB			LTR						
SB				LTR					
GREEN	8	57	19	10	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	V/C	o/C	LANE GRP.	V/s	DELAY	LOS
EB	L	.21	.08	L	.02	36.0	D
	T	.62	.53	T	.32	10.0	B
	R	.11	.71	R	.08	2.4	A
WB	L	.42	.08	L	.03	37.8	D
	TR	.86	.53	TR	.45	14.6	B
NB	L	.33	.18	L	.06	30.2	D
	LTR	.35	.18	LTR	.06	25.6	D
	R	.09	.18	R	.02	24.2	C
SB	L	.24	.10	L	.02	34.9	D
	LTR	.68	.10	LTR	.07	37.3	D
	R	.70	.10	R	.07	38.7	D

APPROACH: DELAY LO

EB	9.9	B
WB	15.0	C
NB	27.5	
SB	37.5	

14.4 SEC/VEH Xc = .70 LOS = B Sum(V/SICR =

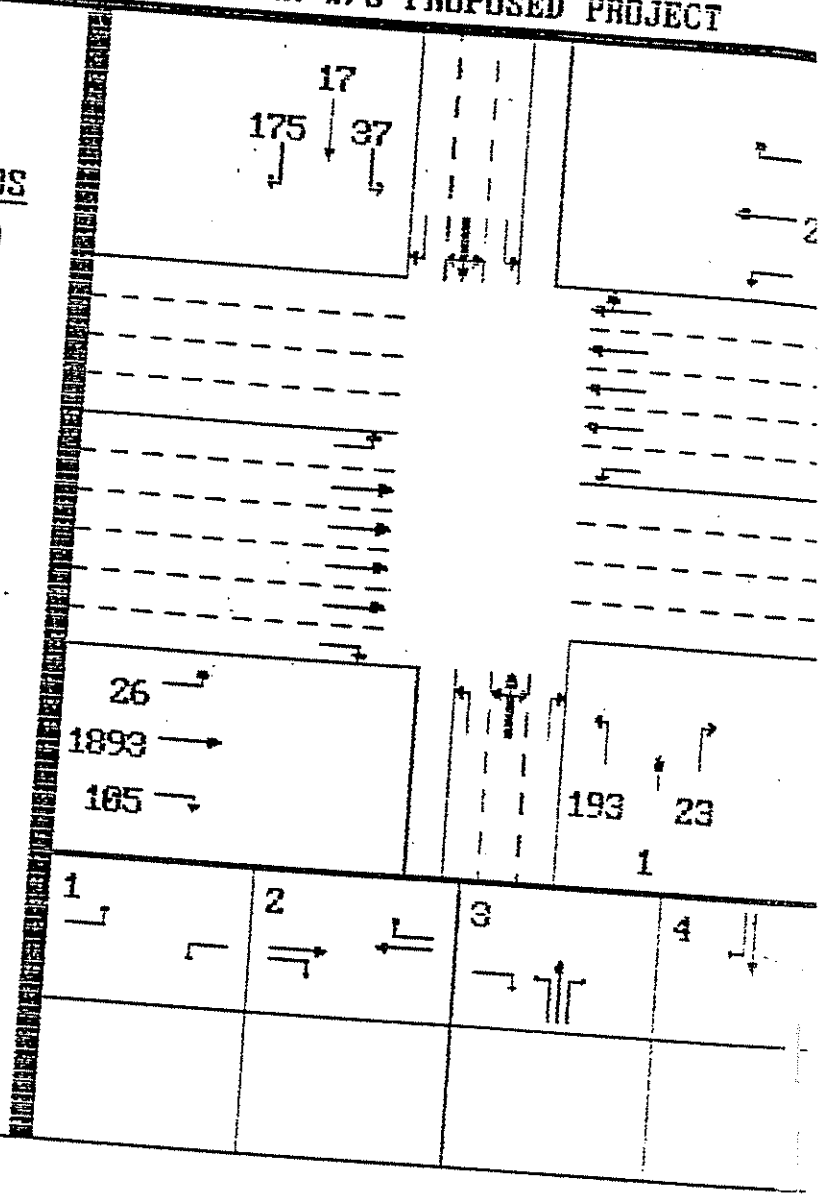
HCM Summary Results for Case: HHIA1

AM PEAK

H STREET /HIDDEN VIS

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.02	.21	36.0	D
	T	.32	.62	10.0	B
	R	.08	.11	2.4	A
	All			9.9	B
WB	*L	.03	.42	37.8	D
	*TR	.45	.86	14.6	B
	All			15.0	C
NB	*L	.06	.35	30.2	D
	LTR	.06	.35	25.6	D
	R	.02	.09	24.2	C
	All			27.5	D
SB	L	.02	.24	34.9	D
	LTR	.07	.68	37.3	D
	*R	.07	.70	38.7	D
	All			37.5	D
Intersect:		.62	.70	14.4	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HHIP1
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INTERSECTION: H STREET /HIDDEN VISTA TIME: PM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	132	3182	291	0	50	6	4
WB	77	1476	22	0	50	5	4
NB	629	37	179	0	50	3	1
SB	26	34	101	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	T	12	TR	12	
NB	L	12	LTR	12	R	12					
SB	L	12	LTR	12	R	12					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	35.5	3
SB	0	2	N	0	0	.90	Y	35.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED OI
EB	L	TR	R						
WB	L	TR							
NB			LTR						
SB				LTR					
GREEN	9	56	21	8	0	0	0	0	
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.95	.09	L	.09	80.8	F
	T	1.05	.52	T	.55	36.5	D
	R	.30	.72	R	.21	2.6	A
WB	L	.56	.09	L	.05	39.7	D
	TR	.50	.52	TR	.26	8.2	B
NB	L	1.09	.20	L	.22	102.7	F
	LTR	1.07	.20	LTR	.21	79.3	F
	R	.66	.20	R	.13	29.2	D
SB	L	.21	.08	L	.02	36.0	D
	LTR	.56	.08	LTR	.05	34.5	D
	R	.60	.08	R	.05	36.3	D

APPROACH:	DELAY	L
EB	35.5	
WB	9.6	
NB	77.9	
SB	35.5	

INTERSECT: DELAY = 34.2 SEC/VEH Xc = 1.01 LOS = D Sum(v/s)CR =

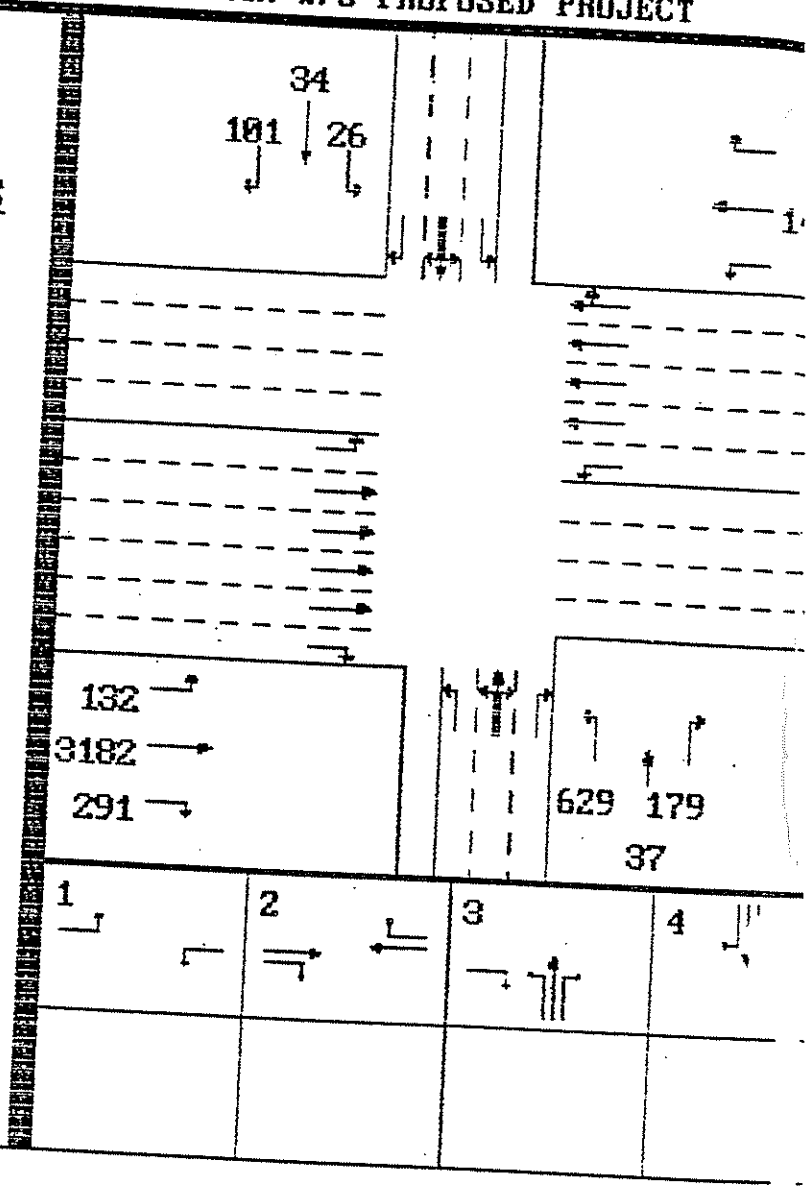
HCM Summary Results for Case: HHIP1

PM PEAK

H STREET /HIDDEN VIS

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.09	.95	80.8	F
	*T	.55	1.05	36.5	D
	R	.21	.30	2.6	A
	All			35.5	D
WB	L	.05	.56	39.7	D
	TR	.26	.50	8.2	B
	All			9.6	B
NB	*L	.22	1.09	102.7	F
	LTR	.21	1.07	79.3	F
	R	.13	.66	29.2	D
	All			77.9	F
SB	L	.02	.21	36.0	D
	LTR	.05	.56	34.5	D
	*R	.05	.60	36.3	D
	All			35.5	D
Intersect:		.90	1.01	34.2	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: HPLA1 SUMMARY REPORT

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INTERSECTION: H STREET /PASEO DEL RE TIME: HOUR
ANALYST: JHK & ASSOCIATES DATE: AM PEAK
COMMENT: W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	234	1426	67	0	50	6	3
WB	182	1768	71	0	50	5	3
NB	288	65	222	0	50	3	2
SB	80	40	80	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	TR	12		
NB	L	12	LT	12	R	12						
SB	L	12	LT	12	R	12						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	29.5	3
SB	0	2	N	0	0	.90	Y	29.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R					
WB		TR	LTR						
NB			R	LTR					
SB	R				LTR				
GREEN	15	28	19	18	10	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

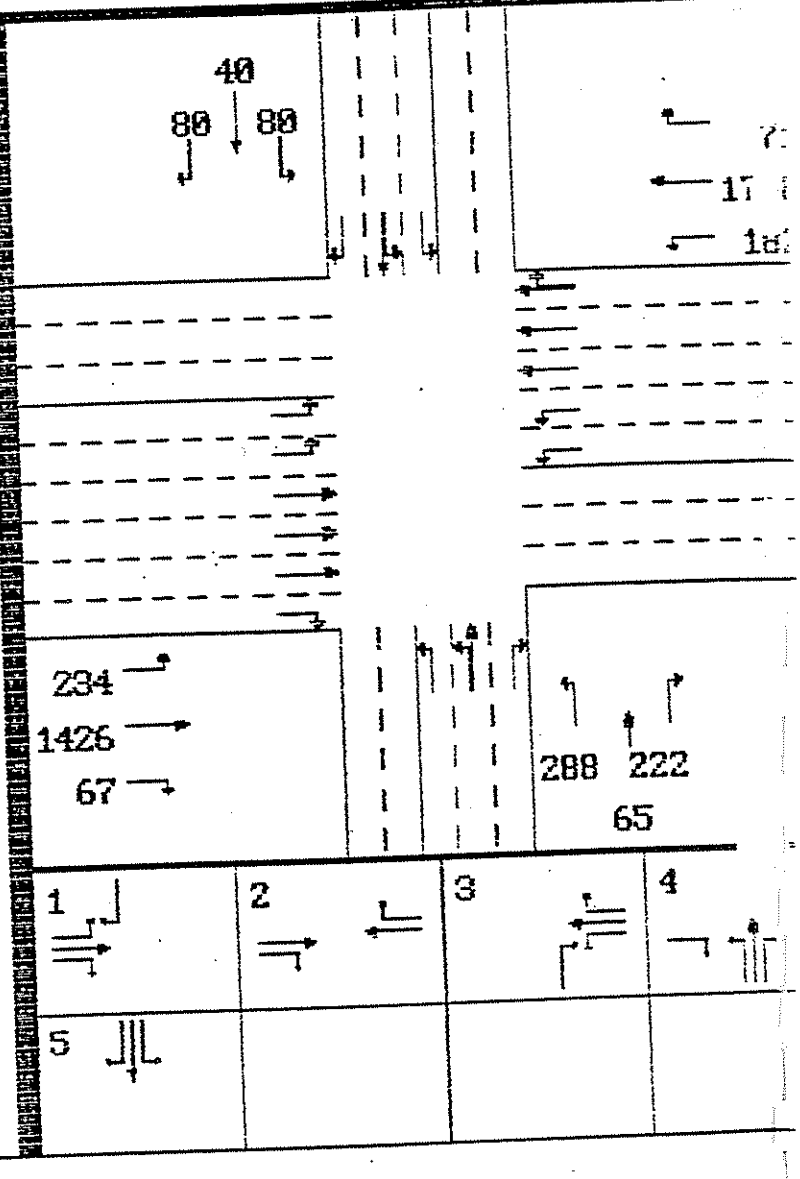
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.57	.15	L	.08	34.5	D	EB	16.9	C
	T	.75	.44	T	.33	14.7	B			
	R	.08	.61	R	.05	4.2	A			
WB	L	.36	.18	L	.06	30.1	D	WB	19.3	C
	TR	.89	.47	TR	.42	18.3	C			
NB	L	.66	.17	L	.11	35.9	D	NB	27.5	D
	LT	.67	.17	LT	.12	30.9	D			
	R	.46	.35	R	.16	18.1	C			
SB	L	.38	.10	L	.04	36.0	D	SB	28.5	D
	LT	.39	.10	LT	.04	30.6	D			
	R	.24	.25	R	.06	21.5	C			

HCM Summary Results for Case: HPLA1 H STREET /PASEO DEL RL

HOUR W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.08	.57	34.5	D
	T	.33	.75	14.7	B
	R	.05	.08	4.2	A
	All			16.9	C
WB	L	.06	.36	30.1	D
	*TR	.42	.89	18.3	C
	All			19.3	C
NB	L	.11	.66	35.9	D
	LT	.12	.67	30.9	D
	*R	.16	.46	18.1	C
	All			27.5	D
SB	L	.04	.38	36.0	D
	LT	.04	.39	30.6	D
	*R	.06	.24	21.5	C
	All			28.5	D
Intersect:		.73	.82	19.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HPLP1

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INTERSECTION: H STREET /PASEO DEL RY TIME: PM PEAK

ANALYST: JHK & ASSOCIATES DATE: SPRING92

COMMENT: W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	195	2220	376	0	50	6	3
WB	220	1130	120	0	50	5	3
NB	219	124	262	0	50	3	2
SB	180	60	390	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	TR	12		
NB	L	12	LT	12	R	12						
SB	L	12	LT	12	R	12						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	29.5	3
SB	0	2	N	0	0	.90	Y	29.5	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 110

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R					
WB		TR	LTR						
NB			R	LTR					
SB	R				LTR				
GREEN	23	27	8	18	14	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

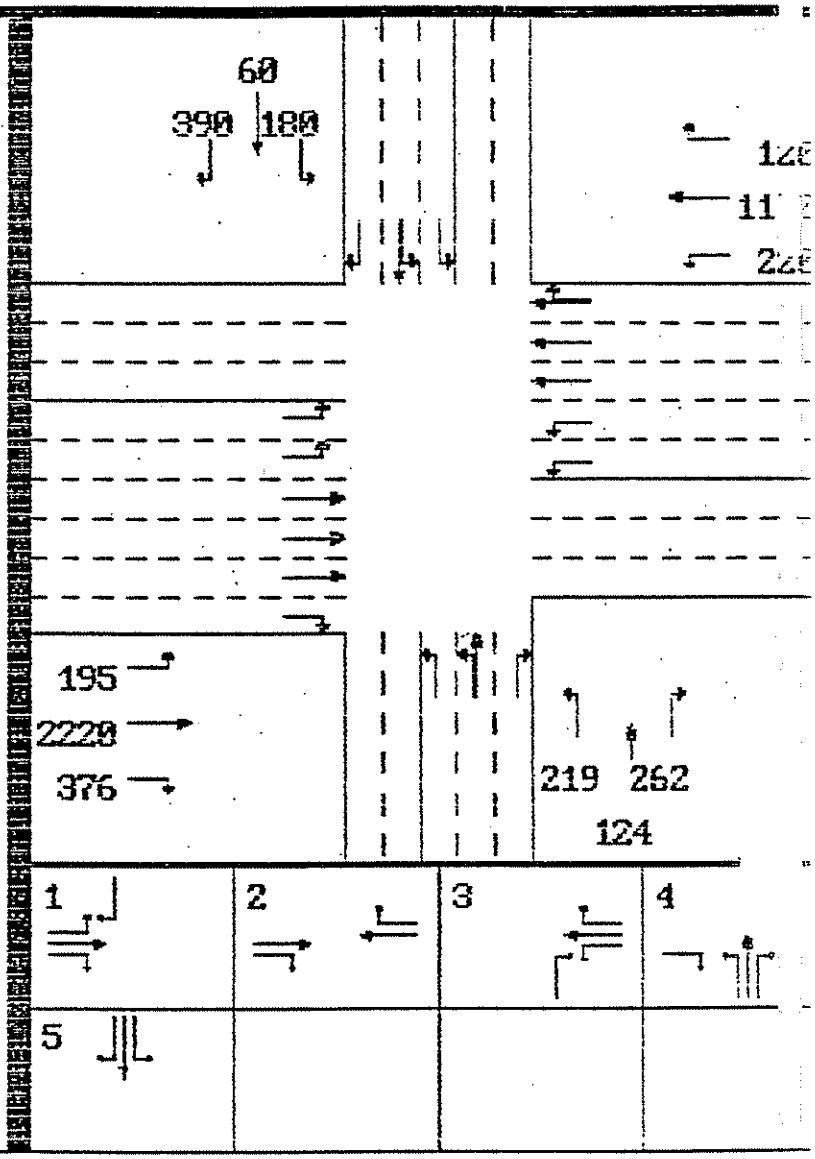
APP	LANE GRP.	v/c	c/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.32	.22	L	.07	27.6	D	EB	26.2	D
	T	1.02	.50	T	.51	29.5	D			
	R	.41	.67	R	.28	3.9	A			
WB	L	.96	.08	L	.08	69.5	F	WB	25.5	D
	TR	.80	.36	TR	.29	18.2	C			
NB	L	.64	.17	L	.11	35.4	D	NB	31.2	D
	LT	.64	.17	LT	.11	30.0	D			
	R	.75	.25	R	.19	29.2	D			
SB	L	.56	.14	L	.08	36.1	D	SB	28.8	D
	LT	.58	.14	LT	.08	30.9	D			
	R	.81	.35	R	.29	25.9	D			

INTERSECT: DELAY = 26.8 SEC/VEH Xc = 1.19 LOS = D Sum(v/s)CR = 1.0

HCM Summary Results for Case: HPLP1 H STREET /PASEO DEL RY

PM PEAK W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.07	.32	27.6	D
	*T	.51	1.02	29.5	D
	R	.28	.41	3.9	A
	All			26.2	D
WB	*L	.08	.96	69.5	F
	TR	.29	.80	18.2	C
	All			25.5	D
NB	L	.11	.64	35.4	D
	LT	.11	.64	30.8	D
	*R	.19	.75	29.2	D
	All			31.2	D
SB	L	.08	.56	36.1	D
	LT	.08	.58	30.9	D
	*R	.29	.81	25.9	D
	All			28.8	D
Intersect:		1.06	1.19	26.8	D



HCM/Cinema v1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HPRA1

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INTERSECTION: H STREET /PASEO RANCHE TIME: AM PEAK

ANALYST: KK DATE: 02-14-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	40	1732	50	0	50	5	3
WB	28	1331	24	0	50	5	3
NB	128	52	82	0	50	2	1
SB	86	18	170	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	TR	12
NB	L	12	TR	12						
SB	L	12	T	12	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	22.8	4
WB	0	2	N	0	0	.90	Y	22.8	4
NB	0	2	N	0	0	.90	Y	37.8	3
SB	0	2	N	0	0	.90	Y	37.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR P							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	15	57	26	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

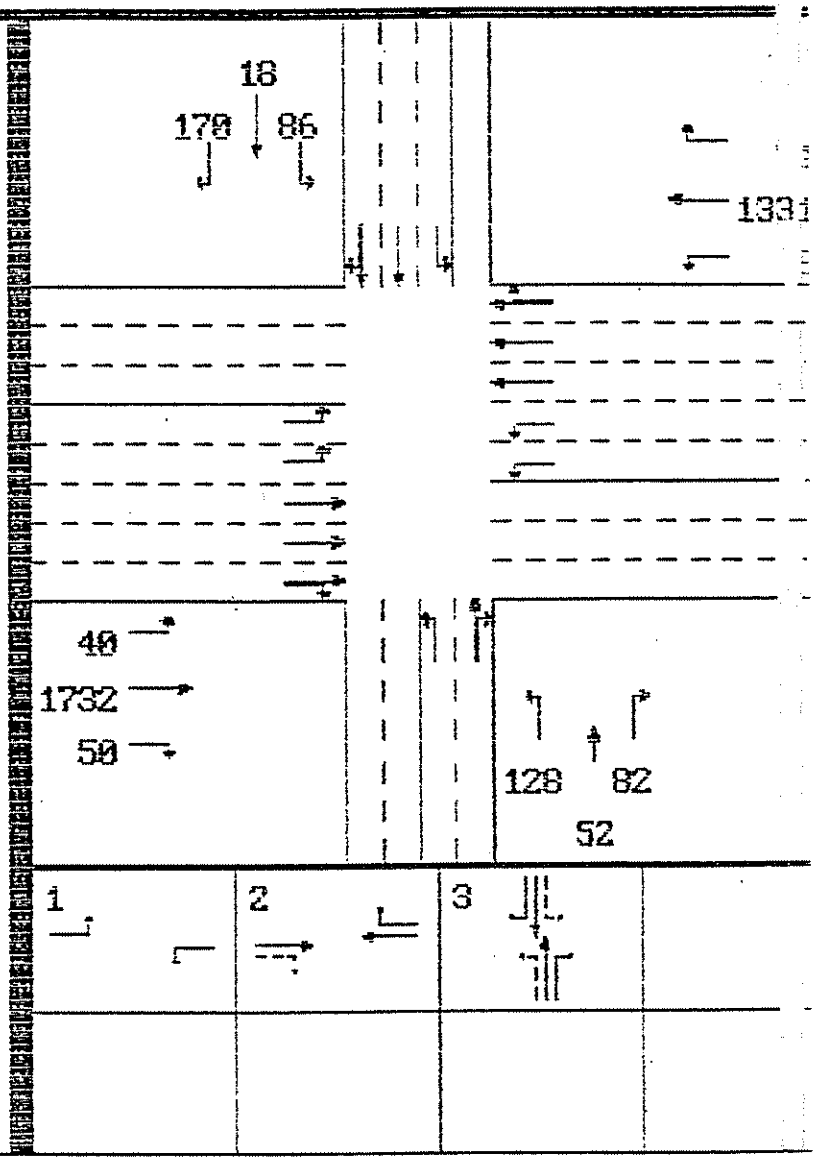
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.10	.15	L	.01	31.0	D	EB	12.3	B
	TR	.78	.53	TR	.41	11.9	B			
WB	L	.07	.15	L	.01	30.8	D	WB	9.0	B
	TR	.59	.53	TR	.31	8.6	B			
NB	L	.47	.25	L	.12	27.9	D	NB	25.1	D
	TR	.38	.25	TR	.09	22.5	C			
SB	L	.34	.25	L	.08	26.2	D	SB	23.2	C
	TR	.29	.25	TR	.07	21.8	C			

INTERSECT DELAY = 12.7 SEC/VEH Xc = .59 LOS = B Sum(v/s)CR = .5

HCM Summary Results for Case: HPRA1 H STREET /PASEO RANCHE

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.01	.10	31.0	D
	*TR	.41	.78	11.9	B
	All			12.3	B
WB	L	.01	.07	38.8	D
	TR	.31	.59	8.6	B
	All			9.0	B
NB	*L	.12	.47	27.9	D
	TR	.09	.38	22.5	C
	All			25.1	D
SB	L	.08	.34	26.2	D
	TR	.07	.29	21.8	C
	All			23.2	C
Intersect:		.54	.59	12.7	B



HCM Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HPRP1
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INTERSECTION: H STREET /PASEO RANCHE TIME: PM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	185	2168	300	0	50	5	3
WB	81	1140	140	0	50	5	3
NB	91	100	40	0	50	2	1
SB	94	100	170	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	TR	12
NB	L	12	TR	12						
SB	L	12	T	12	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	22.8	4
WB	0	2	N	0	0	.90	Y	22.8	4
NB	0	2	N	0	0	.90	Y	37.8	3
SB	0	2	N	0	0	.90	Y	37.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR P							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	15	62	21	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

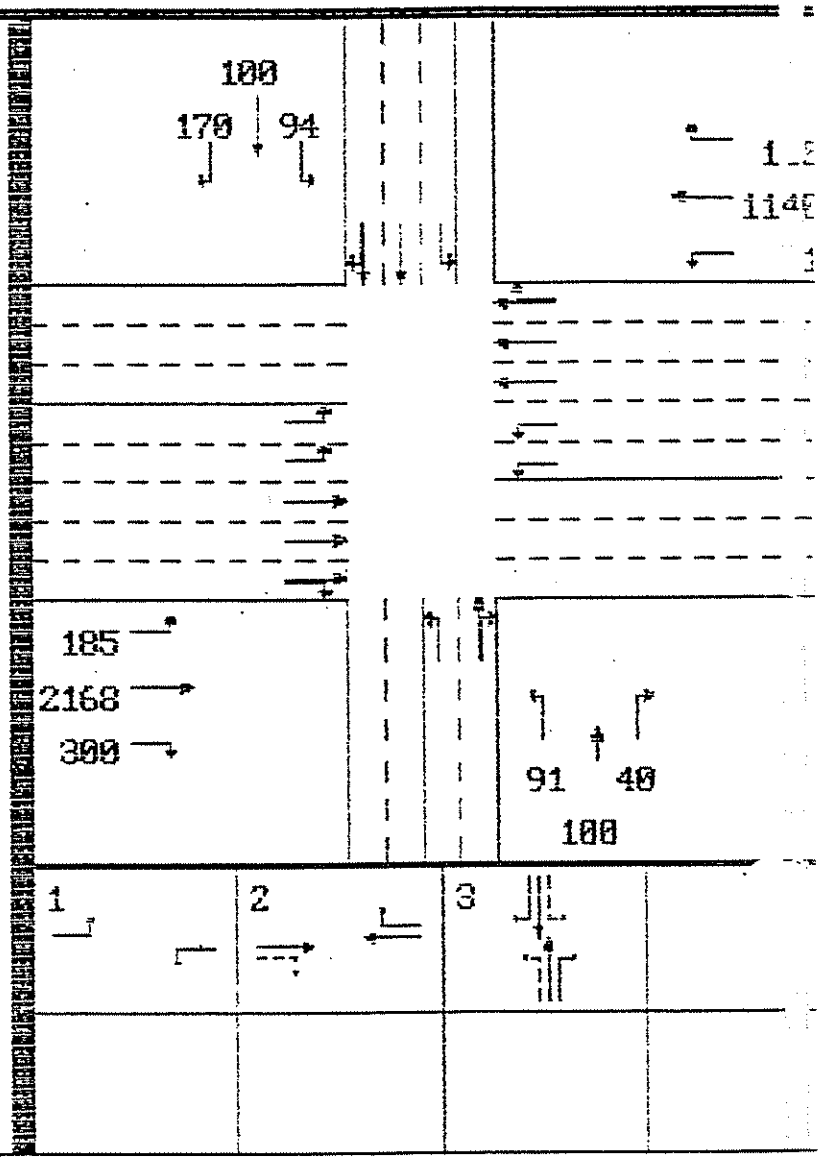
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.45	.15	L	.07	33.2	D	EB	25.4	D
	TR	1.01	.57	TR	.58	24.8	C			
WB	L	.20	.15	L	.03	31.5	D	WB	8.2	B
	TR	.32	.37	TR	.30	6.8	B			
NB	L	.50	.20	L	.10	31.3	D	NB	27.8	D
	TR	.45	.20	TR	.09	25.6	D			
SB	L	.48	.20	L	.10	30.9	D	SB	26.9	D
	TR	.49	.20	TR	.10	25.6	D			

INTERSECT DELAY = 20.8 SEC/VEH Xc = .81 LOS = C Sum(v/s)CR = .7

HCM Summary Results for Case: HPRP1 H STREET /PASEO RANCHE

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.07	.45	33.2	D
	*TR	.58	1.01	24.8	C
	All			25.4	D
WB	L	.03	.20	31.5	D
	TR	.30	.52	6.8	B
	All			8.2	B
NB	*L	.10	.50	31.3	D
	TR	.09	.45	25.6	D
	All			27.8	D
SB	L	.10	.48	30.9	D
	TR	.10	.49	25.6	D
	All			26.9	D
Intersect:		.74	.81	20.5	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: EHOTA1

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INTERSECTION: EAST H ST /OTAY LAKES R TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-7-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	215	264	47	0	50	6	3
WB	86	626	135	0	50	5	3
NB	389	636	877	0	50	6	3
SB	154	514	322	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R 12
WB	L	12	L	12	T	12	T	12	TR	12	
NB	L	12	L	12	T	12	T	12	T	12	R 12
SB	L	12	L	12	T	12	T	12	T	12	R 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	29.5	4
SB	0	2	N	0	0	.90	Y	29.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR	R						
WB	L	TR	R						
NB	R		L	TR					
SB	R		L	TR					
GREEN	9	19	13	53	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

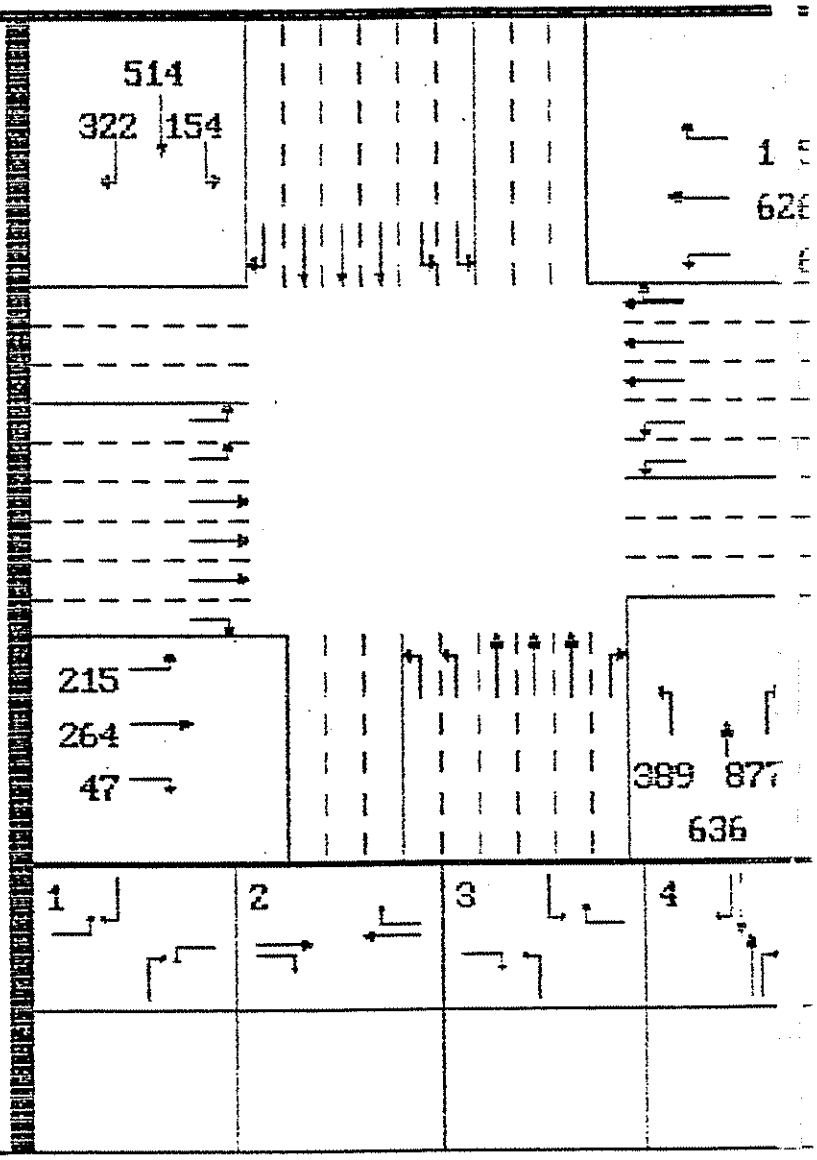
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.84	.09	L	.08	50.5	E	EB	30.9	D
	T	.33	.18	T	.06	18.5	C			
	R	.11	.31	R	.03	12.8	B			
WB	L	.34	.09	L	.03	35.9	D	WB	41.0	E
	TR	.98	.18	TR	.18	41.5	E			
NB	L	1.09	.13	L	.14	100.4	F	NB	50.0	E
	T	.30	.49	T	.15	7.9	B			
	R	1.11	.58	R	.64	60.2	F			
SB	L	.43	.13	L	.05	34.2	D	SB	11.2	B
	T	.24	.49	T	.12	7.6	B			
	R	.41	.58	R	.24	6.0	B			

INTERSECT DELAY = 36.8 SEC/VEH Xc = 1.16 LOS = D Sum(v/s)CR = 1.04

HCM Summary Results for Case: EHOTA1 EAST H ST /OTAY LAKES F

AM PK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.08	.84	50.5	E
	T	.06	.33	18.5	C
	R	.03	.11	12.8	B
	All			30.9	D
WB	L	.03	.34	35.9	D
	*TR	.10	.90	41.5	E
	All			41.0	E
NB	*L	.14	1.09	100.4	F
	T	.15	.30	7.9	B
	*R	.64	1.11	60.2	F
	All			50.0	E
SB	L	.05	.43	34.2	D
	T	.12	.24	7.6	B
	R	.24	.41	6.0	B
	All			11.2	B
Intersect:		1.04	1.16	36.8	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: EHOTF1

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INTERSECTION: EAST H ST /OTAY LAKES R TIME: PM PK

ANALYST: JHK & ASSOCIATES DATE: 1-7-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	191	398	189	0	50	6	3
WB	41	345	92	0	50	5	3
NB	269	1234	688	0	50	6	3
SB	312	535	306	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	TR	12		
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	29.5	4
SB	0	2	N	0	0	.90	Y	29.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:		1	2	3	4	5	6	7	8	PED O
	EB	L	TR	R						
	WB	L	TR	R						
	NB	R		L	TR					
	SB	R		L	TR					
GREEN		7	19	15	53	0	0	0	0	
YELLOW		3	3	3	3	0	0	0	0	
RED		1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.94	.07	L	.07	68.3	F
	T	.50	.18	T	.09	19.3	C
	R	.42	.33	R	.14	13.8	B
WB	L	.20	.07	L	.01	36.5	D
	TR	.57	.18	TR	.10	19.7	C
NB	L	.66	.15	L	.10	36.1	D
	T	.57	.49	T	.28	9.5	B
	R	.89	.56	R	.50	19.2	C
SB	L	.76	.15	L	.11	39.3	D
	T	.25	.49	T	.12	7.7	B
	R	.40	.56	R	.22	6.5	B

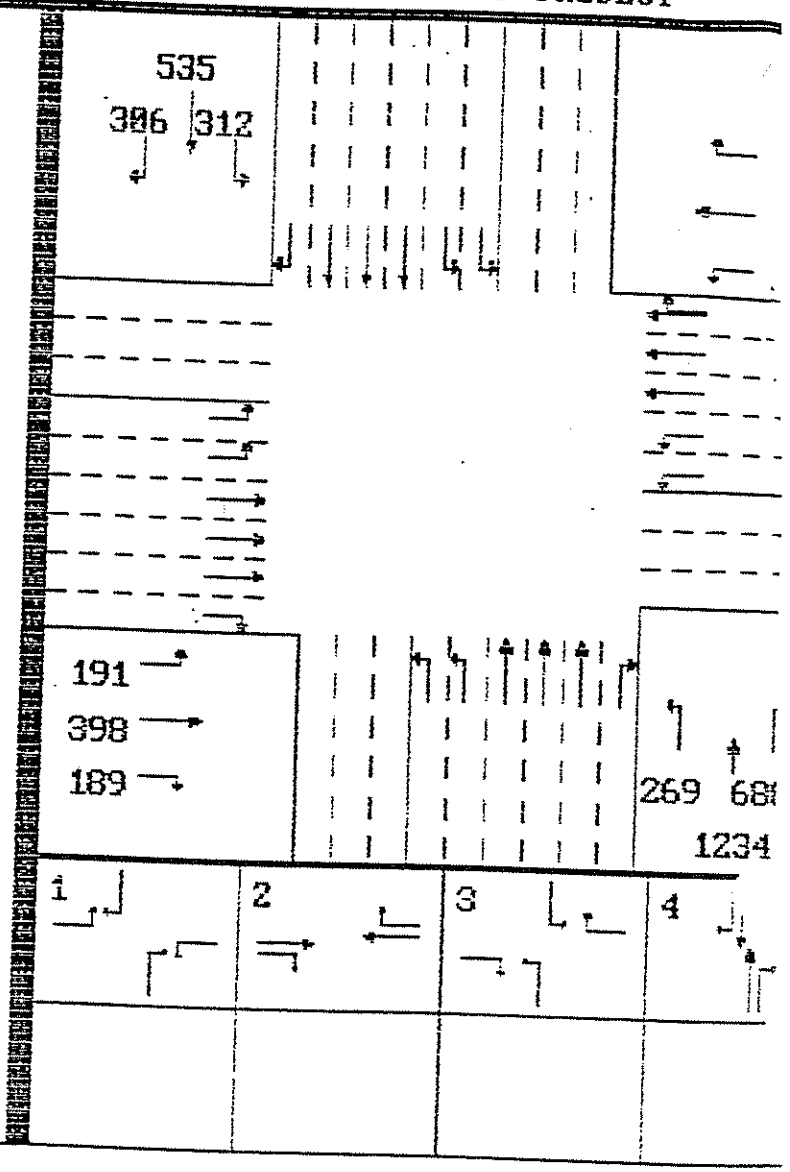
APPROACH: DELAY

EB	29.9
WB	21.1
NB	15.6
SB	15.8

INT DELAY = 18.7 SEC/VEH XC = .92 LOS = C Sum(V/S)CR =

HCM Summary Results for Case: EHOTP1 EAST H ST /OTAY LAKES
PM PK
INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.07	.94	68.3	F
	T	.09	.50	19.3	C
	*R	.14	.42	13.8	B
	All			29.9	D
WB	L	.01	.28	36.5	D
	TR	.10	.57	19.7	C
	All			21.1	C
NB	L	.10	.66	36.1	D
	T	.28	.57	9.5	B
	*R	.50	.89	19.2	C
	All			15.6	C
SB	*L	.11	.76	39.3	D
	T	.12	.25	7.7	B
	R	.22	.48	6.5	B
	All			15.8	C
Intersect:		.82	.92	18.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: HRUA1 SUMMARY REPORT

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INTERSECTION: H STREET /RUTGERS TIME: AM PEAK

ANALYST: KK DATE: 02-14-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	162	777	376	0	50	3	2
WB	12	311	24	0	50	3	2
NB	126	77	23	0	50	3	2
SB	74	84	412	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12
WB	L	12	T	12	TR	12
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: PRETIMED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
EB	L		LTR	TR						
WB	L			TR						
NB					LTR					
SB					LTR					
GREEN		4	20	33	37	0	0	0	0	0
YELLOW		4	4	4	4	0	0	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

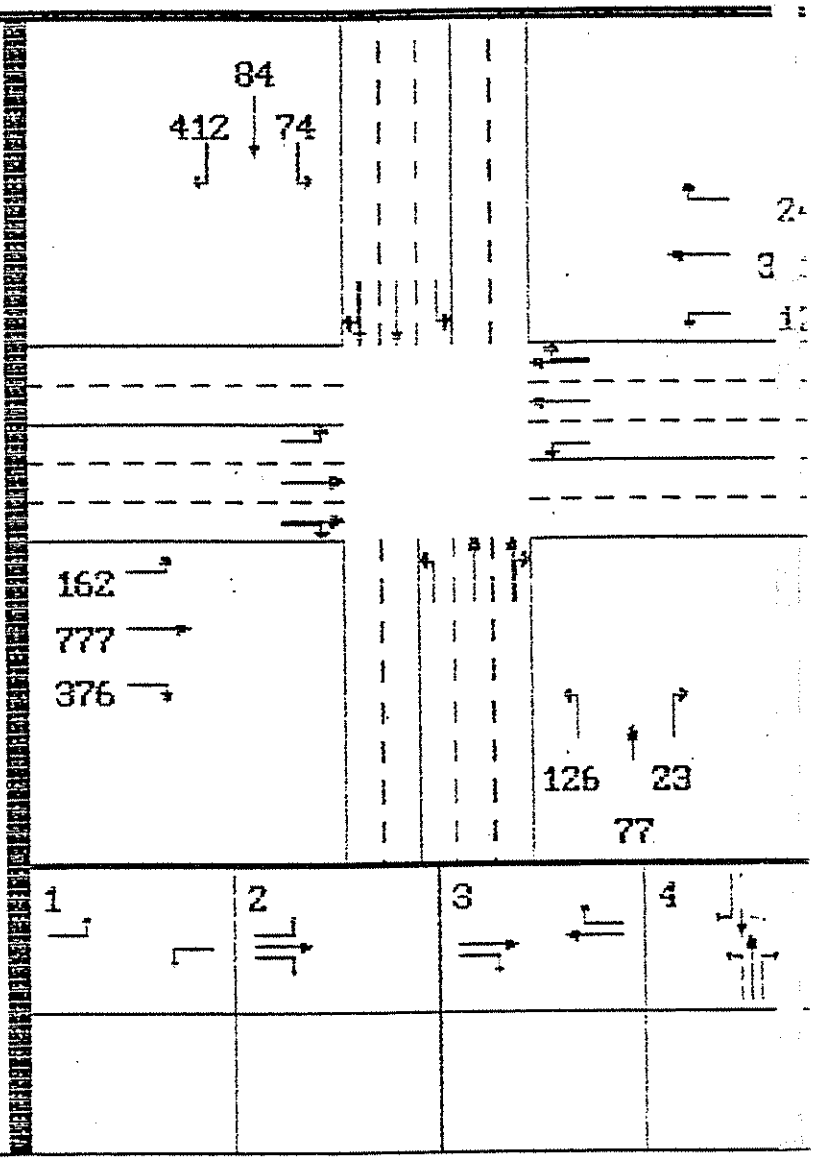
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.40	.26	L	.11	25.7	D	EB	15.2	C
	TR	.75	.53	TR	.40	13.8	B			
WB	L	.17	.05	L	.01	38.5	D	WB	16.9	C
	TR	.36	.31	TR	.11	16.2	C			
NB	L	.35	.35	L	.19	24.0	C	NB	21.5	C
	TR	.10	.35	TR	.03	18.5	C			
SB	L	.17	.35	L	.06	19.1	C	SB	22.0	C
	TR	.54	.35	TR	.19	22.4	C			

INTERSECTION DELAY = 17.6 (SECONDS) X= .5 LOS = C SUMMA V/C = .59

HCM Summary Results for Case: HRUA1 H STREET /RUTGERS

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.11	.40	25.7	D
	*TR	.40	.75	13.8	B
	All			15.2	C
WB	*L	.01	.17	38.5	D
	TR	.11	.36	16.2	C
	All			16.9	C
NB	*L	.19	.55	24.0	C
	TR	.03	.10	18.5	C
	All			21.5	C
SB	L	.06	.17	19.1	C
	TR	.19	.54	22.4	C
	All			22.8	C
Intersect:		.59	.65	17.6	C



HCM/Cinema V1.26 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HRUP1

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INTERSECTION: H STREET /RUTGERS TIME: PM PEAK

ANALYST: KK DATE: 02-14-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	410	648	284	0	50	3	2
WB	18	286	39	0	50	3	2
NB	58	90	35	0	50	3	2
SB	70	69	170	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR 12
WB	L	12	T	12	TR 12
NB	L	12	T	12	TR 12
SB	L	12	T	12	TR 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: PRETIMED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED OP
EB	L	LTR	TR						
WB	L		TR						
NB				LTR					
SB				LTR					
GREEN	4	30	33	27	0	0	0	0	
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

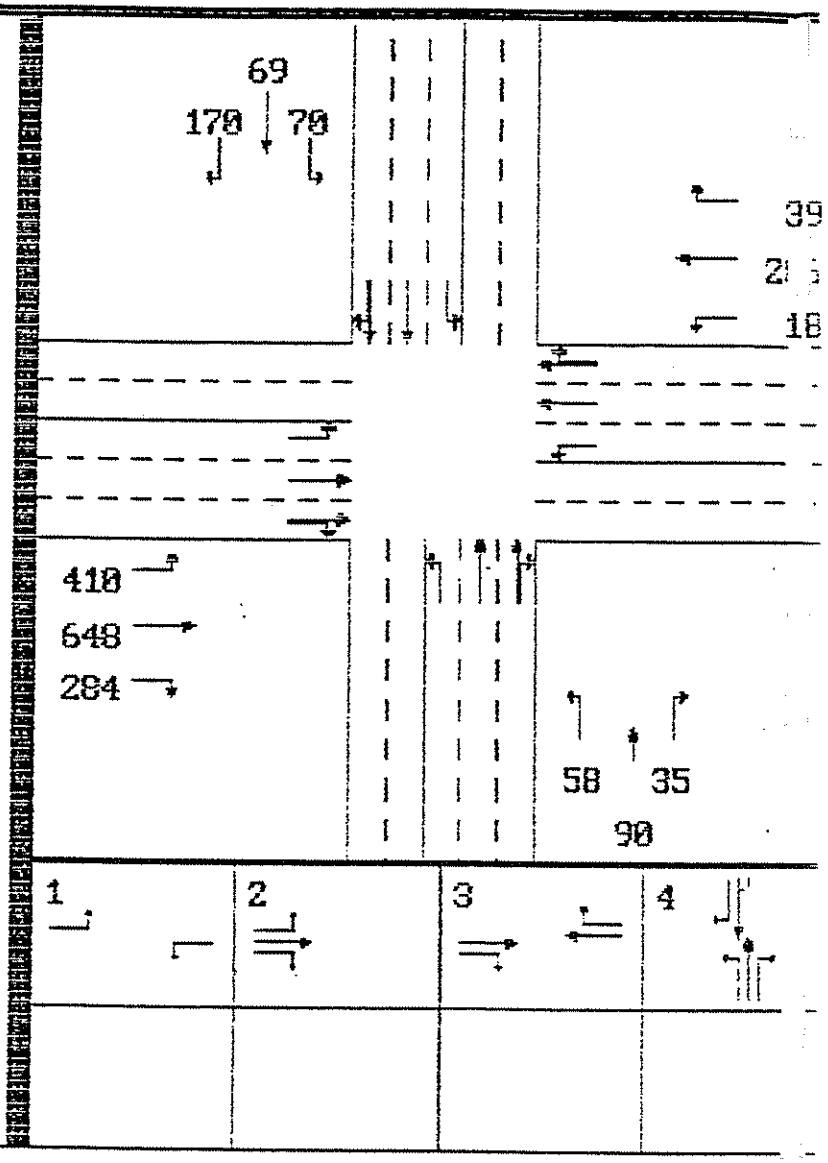
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	L
EB	L	.76	.35	L	.27	27.7	D	EB	12.8	
	TR	.52	.62	TR	.32	6.6	B			
WB	L	.26	.05	L	.01	39.0	D	WB	17.3	
	TR	.35	.31	TR	.11	16.2	C			
NB	L	.23	.25	L	.06	24.7	C	NB	24.4	
	TR	.17	.25	TR	.04	24.3	C			
SB	L	.23	.25	L	.06	24.7	C	SB	25.4	
	TR	.34	.25	TR	.09	25.6	D			

INTERSECT: DELAY = 16.3 SEC/VEH Xc = .51 LOS = C Sum(v/s)CR =

HCM Summary Results for Case: HRUP1 H STREET /RUTGERS

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.27	.76	27.7	D
	TR	.32	.52	6.6	B
	All			12.8	B
WB	L	.01	.26	39.0	D
	*TR	.11	.35	16.2	C
	All			17.3	C
NB	L	.06	.23	24.7	C
	TR	.04	.17	24.3	C
	All			24.4	C
SB	L	.06	.23	24.7	C
	*TR	.09	.34	25.6	D
	All			25.4	D
Intersect:		.47	.51	16.3	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: HELA1 SUMMARY REPORT

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INTERSECTION: "H" STREET /EASTLAKE PW TIME: A.M. PEAK
ANALYST: JHK DATE: 1/9/92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	52	158	664	0	50	3	2
WB	3	67	8	0	50	3	2
NB	212	155	6	0	50	3	2
SB	12	377	68	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR 12
WB	L	12	T	12	TR 12
NB	L	12	T	12	TR 12
SB	L	12	T	12	TR 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	17.5	3
SB	0	2	N	0	0	.90	Y	17.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
EB	L		LTR	TR						
WB	L			TR						
NB					L	LTR	TR			
SB					L		TR			
GREEN		7	13	26	7	11	22	0	0	0
YELLOW		3	3	3	3	3	3	0	0	
RED		1	1	1	1	1	1	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

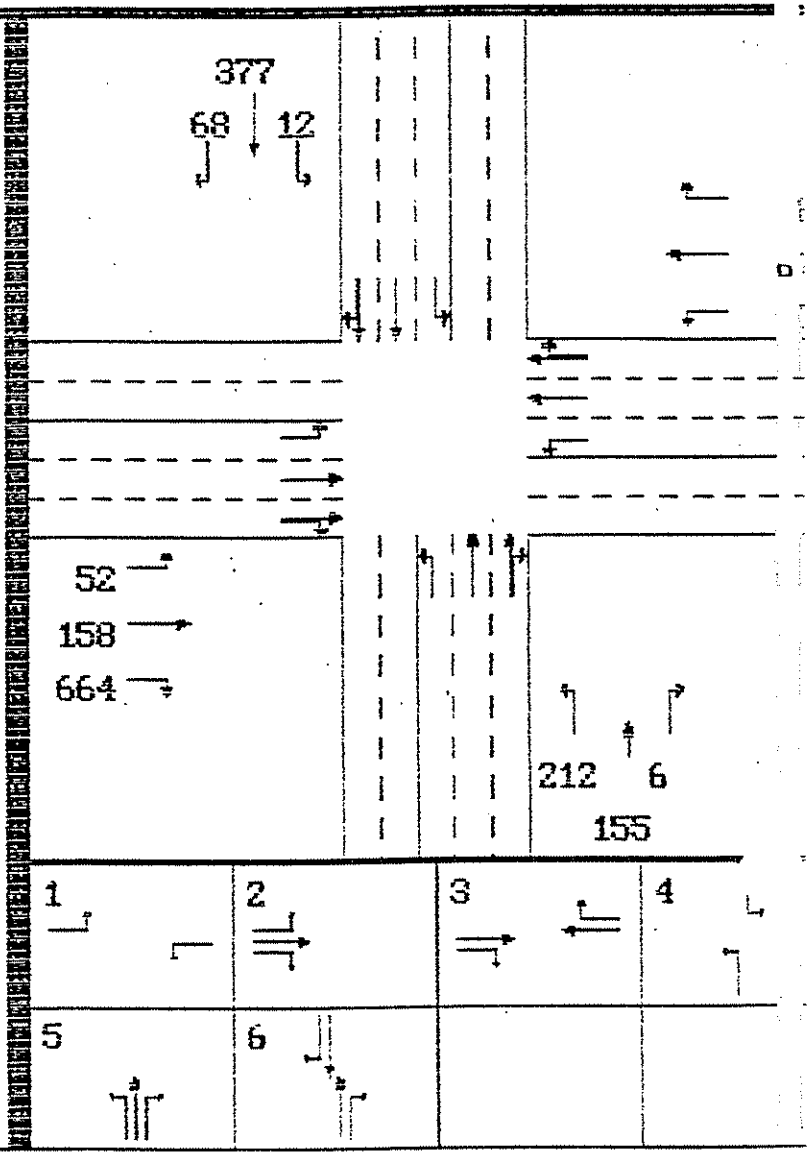
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.15	.23	L	.03	25.9	D	EB	17.4	C
	TR	.77	.40	TR	.31	16.9	C			
WB	L	.02	.07	L	.00	36.0	D	WB	15.8	C
	TR	.10	.25	TR	.02	15.1	C			
NB	L	.67	.21	L	.14	33.6	D	NB	25.9	D
	TR	.15	.35	TR	.05	16.1	C			
SB	L	.11	.07	L	.01	36.2	D	SB	28.3	D
	TR	.71	.21	TR	.15	28.1	D			

HCM Summary Results for Case: HELA1 "H" STREET /EASTLAKE PW

A.M. PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.03	.15	25.9	D
	*TR	.31	.77	16.9	C
	All			17.4	C
WB	*L	.00	.02	36.0	D
	TR	.02	.10	15.1	C
	All			15.8	C
NB	*L	.14	.67	33.6	D
	TR	.05	.15	16.1	C
	All			25.9	D
SB	L	.01	.11	36.2	D
	*TR	.15	.71	28.1	D
	All			28.3	D
Intersect:		.60	.67	21.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HELP1

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INTERSECTION: "H" STREET /EASTLAKE PW TIME: PM PEAK

ANALYST: JHK DATE: 1/9/92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	99	106	511	0	50	3	2
WB	6	58	11	0	50	3	2
NB	238	428	14	0	50	3	2
SB	16	176	57	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR 12
WB	L	12	T	12	TR 12
NB	L	12	T	12	TR 12
SB	L	12	T	12	TR 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	17.5	3
SB	0	2	N	0	0	.90	Y	17.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	7	13	26	7	11	22	0	0	0
YELLOW	3	3	3	3	3	3	0	0	
RED	1	1	1	1	1	1	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	V/C	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.29	.23	L	.06	26.8	D	EB	14.3	B
	TR	.58	.40	TR	.23	12.4	B			
WB	L	.06	.07	L	.00	36.1	D	WB	16.8	C
	TR	.09	.25	TR	.02	15.1	C			
NB	L	.75	.21	L	.16	36.7	D	NB	24.3	C
	TR	.42	.35	TR	.15	17.9	C			
SB	L	.15	.07	L	.01	36.4	D	SB	25.0	D
	TR	.38	.21	TR	.08	24.3	C			

[illegible] SEC/VEH XC = .53 LOS = C Sum(V/S)CR = .[illegible]

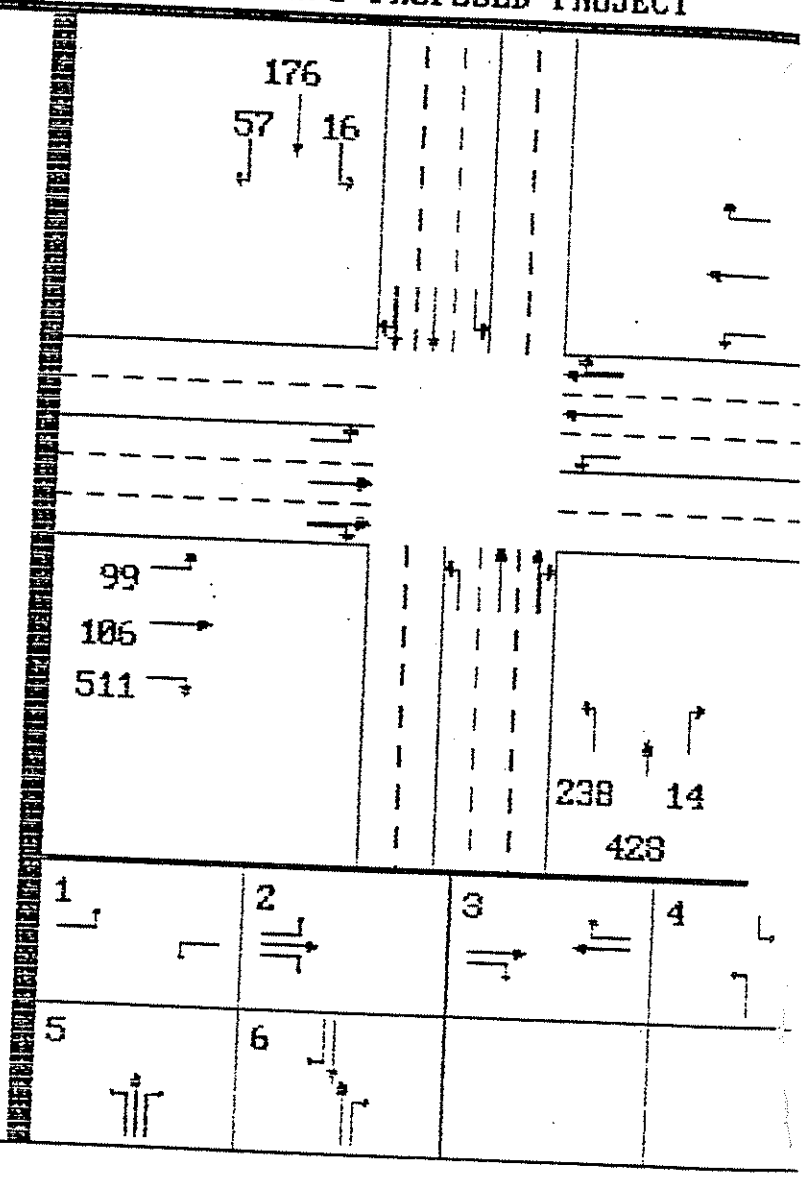
HCM Summary Results for Case: HELP1

PM PEAK

"H" STREET /EASTLAKE P

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.06	.29	26.8	D
	*TR	.23	.58	12.4	B
	All			14.3	B
WB	*L	.00	.06	36.1	D
	TR	.02	.09	15.1	C
	All			16.8	C
NB	*L	.16	.75	36.7	D
	TR	.15	.42	17.9	C
	All			24.3	C
SB	L	.01	.15	36.4	D
	*TR	.00	.38	24.3	C
	All			25.0	D
Intersect:		.47	.53	19.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TES8A1

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INTERSECTION: TELEGRAPH /I-805 SB Ram TIME: A.M. Peak

ANALYST: JHK DATE: 12/27/91

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1011	0	0	50	2	3
WB	461	519	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	0	0	586	0	50	2	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12				
WB	L	12	L	12	T	12	T	12
NB								
SB	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	N	8.5	4
WB	0	2	N	0	0	.90	N	8.5	4
NB	0	2	N	0	0	.90	N	23.5	3
SB	0	2	N	0	0	.90	N	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB		T	T						
WB	LT	T							
NB									
SB			R	R					
GREEN	26	24	19	25	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.76	.44	T	.33	15.2	C	EB	15.2	C
WB	L	.67	.25	L	.16	30.0	D	WB	18.2	C
	T	.34	.50	T	.17	7.8	B			
SB	R	.61	.42	R	.26	16.8	C	SB	16.8	

35 LOS = C Sum(v/s)CR =

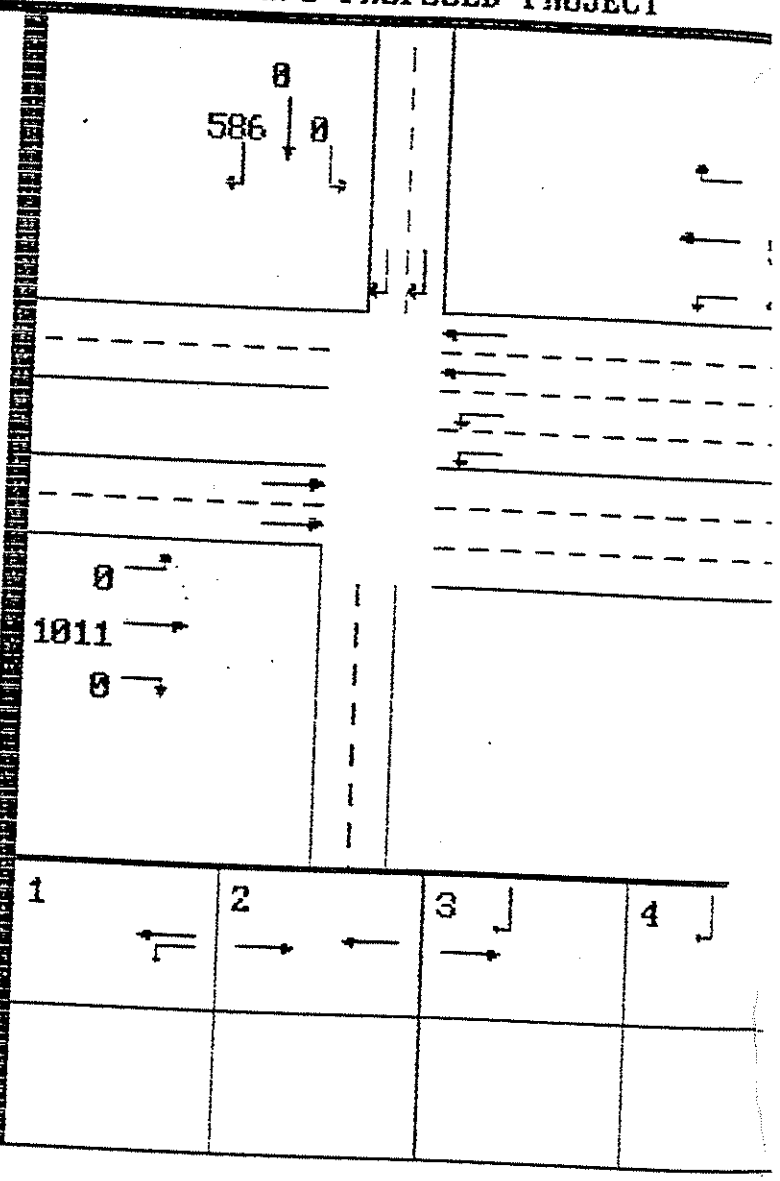
HCM Summary Results for Case: TES8A1

A.M. Peak

TELEGRAPH /I-805 SB Ra

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.33	.76	15.2	C
	All			15.2	C
WB	*L	.16	.67	38.8	D
	T	.17	.34	7.8	B
	All			18.2	C
SB	*R	.26	.61	16.8	C
	All			16.8	C
Intersect:		.75	.82	16.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TES8P1 SUMMARY REPORT

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INTERSECTION: TELEGRAPH /I-805 SB Ram TIME: P.M. Peak
ANALYST: JHK DATE: 12/27/91
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1480	0	0	50	2	3
WB	487	595	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	0	0	810	0	50	2	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12				
WB	L	12	L	12	T	12	T	12
NB								
SB	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	N	8.5	4
WB	0	2	N	0	0	.90	N	8.5	4
NB	0	2	N	0	0	.90	N	23.5	3
SB	0	2	N	0	0	.90	N	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		T	T						
WB	LT	T							
NB									
SB			R	R					
GREEN	20	21	29	24	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

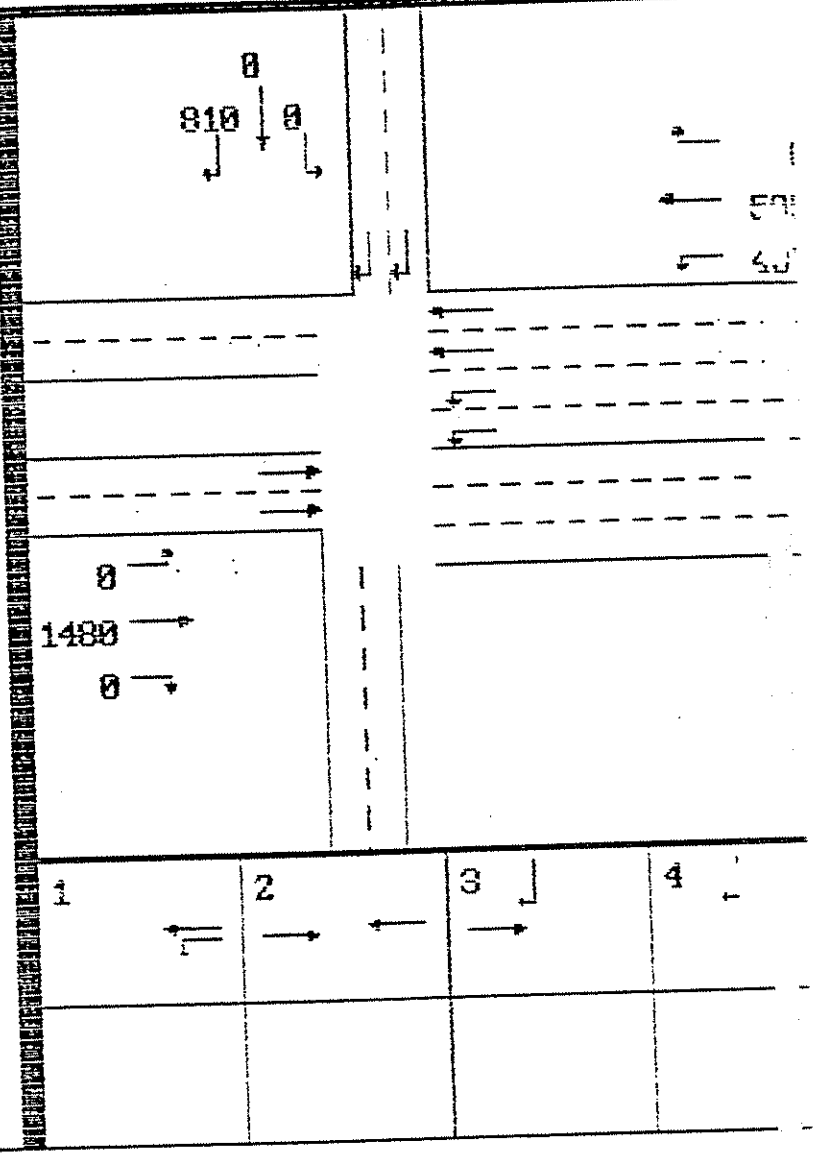
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.97	.50	T	.48	24.3	C	EB	24.3	C
WB	L	.91	.19	L	.17	45.3	E	WB	26.4	D
	T	.47	.42	T	.19	11.0	B			
SB	R	.71	.50	R	.35	14.8	B	SB	14.8	B

HCM Summary Results for Case: TES8P1 TELEGRAPH /I-805 SB Ram

P.M. Peak INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*T	.48	.97	24.3	C
	All			24.3	C
WB	*L	.17	.91	45.3	E
	T	.19	.47	11.0	B
	All			26.4	D
SB	*R	.35	.71	14.8	B
	All			14.8	B
Intersect:		1.01	1.10	22.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION. CASE: TEN8A1
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INTERSECTION: TELEGRAPH CA/NB I-805 RAM TIME: AM PEAK
DATE: -02-11-92
ANALYST: KK AREA TYPE: NON-CBD
COMMENT: INTERIM W/O PROPOSED PROJECT

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	612	984	0	0	50	4	2
WB	0	791	824	0	50	4	2
NB	189	0	618	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12	R	12
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	.0	4
WB	0	2	N	0	0	.90	Y	.0	4
NB	0	2	N	0	0	.90	Y	.0	3
SB	0	2	N	0	0	.90	Y	.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR							
NB			LR						
SB									
GREEN	27	36	35	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

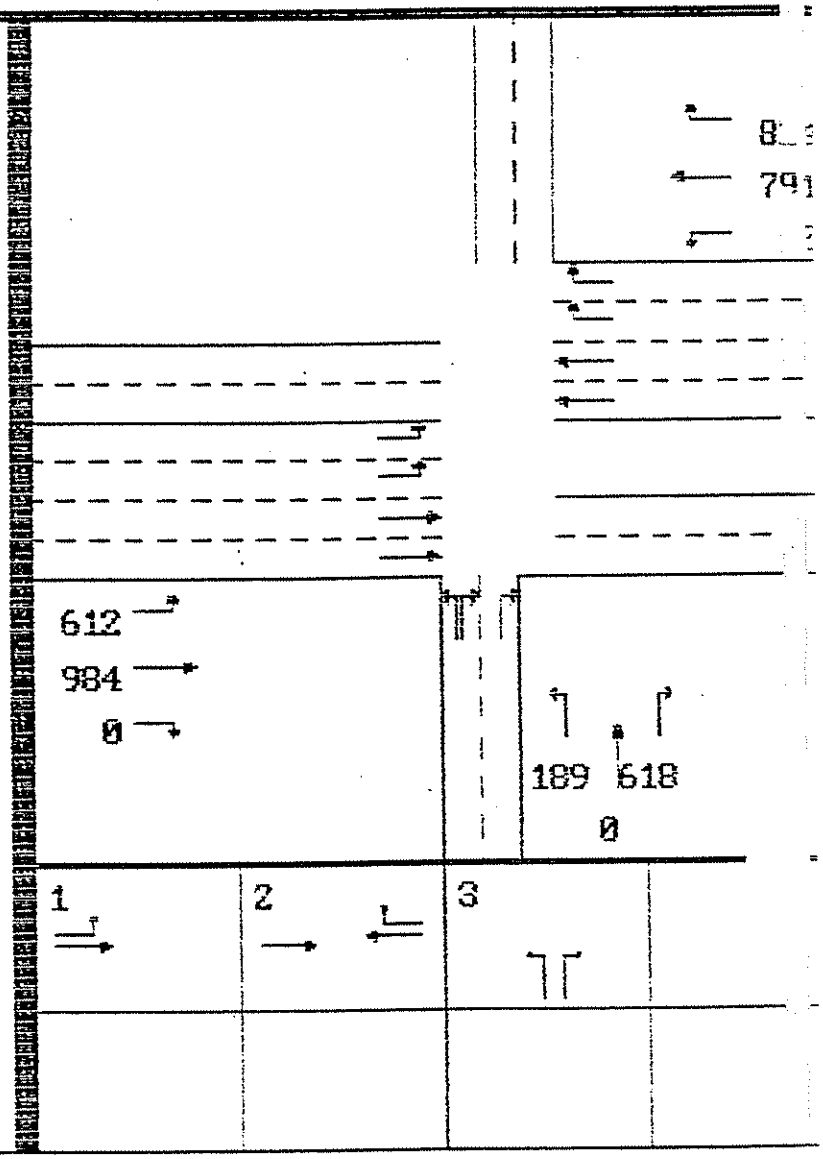
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.86	.25	L	.22	35.8	D	EB	17.2	C
	T	.32	.62	T	.32	5.7	B			
WB	T	.77	.34	T	.26	19.2	C	WB	38.2	D
	R	1.07	.34	R	.36	56.4	E			
NB	LR	.85	.33	LR	.28	29.6	D	NB	32.1	D
	R	.50	.33	R	.30	34.5	D			

INTERSECT. DELAY = 28.8 SEC/VEH Xc = .95 LOS = D Sum(v/s)CR = .87

HCM Summary Results for Case: TEN0A1 TELEGRAPH CA/NB I-885 RAM

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.22	.86	35.8	D
	T	.32	.52	5.7	B
	All			17.2	C
WB	T	.26	.77	19.2	C
	*R	.36	1.07	56.4	E
	All			38.2	D
NB	LR	.28	.85	29.6	D
	*R	.38	.90	34.5	D
	All			32.1	D
Intersect:		.87	.95	28.6	D



HCM/Cinema V1.29 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEN8P1 SUMMARY REPORT

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INTERSECTION: TELEGRAPH CA/NB I-805 RAM TIME: PM PEAK
ANALYST: KK DATE: 02-11-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	630	1675	0	0	50	4	2
WB	0	932	953	0	50	4	2
NB	150	0	590	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12	R	12
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	.0	4
WB	0	2	N	0	0	.90	Y	.0	4
NB	0	2	N	0	0	.90	Y	.0	3
SB	0	2	N	0	0	.90	Y	.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR P							
NB			LR P						
SB									
GREEN	25	41	32	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

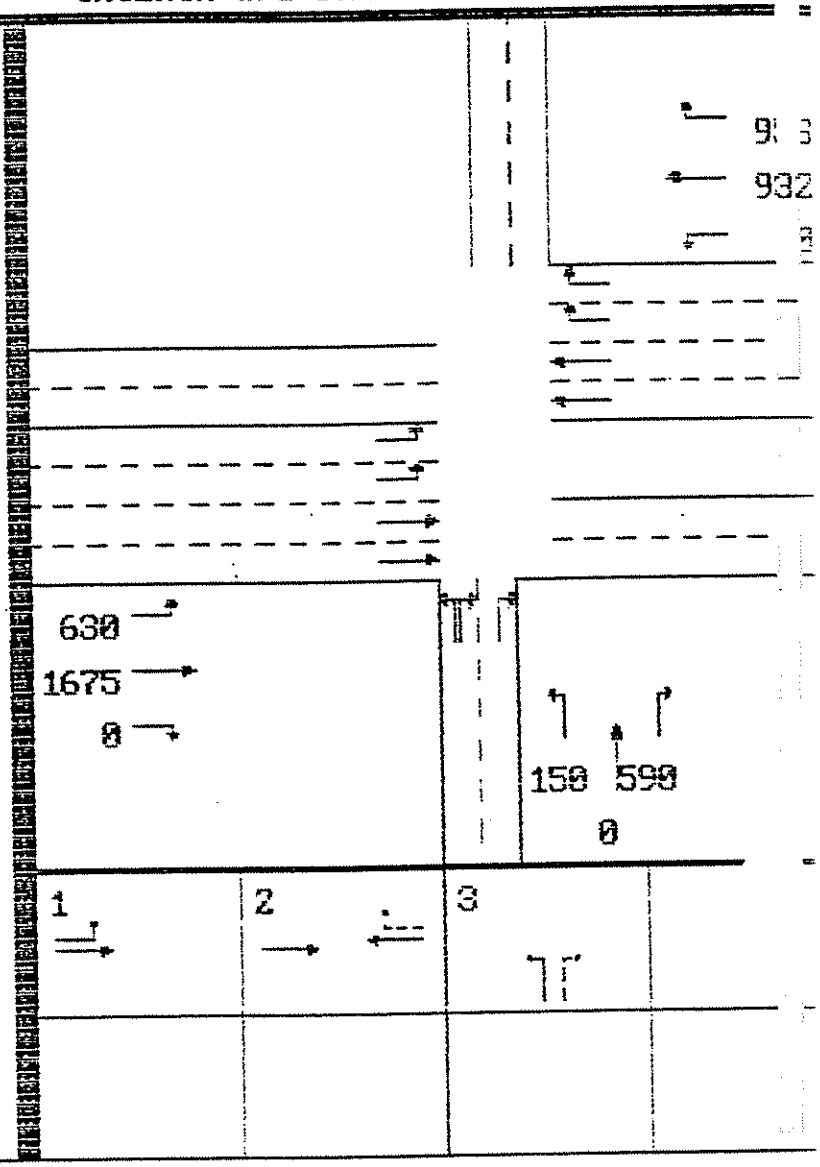
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	o/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.95	.24	L	.22	46.6	E	EB	20.6	C
	T	.85	.65	T	.55	10.9	B			
WB	T	.80	.38	T	.31	18.1	C	WB	26.3	D
	R	.99	.38	R	.38	34.3	D			
NB	LR	.86	.30	LR	.26	32.5	D	NB	36.7	D
	R	.93	.30	R	.28	40.8	E			

HCM Summary Results for Case: TEN8P1 TELEGRAPH CA/NB I-885 RAM

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.22	.95	46.6	E
	T	.55	.85	18.9	B
	All			28.6	C
WB	T	.31	.88	18.1	C
	*R	.38	.99	34.3	D
	All			26.3	D
NB	LR	.26	.86	32.5	D
	*R	.28	.93	48.8	E
	All			36.7	D
Intersect:		.88	.96	25.1	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TEHAA1

****

INTERSECTION: Tel. Canyon /Halecrest Dr TIME: A.M. PEAK
DATE: 1/2/92
ANALYST: JHK AREA TYPE: NON-CBD
COMMENT: INTERIM W/O PROPOSED PROJECT

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	99	1503	0	0	50	4	3
WB	0	1477	15	0	50	4	3
NB	0	0	0	0	50	0	1
SB	31	0	138	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	TR	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR							
NB									
SB	R		LR						
GREEN	25	48	25	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

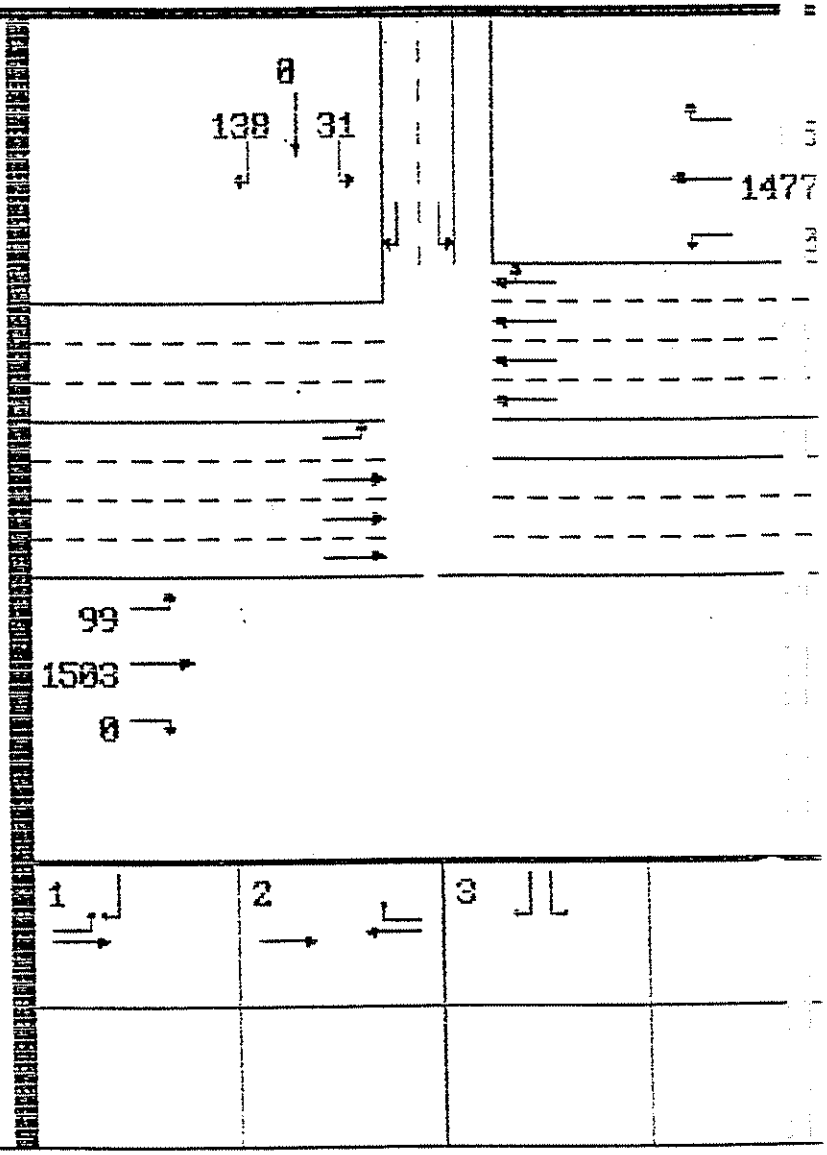
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.28	.24	L	.06	26.2	D	EB	4.7	A
	T	.48	.71	T	.34	3.4	A			
WB	TR	.58	.45	TR	.26	10.8	B	WB	10.8	B
SB	L	.09	.24	L	.02	24.9	C	SB	13.5	B
	R	.21	.47	R	.10	11.0	B			

INTERSECT DELAY = 7 SEC/VEH XC = .47 LOS = B Sum(v/s)CR = .42

HCM Summary Results for Case: TEHAA1 Tel. Canyon /Halecrest Dr

A.M. PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.06	.28	26.2	D
	*T	.34	.48	3.4	A
	All			4.7	A
WB	TR	.26	.58	10.8	B
	All			10.8	B
SB	L	.02	.09	24.9	C
	*R	.10	.21	11.0	B
	All			13.5	B
Intersect:		.44	.47	7.9	B



HCM-Cinema v1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: TEHAP1 SUMMARY REPORT

****

INTERSECTION: Tel. Canyon /Halecrest Dr TIME: PM PEAK

SUMMARY: INTERIM W/O PROPOSED PROJECT DATE: 1/3/93 AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	410	1855	0	0	50	4	3
WB	0	1720	38	0	50	4	3
NB	0	0	0	0	50	0	1
SB	40	0	165	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR	12
WB								
SB								

[illegible]

HCM/Cinema V1.2B LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TEHAP1
****
INTERSECTION: Tel. Canyon /Halecrest Dr TIME: PM PEAK
DATE: 1/2/92
ANALYST: JHK AREA TYPE: NON-CBD
COMMENT: INTERIM W/O PROPOSED PROJECT

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	410	1855	0	0	50	4	3
WB	0	1720	38	0	50	4	3
NB	0	0	0	0	50	0	1
SB	40	0	165	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	TR	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 110

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR							
NB									
SB	R		LR						
GREEN	35	39	24	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

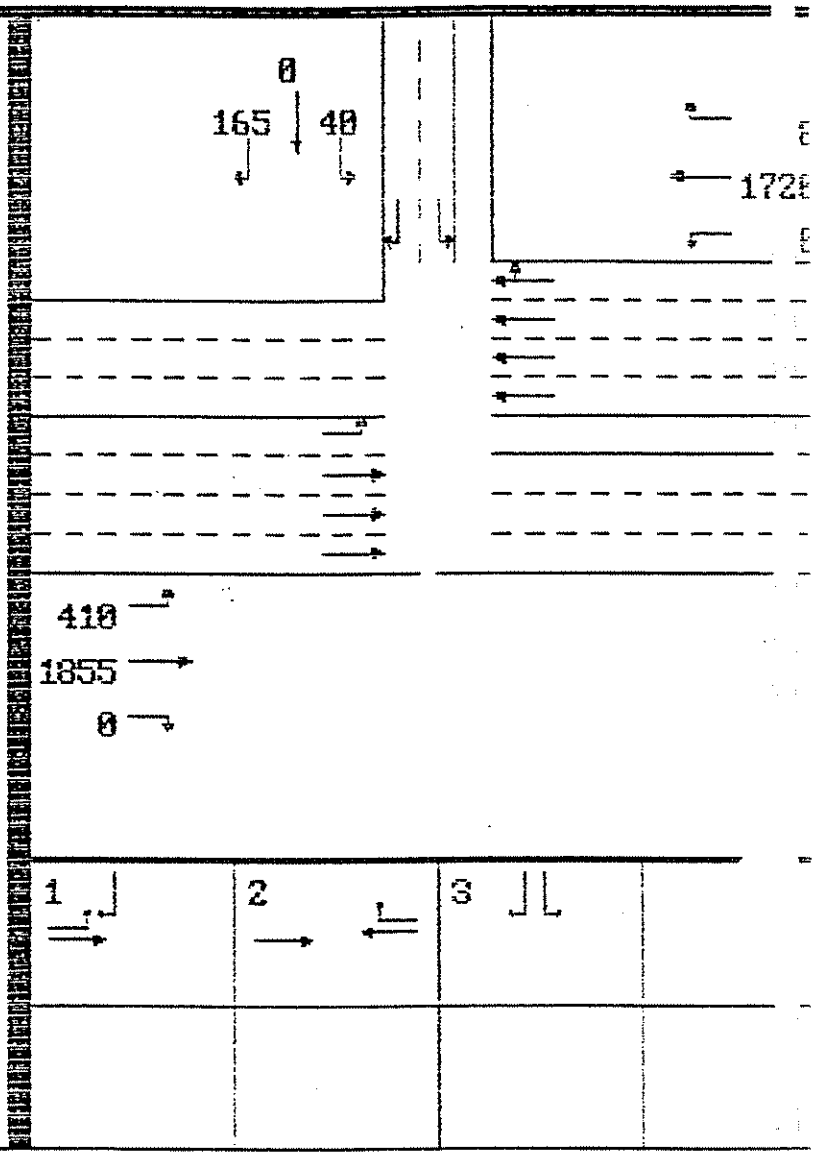
APP	LANE GRP.	v/c	o/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.82	.33	L	.27	32.7	D	EB	8.5	B
	T	.59	.72	T	.42	3.7	A			
WB	TR	.83	.36	TR	.30	20.3	C	WB	20.3	C
SB	L	.11	.23	L	.03	25.6	D	SB	11.4	B
	R	.22	.55	R	.12	8.0	B			

INTERSECT: DELAY = 13.6 SEC/VEH Xc = .75 LOS = B Sum(v/s)CR = .6

HCM Summary Results for Case: TEHAP1 Tel. Canyon /Halecrest Dr

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.27	.82	32.7	D
	T	.42	.59	3.7	A
	All			8.5	B
WB	*TR	.30	.83	20.3	C
	All			20.3	C
SB	L	.03	.11	25.6	D
	*R	.12	.22	8.0	B
	All			11.4	B
Intersect:		.69	.75	13.6	B



HCM/Cinema V1.29 LICENSEE: JHK & Associates SUMMARY REPOR
HCM SIGNALIZED INTERSECTION CASE: TEOLA1
****
INTERSECTION: TELE CYN RD /CREST DR TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	27	1237	105	0	50	4	3
WB	126	1143	23	0	50	4	3
NB	301	88	127	0	50	2	1
SB	34	68	48	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	10	T	12	T	12	TR	12
WB	L	10	T	12	T	12	TR	12
NB	L	10	TR	12				
SB	L	10	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	10.5	4
WB	0	2	N	0	0	.90	Y	10.5	4
NB	0	2	N	0	0	.90	Y	22.5	3
SB	0	2	N	0	0	.90	Y	22.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	12	47	8	13	10	0	0	0	
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

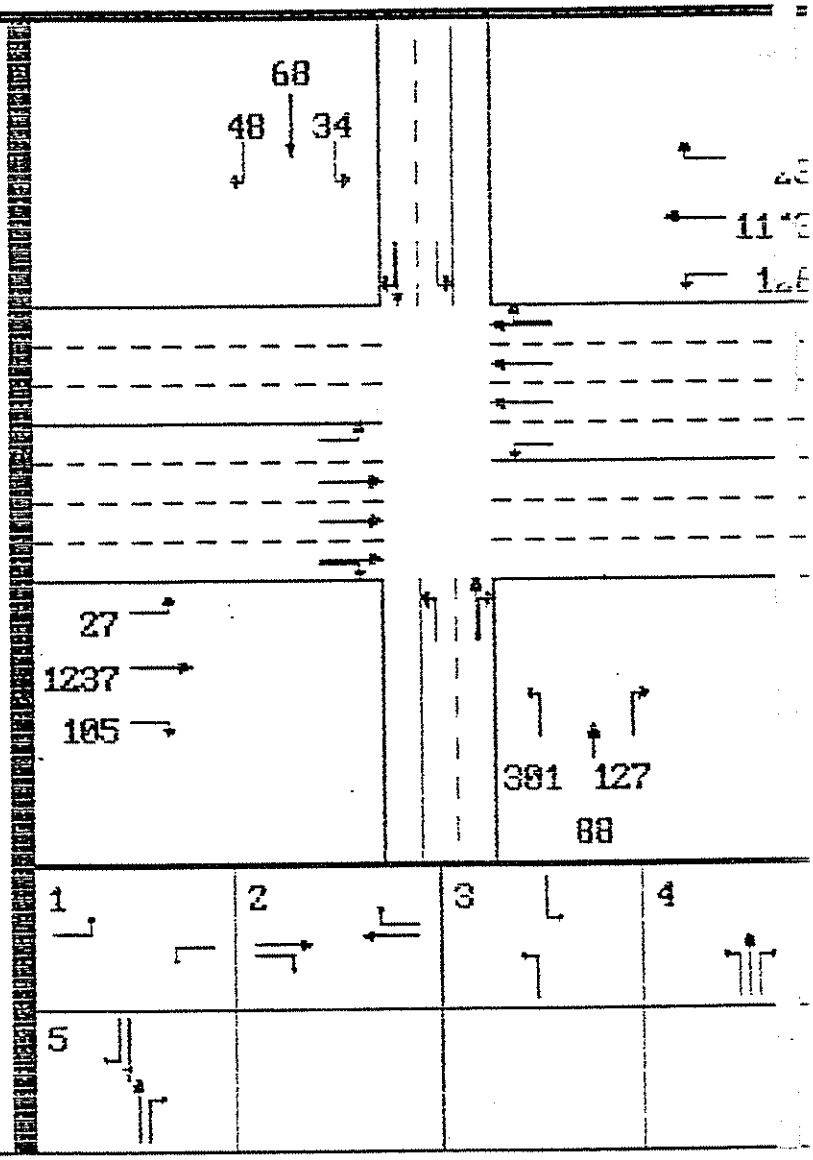
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	L
EB	L	.16	.12	L	.02	33.2	D	EB	14.5	
	TR	.71	.44	TR	.31	14.2	B			
WB	L	.75	.12	L	.09	46.2	E	WB	16.1	
	TR	.61	.44	TR	.27	13.1	B			
NB	L	.90	.24	L	.21	47.6	E	NB	37.9	
	TR	.58	.25	TR	.15	24.4	C			
SB	L	.29	.08	L	.02	36.5	D	SB	41.0	
	TR	.77	.10	TR	.08	42.3	E			

INTERSECT: DELAY = 19.6 SEC/VEH Xc = .77 LOS = C Sum(v/s)CR =

HCM Summary Results for Case: TEOLA1 TELE CYN RD /CREST DR

AM PK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.02	.16	33.2	D
	*TR	.31	.71	14.2	B
	All			14.5	B
WB	*L	.09	.75	46.2	E
	TR	.27	.61	13.1	B
	All			16.1	C
NB	*L	.21	.90	47.6	E
	TR	.15	.58	24.4	C
	All			37.9	D
SB	L	.02	.29	36.5	D
	*TR	.08	.77	42.3	E
	All			41.0	E
Intersect:		.69	.77	19.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: TEOLP1

****

INTERSECTION: TELE CYN RD /CREST DR TIME: PM PEAK

ANALYST: JHK & ASSOCIATES DATE: 1-6-92

COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	139	1409	345	0	50	4	3
WB	100	1546	34	0	50	4	3
NB	255	103	102	0	50	2	1
SB	123	164	34	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	10	T	12	T	12	TR	12
WB	L	10	T	12	T	12	TR	12
NB	L	10	TR	12				
SB	L	10	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	13.5	4
WB	0	2	N	0	0	.90	Y	13.5	4
NB	0	2	N	0	0	.90	Y	25.5	3
SB	0	2	N	0	0	.90	Y	25.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	12	45	11	8	14	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

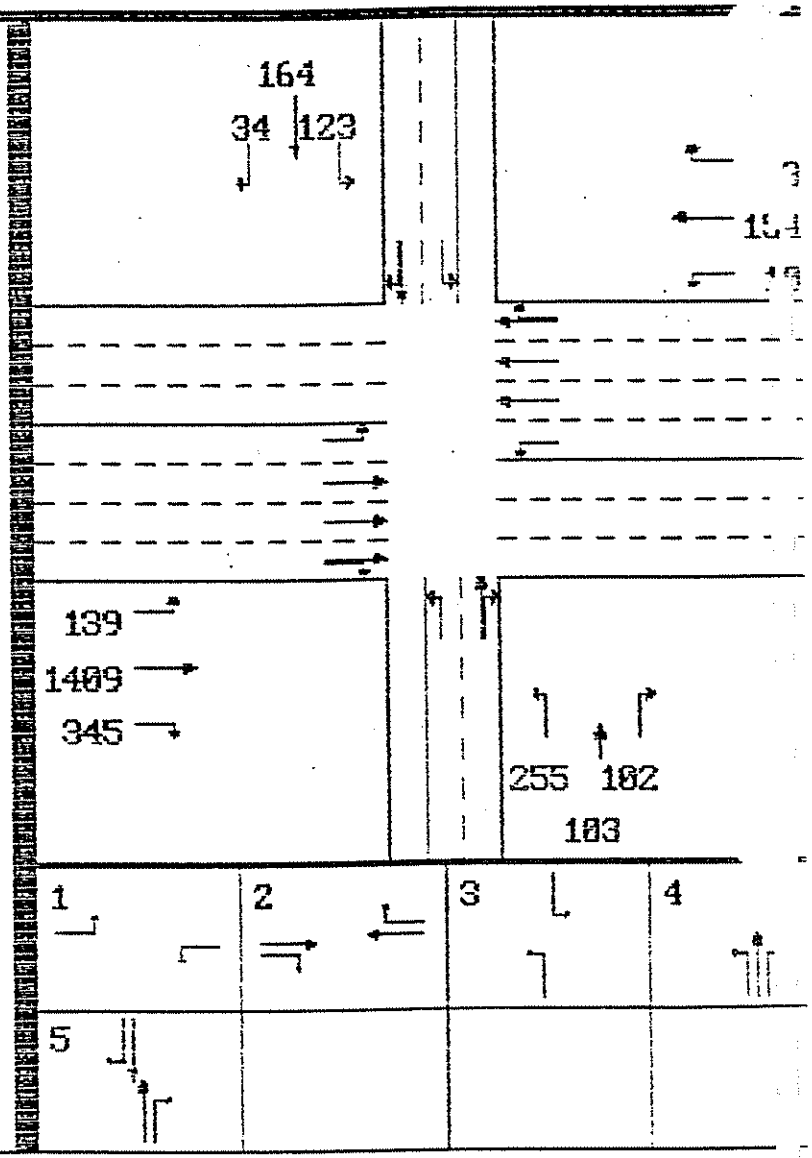
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.83	.12	L	.10	53.3	E	EB	30.2	D
	TR	.99	.42	TR	.41	28.5	D			
WB	L	.60	.12	L	.07	38.6	D	WB	20.5	C
	TR	.87	.42	TR	.36	19.5	C			
NB	L	.83	.22	L	.18	41.5	E	NB	34.0	D
	TR	.56	.25	TR	.14	24.6	C			
SB	L	.80	.11	L	.09	51.3	E	SB	53.1	E
	TR	.93	.14	TR	.13	54.2	E			

INTERSECT DELAY = 28.3 SEC/VEH X = .92 LOS = D Sum(v/s)CR = .6

HCM Summary Results for Case: TEOLP1 TELE CYM RD /CREST DR

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.10	.83	53.3	E
	*TR	.41	.99	28.5	D
	All			38.2	D
WB	L	.07	.68	38.6	D
	TR	.36	.87	19.5	C
	All			20.5	C
NB	*L	.18	.83	41.5	E
	TR	.14	.56	24.6	C
	All			34.0	D
SB	L	.09	.80	51.3	E
	*TR	.13	.93	54.2	E
	All			53.1	E
Intersect:		.82	.92	28.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TEPAA1
****
INTERSECTION: TELE CYN RD /PASEO DEL RE TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	342	1397	8	0	50	4	3
WB	2	1084	68	0	50	3	2
NB	4	2	0	0	50	2	1
SB	87	5	364	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR 12
WB	L	12	T	12	TR	12	
NB	LT	12	R	12			
SB	L	12	T	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11[illegible]

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR							
WB		TR	LTR						
NB				LTR					
SB	R			LTR					
GREEN	33	17	30	14	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.73	.31	L	.22	29.2	D	EB	14.5	B
	TR	.64	.50	TR	.32	11.2	B			
WB	L	.00	.28	L	.00	21.6	C	WB	16.3	C
	TR	.80	.47	TR	.38	16.3	C			
NB	LT	.09	.14	LT	.01	26.8	D	NB	26.8	D
	R	.00	.14	R	.00	.0	A			
SB	L	.40	.14	L	.05	33.6	D	SB	19.3	C
	T	.02	.14	T	.00	26.6	D			
	R	.60	.45	R	.27	18.8	C			

INTERSECTION DELAY = 15.7 SEC/VEH Xc = .95 LOS = C SUM(V/S)CR = .8

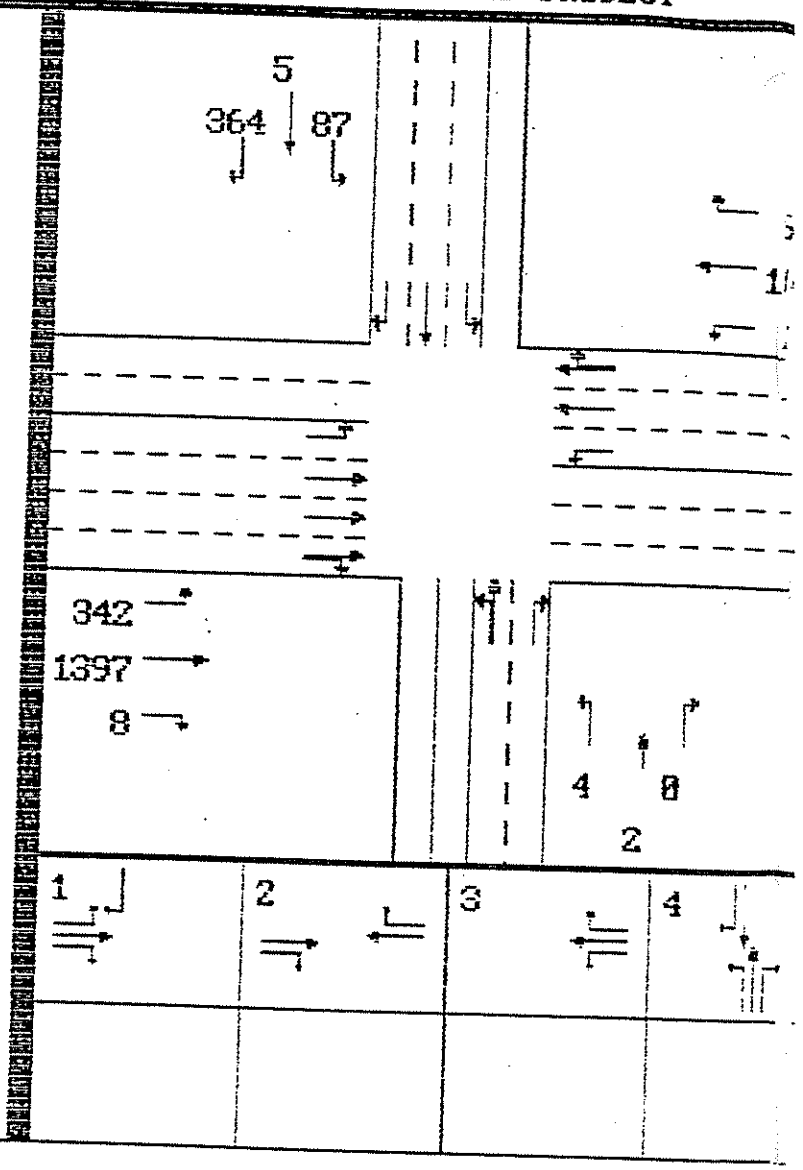
HCM Summary Results for Case: TEPAA1

AM PK

TELE CYN RD /PASEO DEL R

INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.22	.73	29.2	D
	TR	.32	.64	11.2	B
	All			14.5	B
WB	L	.00	.00	21.6	C
	*TR	.38	.80	16.3	C
	All			16.3	C
NB	LT	.01	.09	26.8	D
	R	.00	.00	.0	A
	All			26.8	D
SB	L	.05	.40	33.6	D
	T	.00	.02	26.6	D
	*R	.27	.60	15.8	C
	All			19.3	C
Intersect:		.87	.95	15.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TEPAP1

****

INTERSECTION: TELE CYN RD /PASEO DEL RE TIME: PM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	440	1206	7	0	50	4	2
WB	0	1337	71	0	50	3	2
NB	15	0	2	0	50	2	1
SB	79	1	326	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR	12
WB	L	12	T	12	TR	12		
NB	LT	12	R	12				
SB	L	12	T	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	LTR	TR							
WB		TR	LTR						
NB				LTR					
SB	R			LTR					
GREEN	33	15	31	15	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

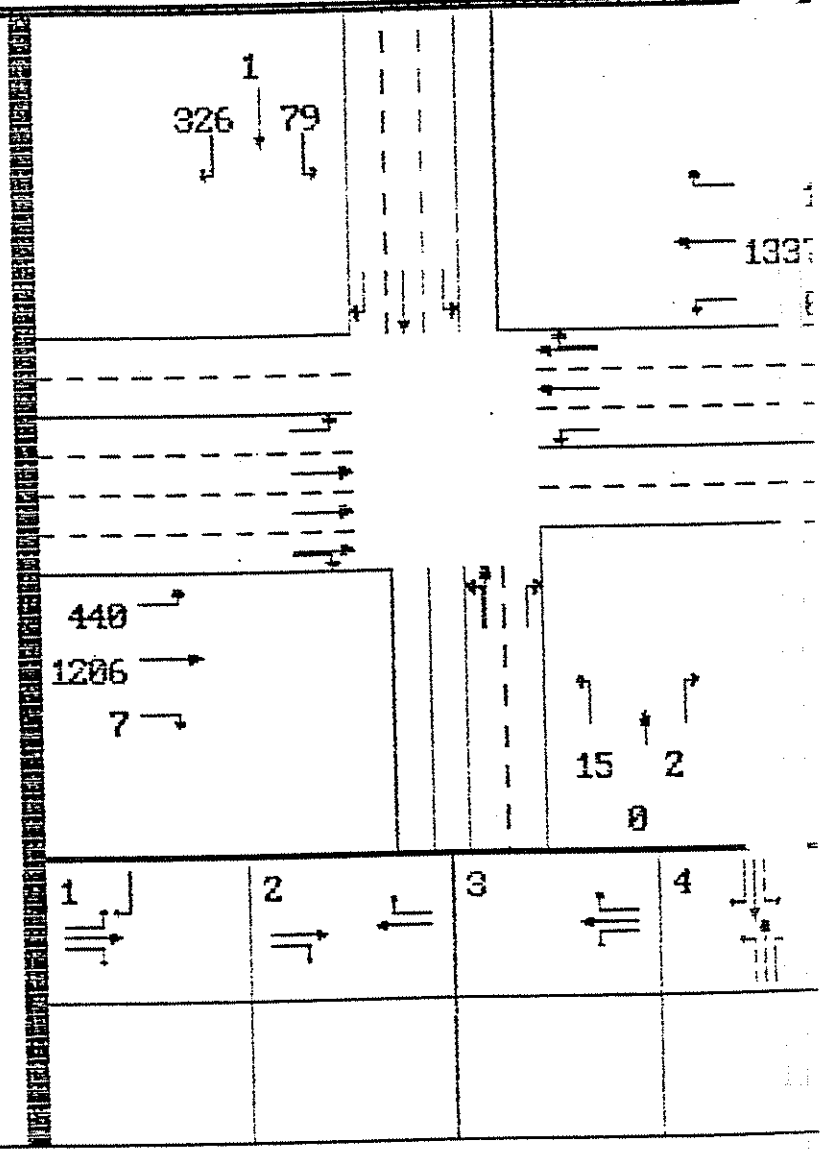
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.93	.31	L	.29	45.6	E	EB	18.7	C
	TR	.58	.48	TR	.28	9.8	B			
WB	L	.00	.29	L	.00	.0	A	WB	31.2	D
	TR	1.00	.46	TR	.46	31.2	D			
NB	LT	.26	.15	LT	.04	27.4	D	NB	27.2	D
	R	.01	.15	R	.00	26.0	D			
SB	L	.36	.15	L	.05	32.6	D	SB	18.0	C
	T	.00	.15	T	.00	26.0	D			
	R	.53	.45	R	.24	14.4	B			

HCM Summary Results for Case: TEPAP1 TELE CYN RD /PASEO DEL RE

PM PK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.29	.93	45.6	E
	TR	.28	.58	9.8	B
	All			18.7	C
WB	L	.00	.00	.0	A
	*TR	.46	1.00	31.2	D
	All			31.2	D
NB	LT	.04	.26	27.4	D
	R	.00	.01	26.0	D
	All			27.2	D
SB	L	.05	.36	32.6	D
	T	.00	.00	26.0	D
	*R	.24	.53	14.4	B
	All			18.0	C
Intersect:		.99	1.08	23.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TELMCA1
****
INTERSECTION: TELEGRAPH CN/MEDICAL CENT TIME: AM PEAK
DATE: 02-19-92
ANALYST: KK AREA TYPE: NON-CBD
COMMENT: INTERIM W/O PROPOSED PROJECT

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1026	429	0	50	3	3
WB	308	954	0	0	50	3	2
NB	183	0	296	0	50	4	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12		
NB	L	12	L	12	R	12	R	12
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.3	4
WB	0	2	N	0	0	.90	Y	17.3	4
NB	0	2	N	0	0	.90	Y	25.8	3
SB	0	2	N	0	0	.90	Y	25.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR							
WB	LT	T							
NB	R		LR						
SB									
GREEN	32	46	20	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

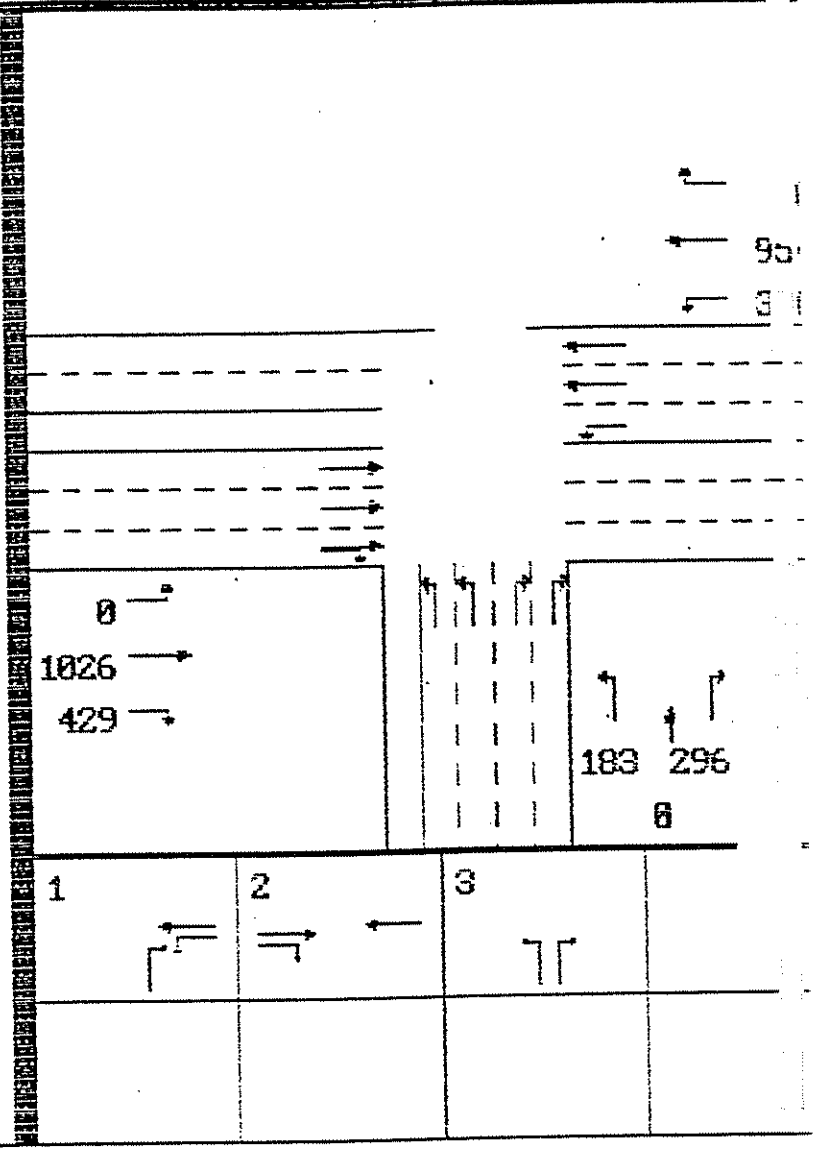
APP	LANE GRP.	v/c	o/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.81	.43	TR	.35	17.8	C	EB	17.8	C
WB	L	.67	.30	L	.20	28.1	D	WB	8.4	B
	T	.41	.75	T	.31	2.3	A			
NB	L	.34	.19	L	.06	29.4	D	NB	17.8	C
	R	.26	.49	R	.13	10.6	B			

INTERSECT: DELAY = 14.2 SEC/VEH Xc = .74 LOS = B SUM(V/S)CR = .6

HCM Summary Results for Case: TELMCA1 TELEGRAPH CM/MEDICAL CENT

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.35	.81	17.8	C
	All			17.8	C
WB	*L	.20	.67	28.1	D
	T	.31	.41	2.3	A
	All			8.4	B
NB	L	.06	.34	29.4	D
	*R	.13	.26	10.6	B
	All			17.8	C
Intersect:		.68	.74	14.2	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TELMCP1 SUMMARY REPORT
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INTERSECTION: TELEGRAPH CN/MEDICAL CENT TIME: PM PEAK
ANALYST: KK DATE: 02-19-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1002	166	0	50	3	3
WB	370	802	0	0	50	3	2
NB	346	0	385	0	50	4	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12		
NB	L	12	L	12	R	12	R	12
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR							
WB	LT	T							
NB	R		LR						
SB									
GREEN	30	41	27	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

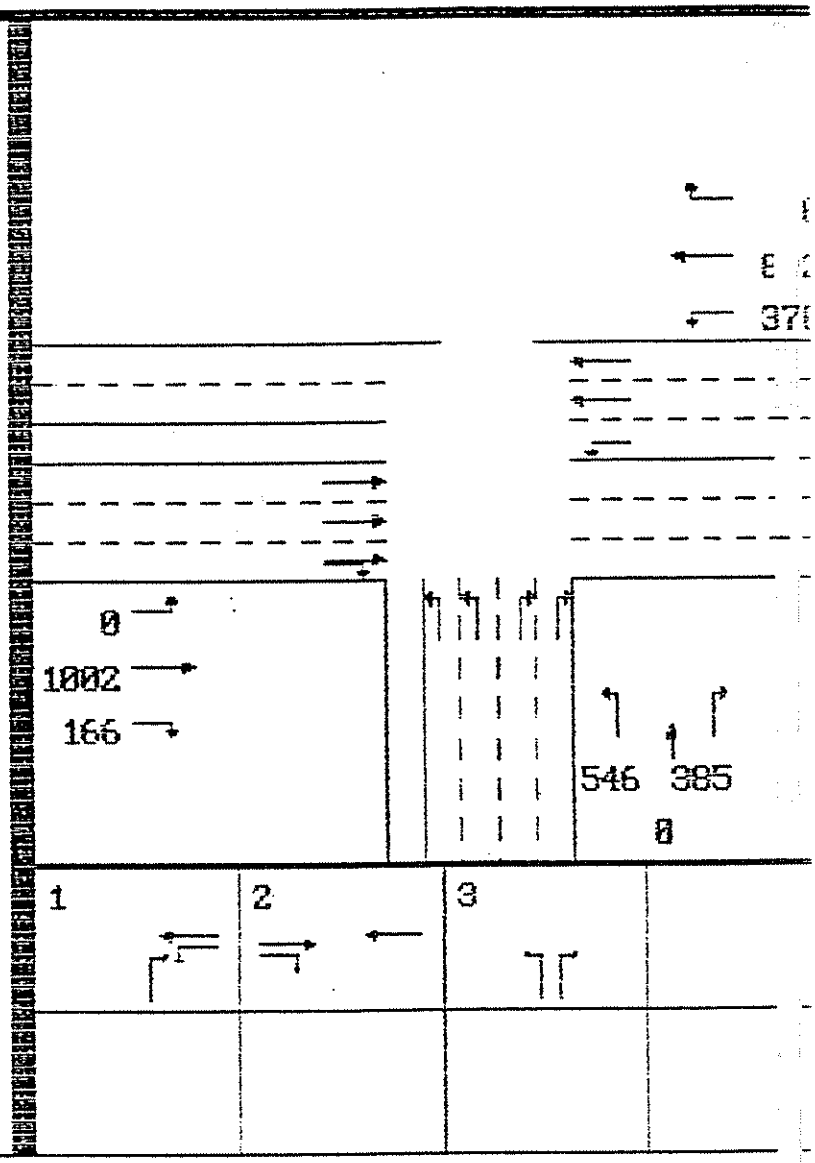
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.71	.38	TR	.27	16.2	C	EB	16.2	C
WB	L	.86	.28	L	.24	38.9	D	WB	14.2	B
	T	.38	.69	T	.26	3.4	A			
NB	L	.76	.25	L	.19	31.8	D	NB	22.4	C
	R	.31	.54	R	.17	9.2	B			

HCM Summary Results for Case: TELMCP1 TELEGRAPH CN/MEDICAL CEN

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.27	.71	16.2	C
	All			16.2	C
WB	*L	.24	.86	38.9	D
	T	.26	.38	3.4	A
	All			14.2	B
NB	*L	.19	.76	31.8	D
	R	.17	.31	9.2	B
	All			22.4	C
Intersect:		.71	.77	17.3	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEOTA1 SUMMARY REPORT

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INTERSECTION: TELE CYN RD /OTAY LAKES TIME: A.M. PEAK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	550	353	0	0	50	5	3
WB	0	719	845	0	50	5	3
NB	0	0	0	0	50	0	2
SB	702	0	324	0	50	4	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12	R	12
NB										
SB	L	12	L	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	26.5	4
SB	0	2	N	0	0	.90	Y	26.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	28	33	37	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

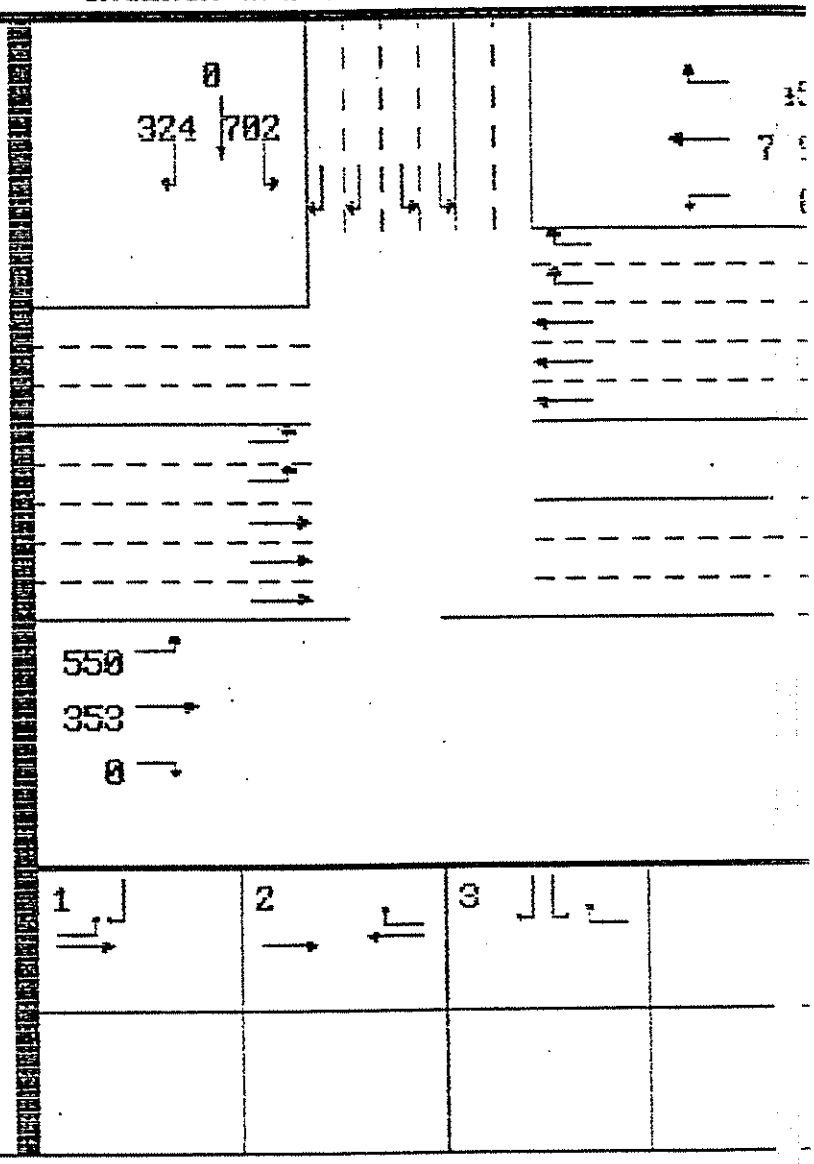
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.74	.26	L	.20	30.6	D	EB	20.1	C
	T	.13	.60	T	.08	4.5	A			
WB	T	.53	.31	T	.16	15.0	B	WB	9.8	B
	R	.56	.65	R	.37	5.1	B			
SB	L	.72	.35	L	.25	25.5	D	SB	18.9	C
	R	.23	.61	R	.14	4.6	A			

INTERSECT DELAY = 13.1 SEC/VEH Xc = .89 LOS = C Sum(v/s)CR = .81

HCM Summary Results for Case: TEOTA1 TELE CYN RD /OTAY LAKES

A.M. PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.20	.74	30.6	D
	T	.08	.13	4.5	A
	All			20.1	C
WB	T	.16	.53	15.8	B
	*R	.37	.56	5.1	B
	All			9.8	B
SB	*L	.25	.72	25.5	D
	R	.14	.23	4.6	A
	All			18.9	C
Intersect:		.81	.89	15.1	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEOTP1 SUMMARY REPORT

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INTERSECTION: TELE CYN RD /OTAY LAKES TIME: PM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	394	734	0	0	50	5	3
WB	0	618	1194	0	50	5	3
NB	0	0	0	0	50	0	2
SB	826	0	698	0	50	4	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12	R	12
NB										
SB	L	12	L	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	26.5	4
SB	0	2	N	0	0	.90	Y	26.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	23	36	39	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

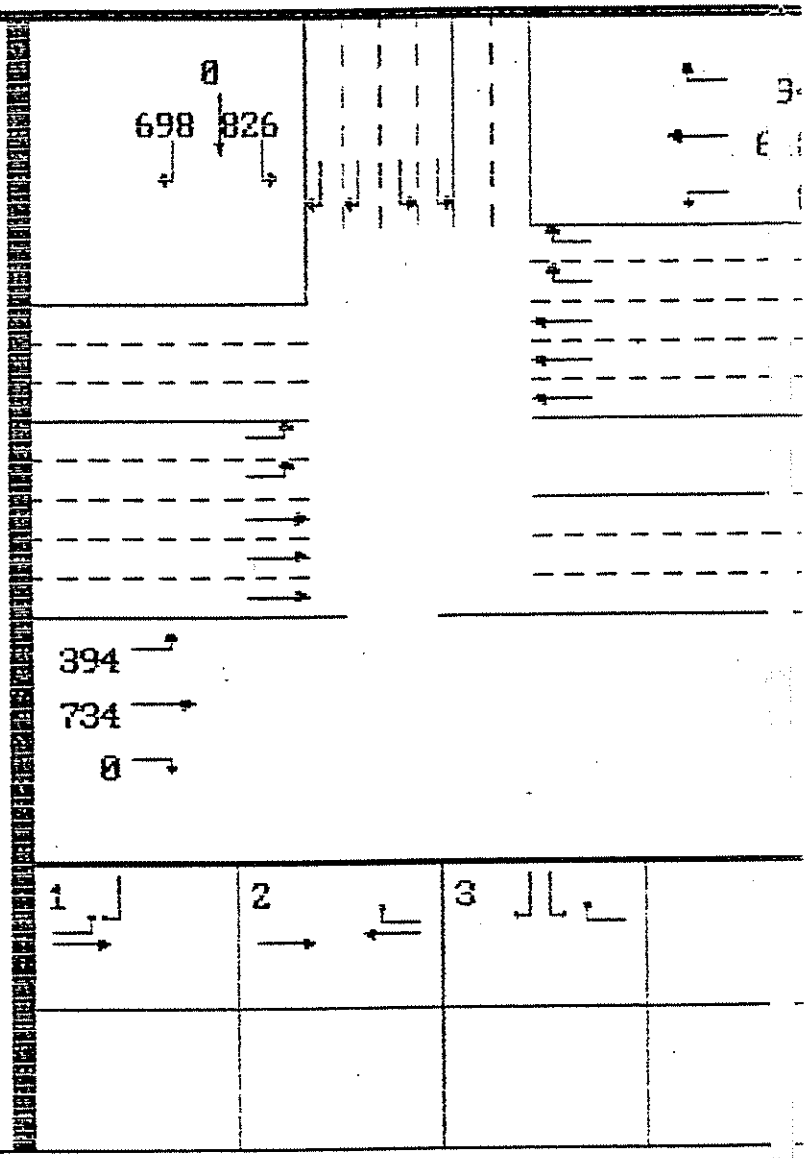
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.64	.22	L	.14	31.1	D	EB	14.2	B
	T	.29	.58	T	.17	5.5	B			
WB	T	.42	.34	T	.14	13.4	B	WB	6.9	B
	R	.74	.70	R	.52	6.4	B			
SB	L	.81	.36	L	.29	27.0	D	SB	17.7	C
	R	.52	.58	R	.30	6.7	B			

INTERSECT: DELAY = 13.2 SEC/VEH Xc = 1.05 LOS = B Sum(v/s)CR = .97

HCM Summary Results for Case: TEOTP1 TELE CYN RD /OTAY LAKES

PM PK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.14	.64	31.1	D
	T	.17	.29	5.5	B
	All			14.2	B
WB	T	.14	.42	13.4	B
	*R	.52	.74	6.4	B
	All			8.9	B
SB	L	.29	.81	27.8	D
	*R	.30	.52	6.7	B
	All			17.7	C
Intersect:		.97	1.85	13.2	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TERUA1 SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/RUTGERS AVE TIME: AM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	90	1149	0	0	50	4	3
WB	0	1207	91	0	50	4	3
NB	0	0	0	0	50	0	1
SB	368	0	302	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	12	50	36	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

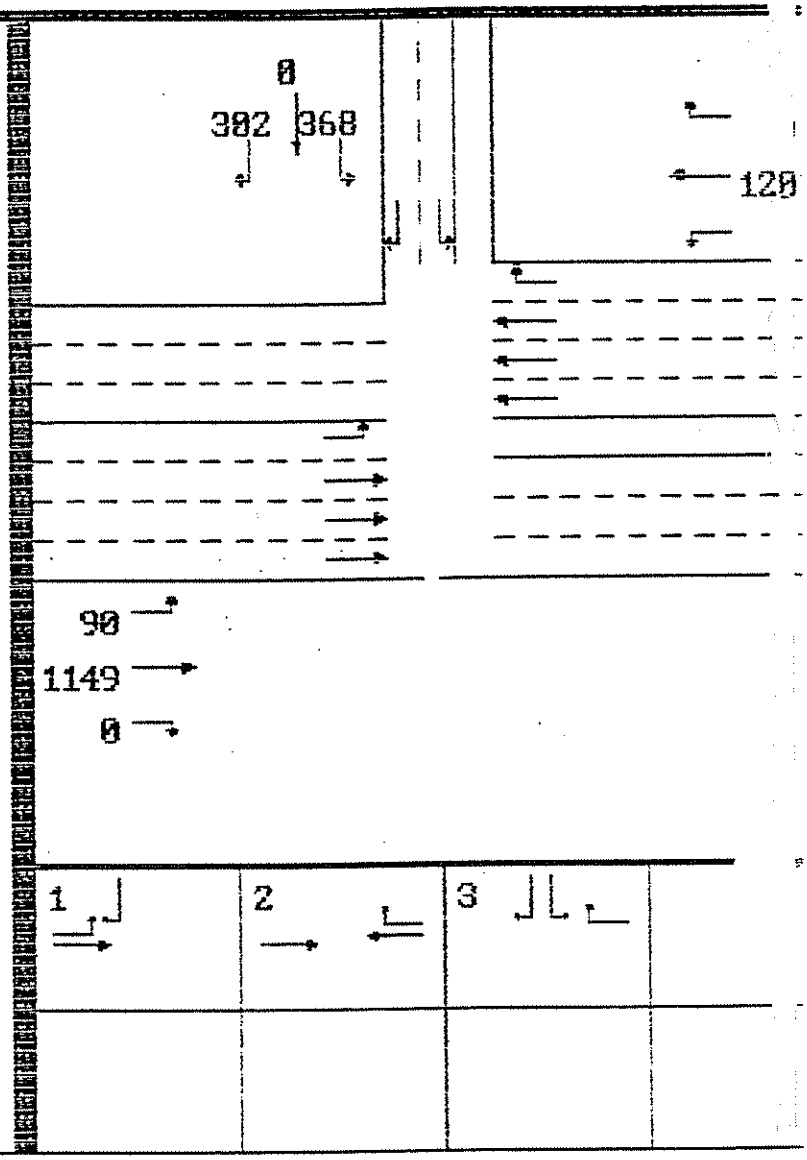
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.80	.13	L	.06	36.2	D	EB	7.3	B
	T	.43	.61	T	.26	5.4	B			
WB	T	.59	.46	T	.28	10.5	B	WB	9.9	B
	R	.08	.80	R	.07	1.1	A			
SB	L	.72	.34	L	.24	27.3	D	SB	21.3	C
	R	.49	.45	R	.22	14.0	B			

INTERSECT: DELAY = 11.1 SEC/VEH Xc = .63 LOS = B Sum(v/s)CR = .58

HCM Summary Results for Case: TERUA1 OTAY LAKES R/RUTGERS AVE

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.06	.50	36.2	D
	T	.26	.43	5.4	B
	All			7.5	B
WB	*T	.28	.59	10.5	B
	R	.07	.08	1.1	A
	All			9.9	B
SB	*L	.24	.72	27.3	D
	R	.22	.49	14.0	B
	All			21.3	C
Intersect:		.58	.63	11.1	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TERUP1 SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/RUTGERS AVE TIME: PM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	128	1465	0	0	50	4	3
WB	0	1684	134	0	50	4	3
NB	0	0	0	0	50	0	1
SB	191	0	180	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	LT	T							
	WB		TR	R						
	NB									
	SB	R		LR						
GREEN		12	50	36	0	0	0	0	0	0
YELLOW		4	4	4	0	0	0	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

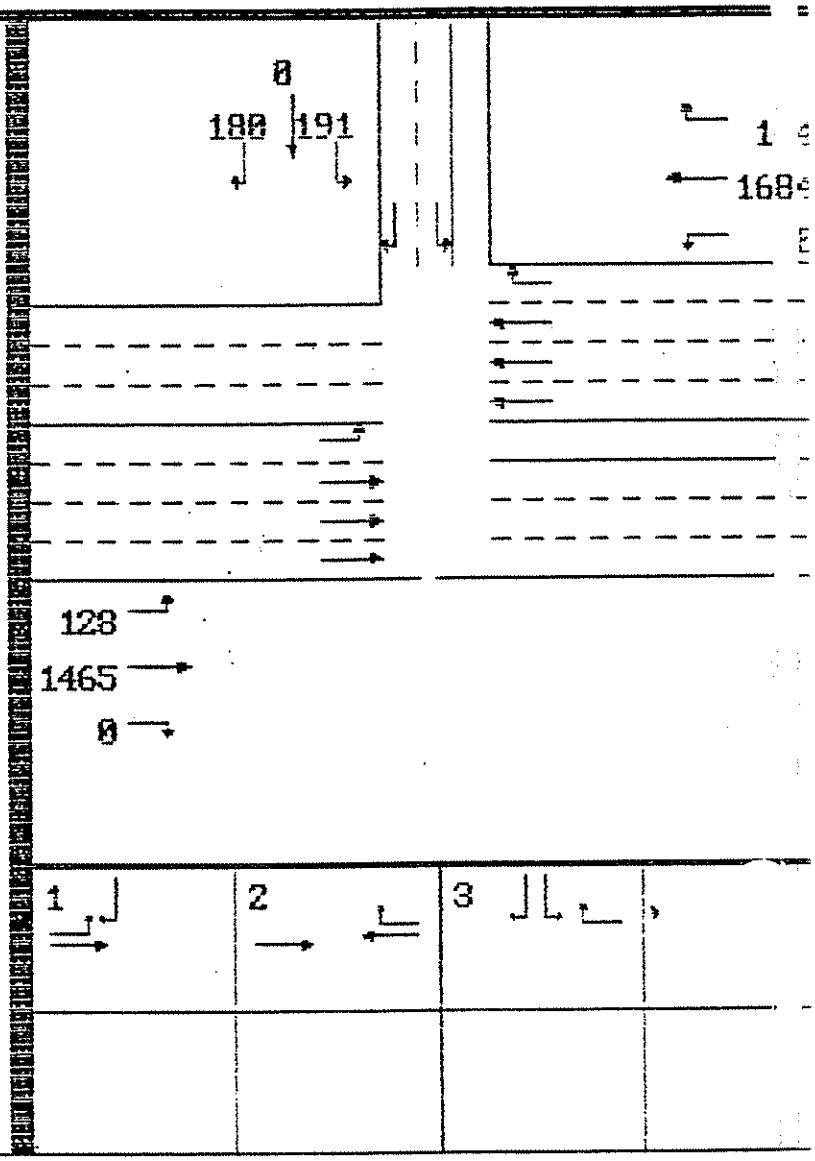
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.71	.12	L	.08	42.9	E	EB	8.8	B
	T	.55	.61	T	.34	6.1	B			
WB	T	.83	.46	T	.38	16.7	C	WB	15.6	C
	R	.12	.80	R	.10	1.2	A			
SB	L	.37	.34	L	.13	21.2	C	SB	16.9	C
	R	.29	.45	R	.13	12.2	B			

INTERSECT. DELAY = 12.8 SEC/VEH Xc = .65 LOS = B Sum(v/s)CR = .60

HCM Summary Results for Case: TERUP1 OTAY LAKES R/RUTGERS AVE

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.08	.71	42.9	E
	T	.34	.55	6.1	B
	All			8.8	B
WB	*T	.38	.83	16.7	C
	R	.10	.12	1.2	A
	All			15.6	C
SB	L	.13	.37	21.2	C
	*R	.13	.29	12.2	B
	All			16.9	C
Intersect:		.68	.65	12.8	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OTELA1 SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK
ANALYST: JHK DATE: 02-24-92
COMMENT: INTERIM WITHOUT PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	678	377	477	0	50	6	2
WB	131	162	126	0	50	5	3
NB	717	334	134	0	50	4	2
SB	106	181	419	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR	R					
NB				L	LTR	TR			
SB	R	R		L		TR			
GREEN	14	20	8	13	23	8	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

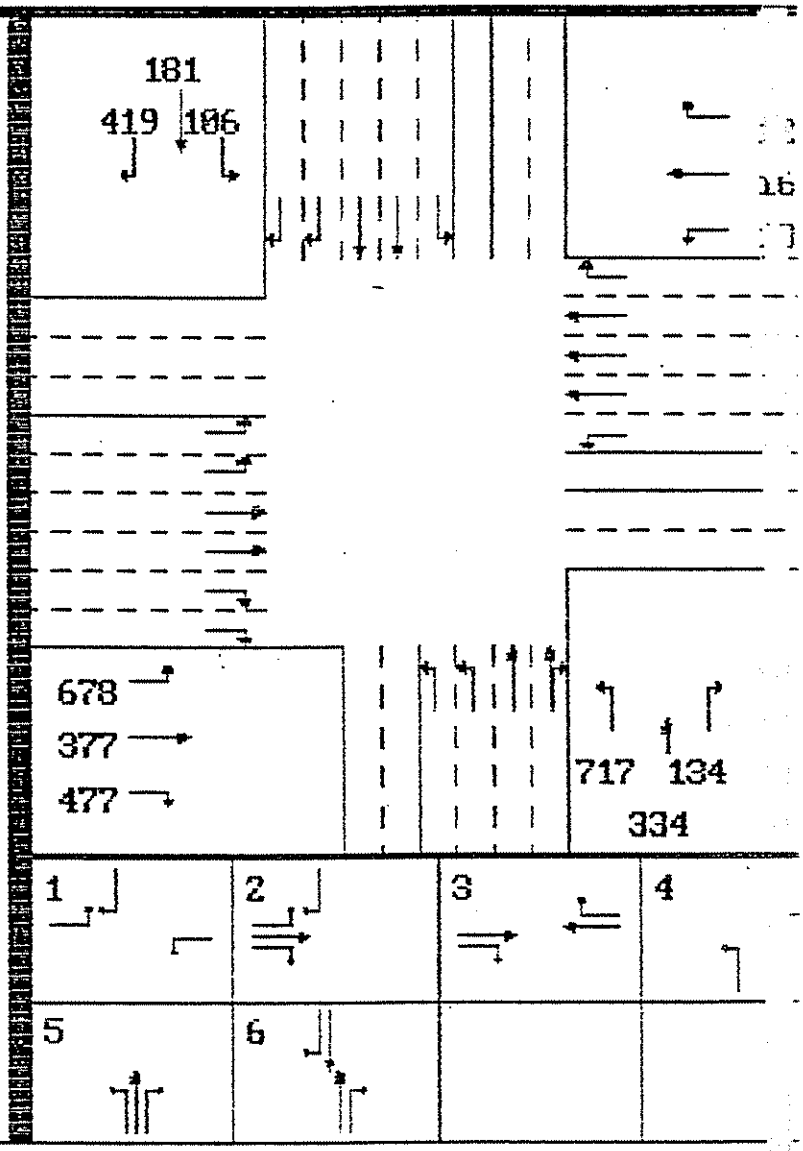
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.68	.35	L	.24	24.1	C	EB	20.4	C
	T	.41	.30	T	.12	14.6	B			
	R	.69	.30	R	.21	19.7	C			
WB	L	.63	.14	L	.09	37.9	D	WB	26.1	D
	T	.45	.08	T	.04	23.0	C			
	R	.44	.21	R	.09	18.3	C			
NB	L	.68	.37	L	.26	23.2	C	NB	19.6	C
	TR	.49	.33	TR	.16	14.1	B			
SB	L	.55	.13	L	.07	36.5	D	SB	19.3	C
	T	.72	.08	T	.06	30.7	D			
	R	.42	.44	R	.18	10.2	B			

INTERSECT: DELAY = 20.6 SEC/VEH Xc = .67 LOS = C Sum[illegible] = .59

HCM Summary Results for Case: OTELA1 OTAY LAKES R/EASTLAKE PA

AM PEAK INTERIM WITHOUT PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.24	.68	24.1	C
	T	.12	.41	14.6	B
	R	.21	.69	19.7	C
	All			20.4	C
WB	L	.09	.63	37.9	D
	*T	.04	.45	23.0	C
	R	.09	.44	18.3	C
	All			26.1	D
NB	*L	.26	.68	23.2	C
	TR	.16	.49	14.1	B
	All			19.6	C
SB	L	.07	.55	36.5	D
	*T	.06	.72	30.7	D
	R	.18	.42	18.2	B
	All			19.3	C
Intersect:		.59	.67	20.6	C



HCM/Cinema V1.28
HCM SIGNALIZED INTERSECTION
LICENSEE: JHK & Associates
CASE: OTELP1
****
SUMMARY REPOR
INTERSECTION: OTAY LAKES R/EASTLAKE PAR
TIME: PM PEAK
ANALYST: JHK
COMMENT: INTERIM WITHOUT PROJECT
DATE: 02-24-92
AREA TYPE: NON-CBD

VOLUMES

	LEFT	THRU	RIGHT	RTOR	PEDS.
EB	524	202	896	0	50
WB	168	471	133	0	50
NB	596	226	164	0	50
SB	157	418	848	0	50

LANES

APPROACH	OUTBOUND
6	2
5	3
4	2
5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED
OPERATIONAL ANALYSIS
CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R					
WB	L		TR	R					
NB				L	LTR	TR			
SB	R	R		L		TR			
GREEN	15	17	16	12	11	15	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC
LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.55	.34	L	.19	23.1	C
	T	.19	.35	T	.07	11.9	B
	R	.84	.46	R	.39	18.5	C
WB	L	.76	.15	L	.11	43.0	E
	T	.70	.15	T	.11	25.0	D
	R	.36	.27	R	.10	15.3	C
NB	L	.83	.25	L	.21	34.5	D
	TR	.48	.28	TR	.14	15.7	C
SB	L	.87	.12	L	.10	57.7	E
	T	.94	.15	T	.14	42.0	E
	R	.77	.48	R	.37	14.1	B

APPROACH:	DELAY	LOS
EB	19.1	C
WB	27.2	D
NB	27.1	D
SB	26.9	D

INTERSECT: DELAY = 24.4 SEC/VEH Xc = .72 LOS = C SUMMARY REPOR

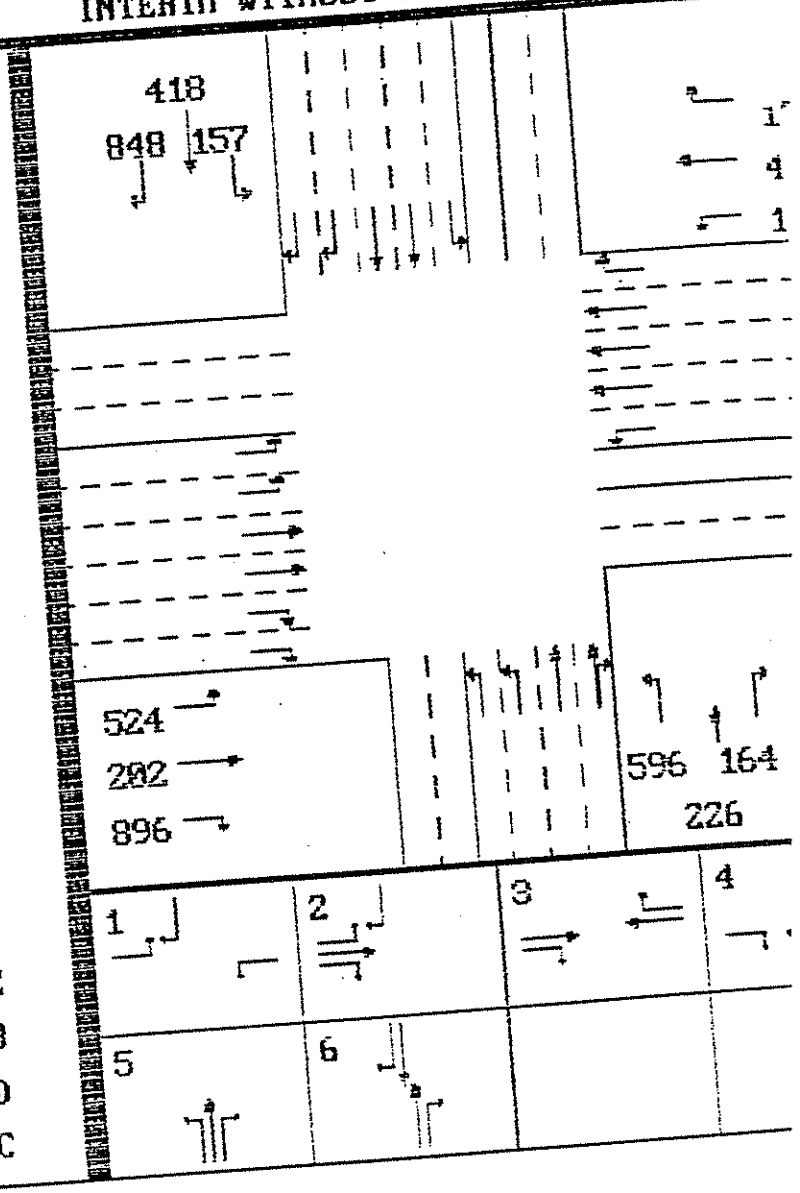
HCM Summary Results for Case: OTELP1

OTAY LAKES R/EASTLAKE PAR

INTERIM WITHOUT PROJECT

PM PEAK

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.19	.55	23.1	C
	T	.07	.19	11.9	B
	R	.39	.84	18.5	C
	All			19.1	C
WB	L	.11	.76	43.0	E
	*T	.11	.70	25.0	D
	R	.10	.36	15.3	C
	All			27.2	D
NB	*L	.21	.83	34.5	D
	TR	.14	.48	15.7	C
	All			27.1	D
SB	L	.10	.87	57.7	E
	*T	.14	.94	42.0	E
	R	.37	.77	14.1	B
	All			26.9	D
Intersect:		.64	.72	24.4	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TELAA1 SUMMARY REPORT
****
INTERSECTION: OTAY LKS RD /LANE AVE TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	12	602	0	0	50	4	3
WB	0	682	21	0	50	3	3
NB	0	0	0	0	50	0	1
SB	18	0	13	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		L R						
GREEN	15	70	13	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.05	.15	L	.01	30.8	D	EB	1.5	A
	T	.17	.82	T	.14	1.0	A			
WB	TR	.25	.65	TR	.16	3.9	A	WB	3.9	A
SB	L	.09	.13	L	.01	32.2	D	SB	26.8	D
	R	.03	.27	R	.01	19.0	C			

INTERSECT: DELAY = 3.3 SEC/VEH xc = .20 LOS = A Sum(v/s)CR = .18

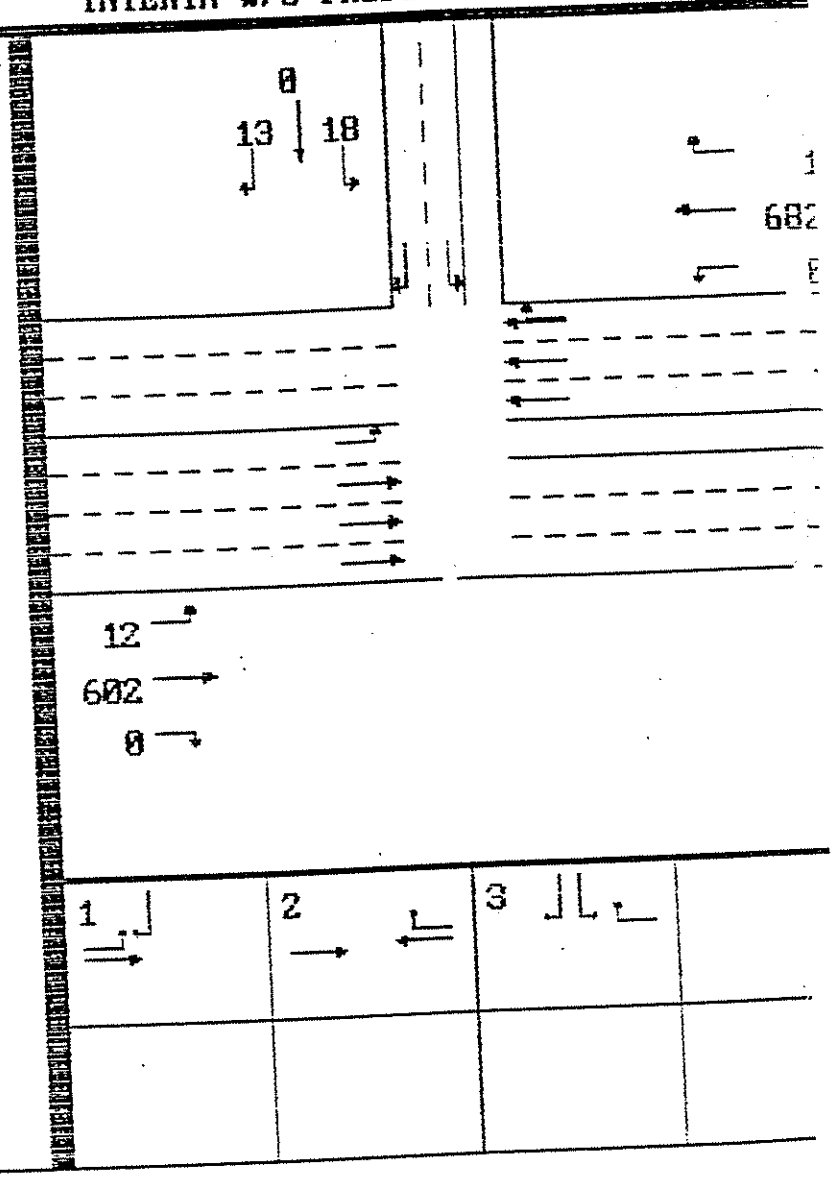
HCM Summary Results for Case: TELAA1

OTAY LKS RD /LANE AVE

INTERIM W/O PROPOSED PROJECT

AM PK

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.01	.05	30.8	D
	T	.14	.17	1.0	A
	All			1.5	A
WB	*TR	.16	.25	3.9	A
	All			3.9	A
SB	*L	.01	.09	32.2	D
	R	.01	.03	19.0	C
	All			26.8	D
Intersect:		.18	.20	3.3	A



HCM/Cinema V1.28
HCM SIGNALIZED INTERSECTION
LICENSEE: JHK & Associates
CASE: TELAP1
****
SUMMARY REPORT
INTERSECTION: OTAY LKS RD /LANE AVE
ANALYST: JHK & ASSOCIATES
TIME: PM PK
COMMENT: INTERIM W/O PROPOSED PROJECT
DATE: 1-6-92
AREA TYPE: NON-CBD

VOLUMES

	LEFT	THRU	RIGHT	RTOR	PEDS.
EB	12	853	0	0	50
WB	0	753	23	0	50
NB	0	0	0	0	50
SB	26	0	13	0	50

LANES

APPROACH	OUTBOUND
4	3
3	3
0	1
2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED
OPERATIONAL ANALYSIS
CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	14	68	16	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC
LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.06	.14	L	.01	31.4	D	EB	1.8	A
	T	.25	.79	T	.20	1.4	A			
WB	TR	.28	.63	TR	.18	4.4	A	WB	4.4	A
SB	L	.11	.15	L	.02	30.4	D	SB	26.4	D
	R	.03	.29	R	.01	18.0	C			

INTERSECTION DELAY = 7.8 SEC/VEH

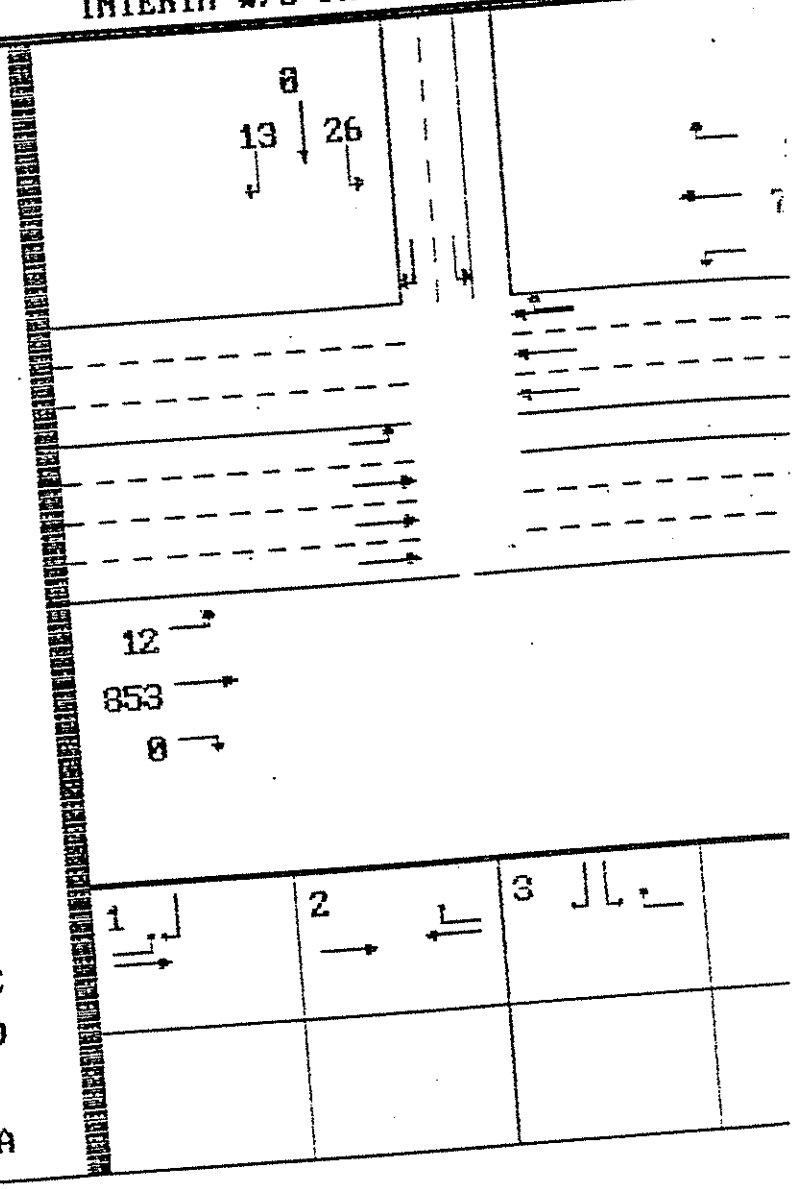
HCM Summary Results for Case: TELAP1

OTAY LKS RD /LANE AVE

INTERIM W/O PROPOSED PROJECT

PM PK

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.01	.06	31.4	D
	*T	.20	.25	1.4	A
	All			1.8	A
WB	TR	.18	.28	4.4	A
	All			4.4	A
SB	*L	.02	.11	30.4	D
	R	.01	.03	18.0	C
	All			26.4	D
Intersect:		.21	.22	3.5	A



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLHUA1
****
INTERSECTION: OTAY LAKES R/HUNTE PKWY TIME: AM PEAK
ANALYST: KK DATE: 02-19-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	97	524	0	50	3	3
WB	12	120	0	0	50	4	3
NB	583	0	12	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12	T	12
NB	L	12	L	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	TR								
WB	LT								
NB		LR							
SB									
GREEN	50	52	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

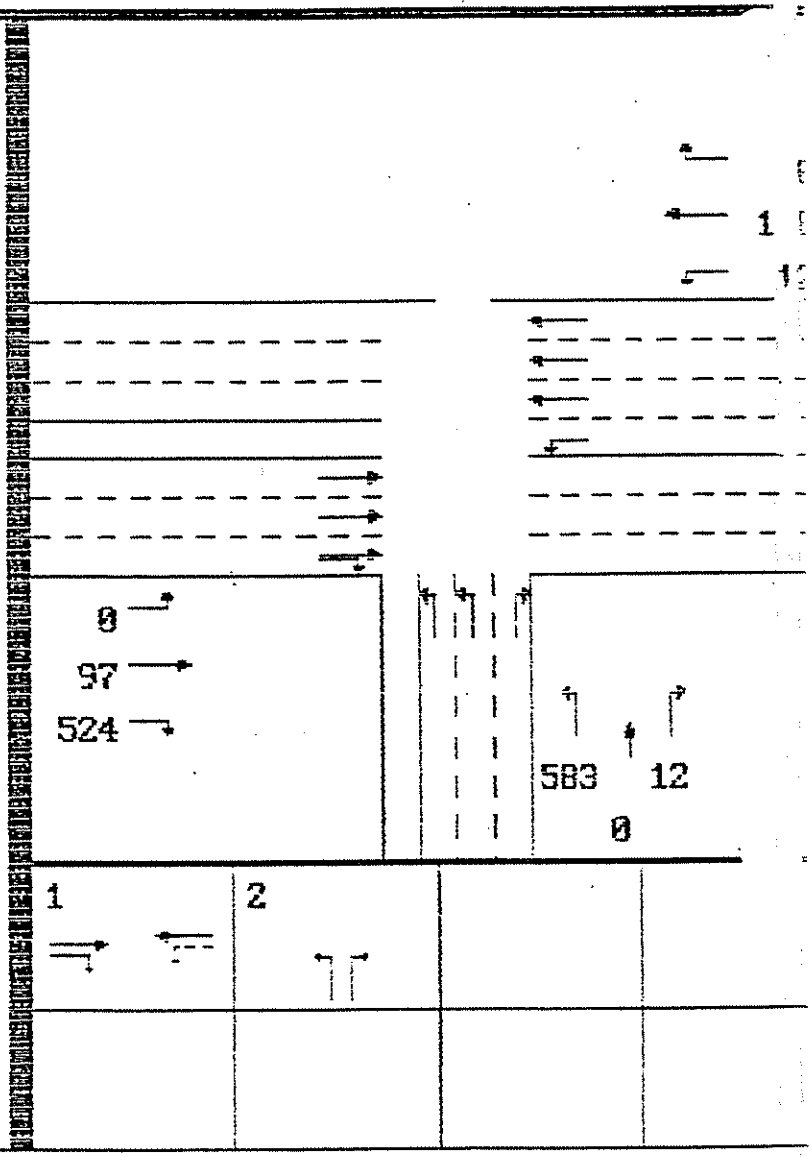
APP	LANE GRP.	V/C	g/C	LANE GRP.	V/S	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.35	.46	TR	.16	8.9	B	EB	8.9	B
WB	L	.04	.46	L	.02	12.2	B	WB	8.0	B
	T	.06	.46	T	.03	7.7	B			
NB	L	.43	.48	L	.21	14.3	B	NB	14.2	B
	R	.02	.48	R	.01	9.6	B			

INTERSECT: DELAY = 11.1 SEC/VEH XC = .39 LOS = B Sum(V/S)CR = .3

HCM Summary Results for Case: OLHUA1 OTAY LAKES R/HUNTE PKWY

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.16	.35	8.9	B
	All			8.9	B
WB	L	.02	.04	12.2	B
	T	.03	.06	7.7	B
	All			8.0	B
NB	*L	.21	.43	14.3	B
	R	.01	.02	9.6	B
	All			14.2	B
Intersect:		.37	.39	11.1	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPOR
HCM SIGNALIZED INTERSECTION CASE: OLHUP1
****
INTERSECTION: OTAY LAKES R/HUNTE PKWY TIME: PM PEAK
ANALYST: KK DATE: 02-19-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	150	729	0	50	3	3
WB	14	121	0	0	50	4	3
NB	655	0	14	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12	T	12
NB	L	12	L	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB	TR								
WB	LT								
NB		LR							
SB									
GREEN	50	52	0	0	0	0	0	0	
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

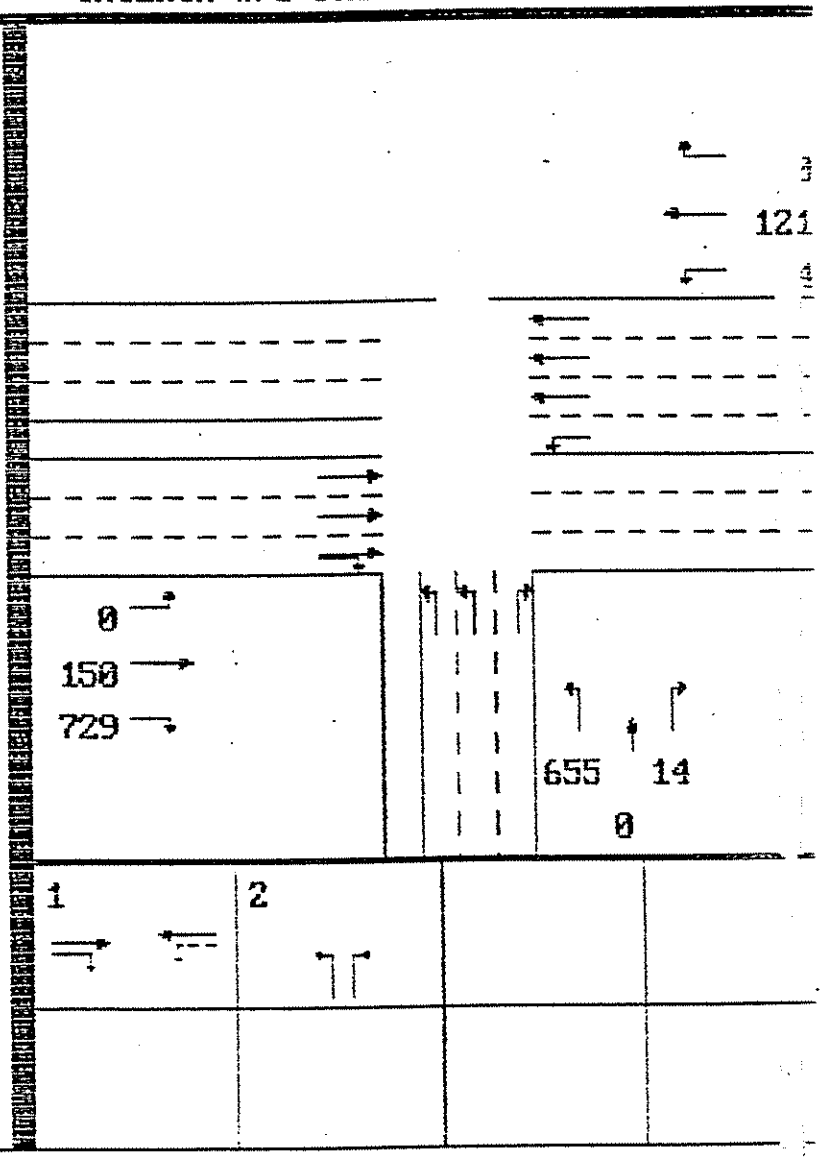
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	L
EB	TR	.50	.46	TR	.23	9.8	B	EB	9.8	
WB	L	.08	.46	L	.04	12.5	B	WB	8.1	
	T	.06	.46	T	.03	7.7	B			
NB	L	.48	.48	L	.23	14.8	B	NB	14.7	
	R	.02	.48	R	.01	9.6	B			

... .49 LOS = B Sum(v/s)CR =

HCM Summary Results for Case: OLHUP1 OTAY LAKES R/HUNTE PKWY

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.23	.50	9.8	B
	All			9.8	B
WB	L	.04	.08	12.5	B
	T	.03	.06	7.7	B
	All			8.1	B
NB	*L	.23	.48	14.8	B
	R	.01	.02	9.6	B
	All			14.7	B
Intersect:		.46	.49	11.6	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ORS8A1
****
INTERSECTION: ORANGE STREE/I-805 SB RAM TIME: AM PEAK HOUR
ANALYST: ME DATE: 03-13-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	826	196	0	50	4	3
WB	136	432	0	0	50	5	3
NB	0	0	0	0	50	0	0
SB	251	0	530	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12		
WB	L	12	L	12	T	12	T	12	T	12
NB										
SB	LT	12	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	FED ONLY
EB		TR							
WB	LT	T							
NB									
SB			LTR						
GREEN	28	22	48	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

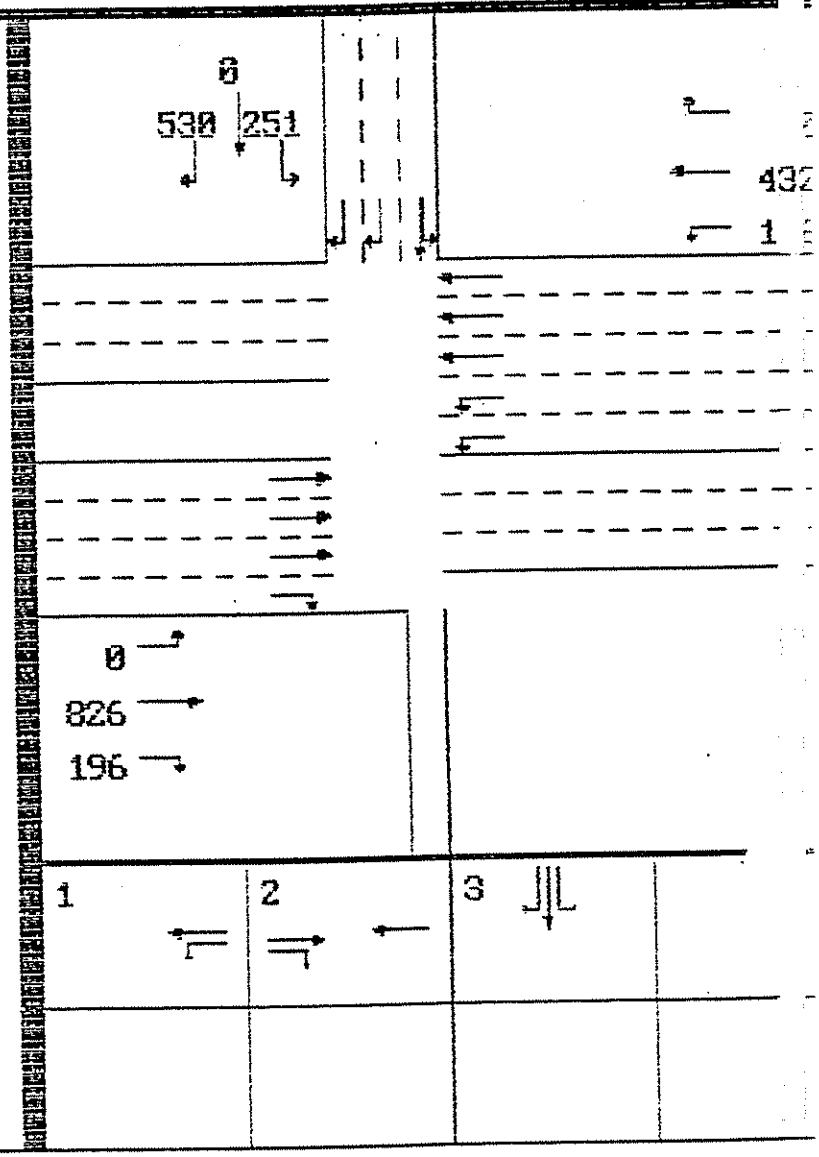
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.90	.21	T	.19	30.9	D	EB	29.8	D
	R	.69	.21	R	.14	24.7	C			
WB	L	.18	.26	L	.05	23.8	C	WB	11.0	B
	T	.20	.50	T	.10	7.2	B			
SB	LT	.37	.45	LT	.16	13.2	B	SB	14.1	B
	R	.52	.45	R	.23	14.5	B			

INTERSECT: DELAY = 20.2 SEC/VEH XC = .51 LOS = C Sum(v/s:CR.= .47

HCM Summary Results for Case: ORS8A1 ORANGE STREE/I-885 SB RAM

AM PEAK HOUR INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.19	.98	30.9	D
	R	.14	.69	24.7	C
	All			29.8	D
WB	*L	.05	.18	23.8	C
	T	.10	.20	7.2	B
	All			11.8	B
SB	LT	.16	.37	13.2	B
	*R	.23	.52	14.5	B
	All			14.1	B
Intersect:		.47	.51	20.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: ORS8P1 SUMMARY REPORT

****

INTERSECTION: ORANGE STREE/I-805 SB RAM TIME: PM PEAK HOUR

DATE: 03-13-92

ANALYST: ME AREA TYPE: NON-CBD

COMMENT: INTERIM W/O PROPOSED PROJECT

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	918	200	0	50	4	3
WB	766	457	0	0	50	5	3
NB	0	0	0	0	50	0	0
SB	419	0	1072	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12		
WB	L	12	L	12	T	12	T	12	T	12
NB										
SB	LT	12	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB		TR							
WB	LT	T							
NB									
SB			LTR						
GREEN	28	22	48	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

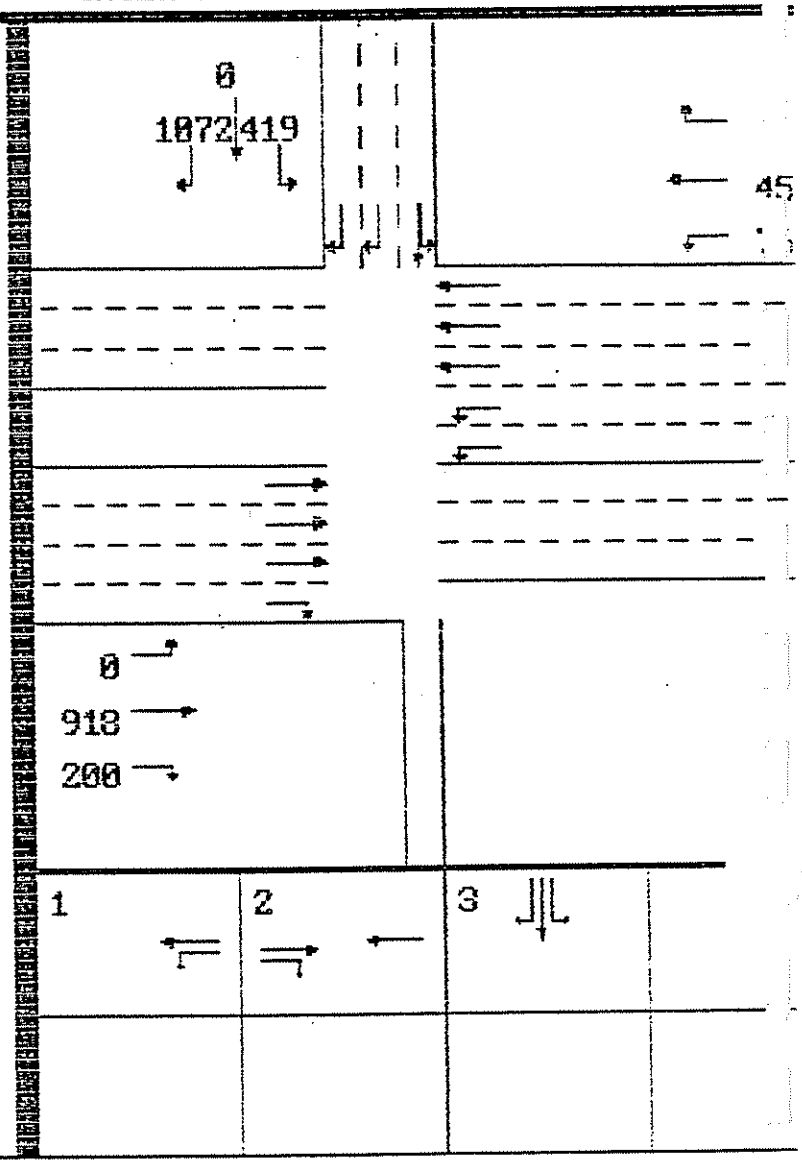
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.98	.21	T	.20	37.9	D	EB	35.7	D
	R	.68	.21	R	.14	24.4	C			
WB	L	1.01	.26	L	.27	55.6	E	WB	37.0	D
	T	.20	.50	T	.10	7.2	B			
SB	LT	.60	.45	LT	.27	15.7	C	SB	34.3	D
	R	1.02	.45	R	.46	41.2	E			

INTERSECTION DELAY = 35.6 SEC/VEH Xc = 1.01 LOS = D Sum(v/s)CR = .92

HCM Summary Results for Case: ORS8P1 ORANGE STREE/I-805 SB RAM.

PM PEAK HOUR INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.20	.98	37.9	D
	R	.14	.68	24.4	C
	All			35.7	D
WB	*L	.27	1.01	55.6	E
	T	.10	.20	7.2	B
	All			37.0	D
SB	LT	.27	.60	15.7	C
	*R	.46	1.02	41.2	E
	All			34.3	D
Intersect:		.92	1.01	35.6	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: DRN8A1

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INTERSECTION: ORANGE AVE /I-805 NB RAM TIME: AM PEAK
DATE: 02-14-92
ANALYST: KK AREA TYPE: NON-CBD
COMMENT: INTERIM W/O PROPOSED PROJECT

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	659	418	0	0	50	4	2
WB	0	456	558	0	50	3	2
NB	112	0	406	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12		
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB			LR						
SB									
GREEN	38	30	30	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

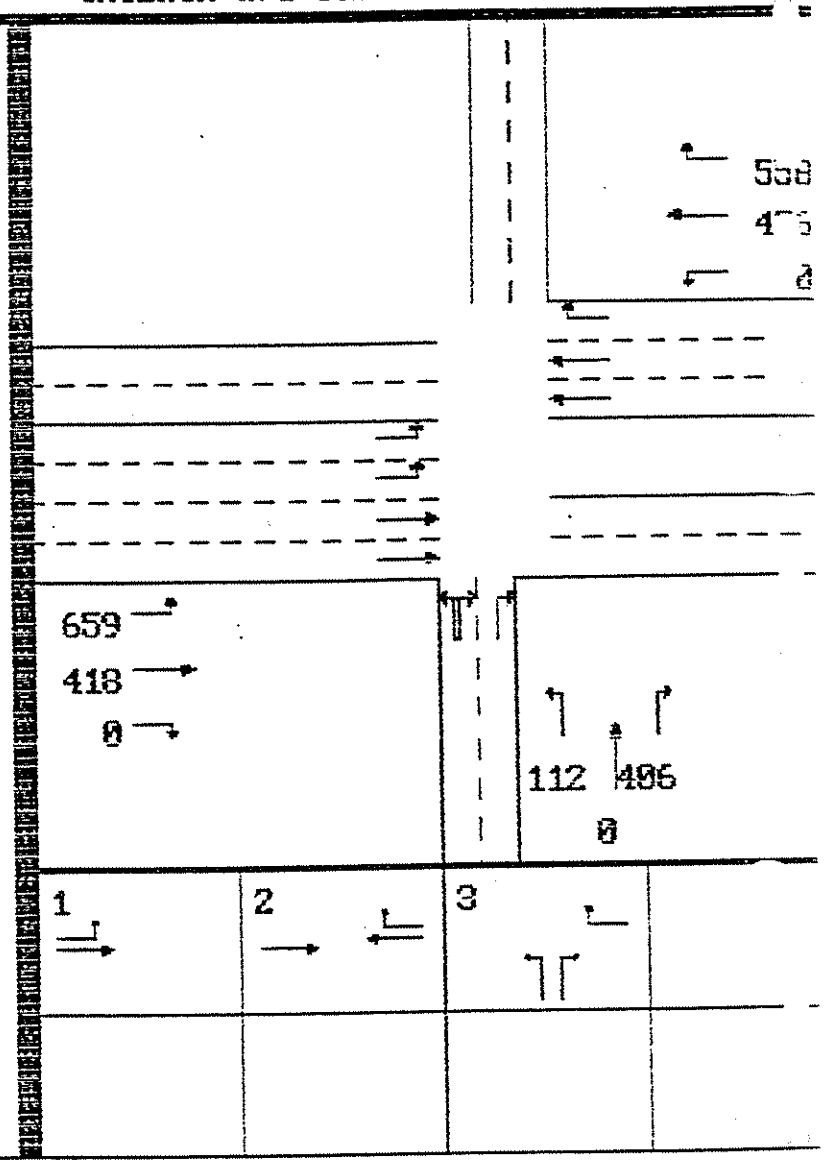
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.66	.35	L	.23	23.7	C	EB	15.9	C
	T	.21	.66	T	.14	3.4	A			
WB	T	.53	.28	T	.15	16.0	C	WB	13.4	B
	R	.73	.56	R	.41	11.1	B			
NB	LR	.63	.28	LR	.18	23.9	C	NB	24.5	C
	R	.68	.28	R	.19	25.1	D			

INTERSECT: DELAY = 16.6 SEC/VEH Xc = .91 LOS = C Sum(v/s)CR = .83

HCM Summary Results for Case: ORN8A1 ORANGE AVE /I-885 NB RAM

AM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.23	.66	23.7	C
	T	.14	.21	3.4	A
	All			15.9	C
WB	T	.15	.53	16.0	C
	*R	.41	.73	11.1	B
	All			13.4	B
NB	LR	.18	.63	23.9	C
	*R	.19	.68	25.1	D
	All			24.5	C
Intersect:		.83	.91	16.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ORN8P1

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INTERSECTION: ORANGE AVE /I-805 NB RAMP TIME: PM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	673	664	0	0	50	4	2
WB	0	1042	320	0	50	3	2
NB	186	0	692	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12		
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB			LR						
SB									
GREEN	26	37	35	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

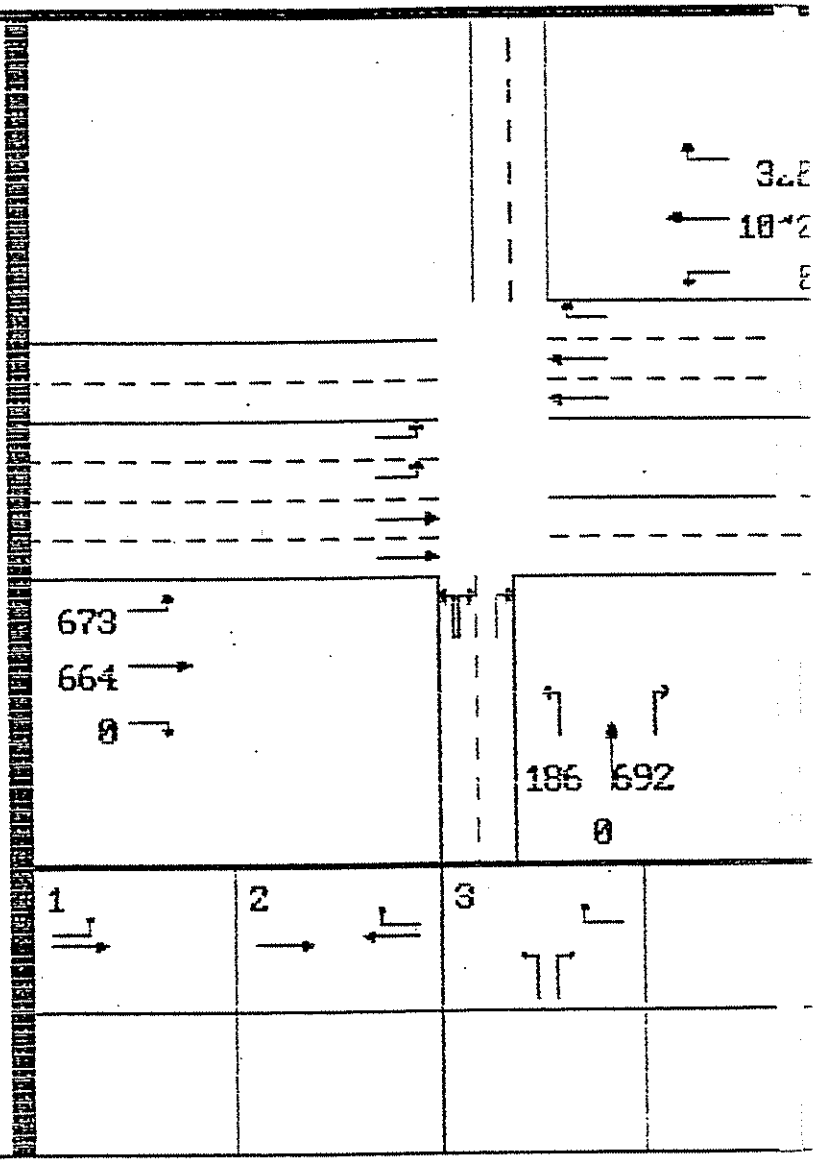
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.98	.25	L	.24	50.5	E	EB	27.8	D
	T	.35	.62	T	.22	4.9	A			
WB	T	.99	.35	T	.34	34.6	D	WB	27.6	D
	R	.35	.67	R	.23	3.7	A			
NB	LR	.93	.33	LR	.31	37.8	D	NB	41.5	E
	R	.98	.33	R	.32	45.3	E			

INTERSECT: DELAY = 31.0 SEC/VEH Xc = .98 LOS = D Sum(v/s)CR = .90

HCM Summary Results for Case: ORN8P1 ORANGE AVE /I-805 NB RAM

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.24	.98	50.5	E
	T	.22	.35	4.9	A
	All			27.8	D
WB	*T	.34	.99	34.6	D
	R	.23	.35	3.7	A
	All			27.6	D
NB	LR	.31	.93	37.8	D
	*R	.32	.98	45.3	E
	All			41.5	E
Intersect:		.90	.98	31.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ORMCA1 SUMMARY REPORT

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INTERSECTION: ORANGE /MEDICAL CENT TIME: A.M. PEAK
DATE: 1/9/92
ANALYST: JHK
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	275	188	2	0	50	4	3
WB	4	95	21	0	50	4	3
NB	1	183	3	0	50	3	2
SB	44	144	438	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	T	12	R	12
NB	L	12	T	12	TR	12		
SB	L	12	T	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR	R					
NB				L	TR				
SB	R	R		L	TR				
GREEN	10	20	25	10	25	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

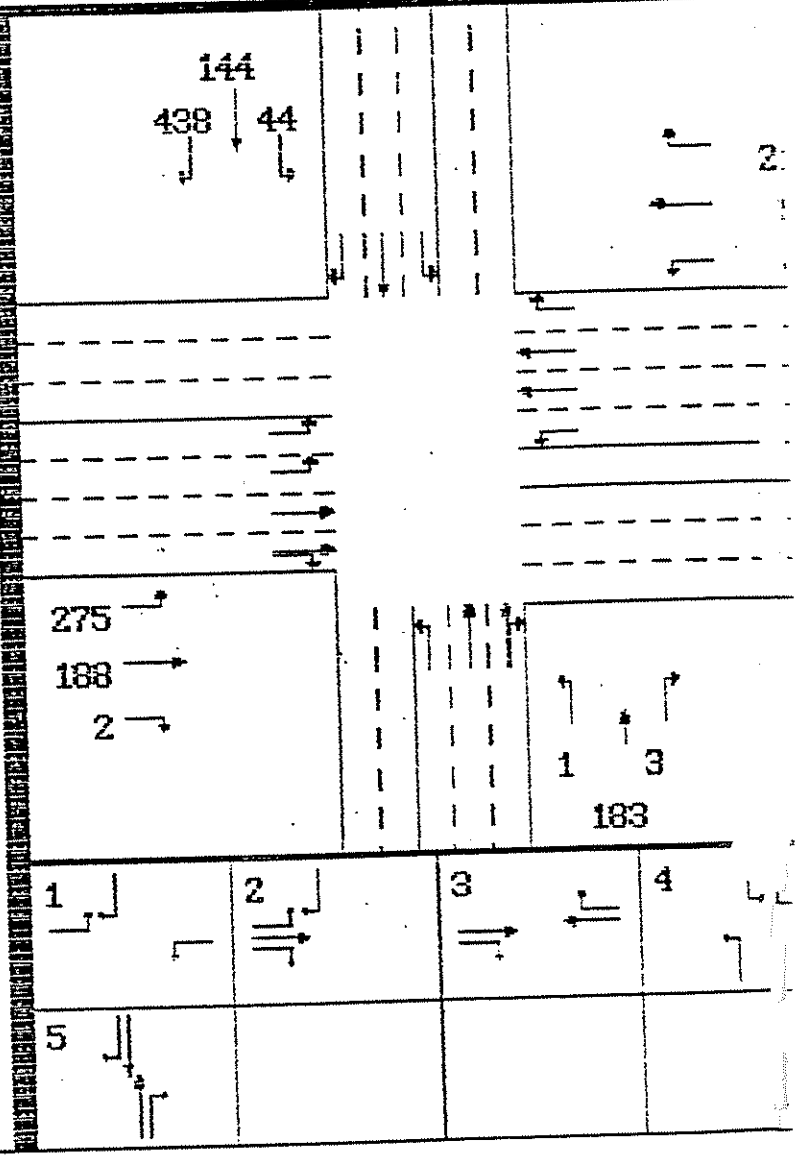
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.31	.32	L	.10	21.6	C	EB	16.1	C
	TR	.14	.45	TR	.06	8.2	B			
WB	L	.02	.10	L	.00	33.9	D	WB	15.5	C
	T	.13	.24	T	.03	15.6	C			
	R	.05	.34	R	.02	11.6	B			
NB	L	.01	.10	L	.00	33.9	D	NB	22.1	C
	TR	.26	.24	TR	.06	22.1	C			
SB	L	.29	.10	L	.03	35.1	D	SB	15.5	C
	T	.38	.24	T	.09	23.0	C			
	R	.58	.55	R	.32	11.0	B			

INTERSECT: DELAY = 16.6 SEC/VEH Xc = .54 LOS = C Sum(v/s)CR = .48

HCM Summary Results for Case: ORMCA1 ORANGE /MEDICAL CENT

A.M. PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.10	.31	21.6	C
	TR	.06	.14	8.2	B
	All			16.1	C
WB	L	.00	.02	33.9	D
	*T	.03	.13	15.6	C
	R	.02	.05	11.6	B
	All			15.5	C
NB	L	.00	.01	33.9	D
	TR	.06	.26	22.1	C
	All			22.1	C
SB	*L	.03	.29	35.1	D
	T	.09	.38	23.0	C
	*R	.32	.58	11.0	B
	All			15.5	C
Intersect:		.48	.54	16.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ORMCP1 SUMMARY REPORT

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INTERSECTION: ORANGE /MEDICAL CENT TIME: PM PEAK
ANALYST: JHK DATE: 1/9/92
COMMENT: INTERIM W/O PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	718	88	1	0	50	4	3
WB	8	210	48	0	50	4	3
NB	0	296	6	0	50	3	2
SB	29	313	827	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	T	12	R	12
NB	L	12	T	12	TR	12		
SB	L	12	T	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR	R					
NB				L	TR				
SB	R	R		L	TR				
GREEN	9	24	20	6	31	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

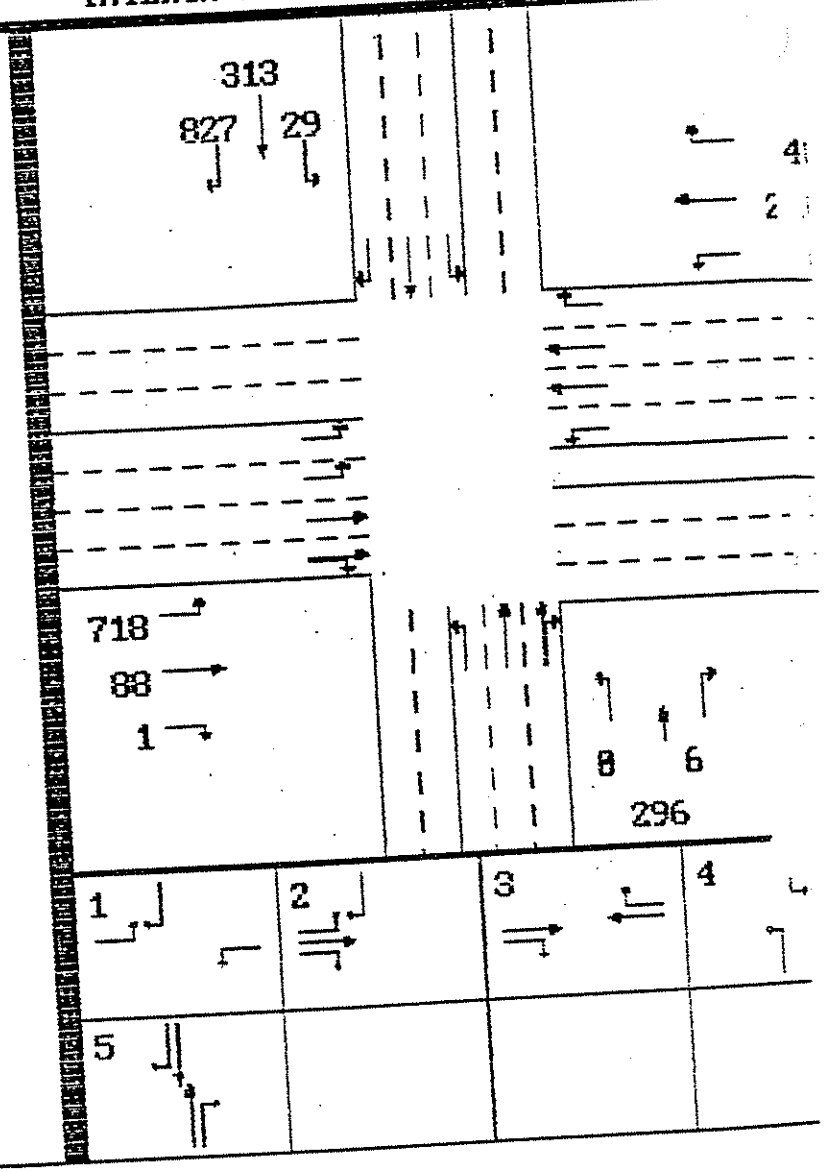
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.74	.35	L	.26	25.9	D	EB	23.9	C
	TR	.07	.45	TR	.03	8.2	B			
WB	L	.06	.09	L	.01	34.7	D	WB	18.2	C
	T	.36	.19	T	.07	18.3	C			
	R	.14	.25	R	.03	14.9	B			
NB	L	.00	.06	L	.00	.0	A	NB	19.9	C
	TR	.34	.29	TR	.10	19.9	C			
SB	L	.30	.06	L	.02	37.8	D	SB	24.1	C
	T	.67	.29	T	.20	24.2	C			
	R	.95	.64	R	.61	23.6	C			

HCM Summary Results for Case: ORMCP1 ORANGE /MEDICAL CEN

PM PEAK INTERIM W/O PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.26	.74	25.9	D
	TR	.03	.07	8.2	B
	All			23.9	C
WB	L	.01	.06	34.7	D
	*T	.07	.36	18.3	C
	R	.03	.14	14.9	B
	All			18.2	C
NB	L	.00	.00	.0	A
	TR	.10	.34	19.9	C
	All			19.9	C
SB	*L	.02	.30	37.8	D
	T	.20	.67	24.2	C
	*R	.61	.95	23.6	C
	All			24.1	C
Intersect:		.95	1.07	22.9	C



APPENDIX D

MEMORANDUM TO HAL ROSENBERG DATED FEBRUARY 28, 1992

EASTLAKE EIR TRANSPORTATION ANALYSIS RECOMMENDED MEDICAL CENTER TRIP GENERATION RATE

FILE COPY

jhk & associates

MEMORANDUM

TO: Hal Rosenberg, City Traffic Engineer

FROM: Daniel F. Marum, Project Manager DFM

DATE: January 28, 1992

REVISED: February 28, 1992

RE: Eastlake EIR Transportation Analysis - Recommended Medical Center Trip Generation Rate (JHK 2885)

As a result of a technical review meeting held on February 3, 1992, JHK & Associates (JHK) has prepared this revised memorandum to document the process which was followed to develop a recommended trip generation rate for the Medical Center portion of the Eastlake I SPA Amendment project. JHK & Associates has conducted a review of the traffic analysis of existing Kaiser Permanente Medical Centers completed on December 23, 1991 by Kimley-Horn & Associates. The Kimley-Horn study of existing Kaiser facilities in the Southern California area indicates a range of trip generation potential for various Kaiser sites. The facilities which were analyzed ranged in size from 518,000 square feet to 694,000 square feet. Each of these sites comprise Medical Center uses including hospital facilities and medical office buildings. Trip generation for these facilities ranged from approximately 18 trips per 1,000 square feet of combined Medical Center use at two sites to approximately 30 trips per 1,000 square feet of combined Medical Center use at the two remaining sites. This range of trip generation for similar sized existing facilities raises concern as to the trip generation rate which should be utilized for planning purposes as part of this Eastlake I SPA Amendment Traffic Analysis project.

As a result of a technical workshop held on Wednesday, October 16, 1991, the City of Chula Vista in conjunction with the JHK Project Team arrived at a recommended trip generation rate for all Medical Center uses which are proposed as part of the SPA Amendment project. The trip generation rates selected at that time were 20 trips per bed for the hospital facility and 50 trips per 1,000 square feet for the medical office facilities. The source of the rates selected by JHK and the City of Chula Vista were derived from the San Diego Association of Governments (SANDAG) Traffic Generators Manual dated June 1991. Based on these trip generation factors JHK calculated an ADT value for the Proposed Project of 26,280 daily trips. The conversion of this ADT value to daily trips per 1,000 square feet of combined Medical Center use indicates approximately 19.7 trips/1,000 square feet (Full Project = 1,335,000 square feet) or 22.5 trips/1,000 square feet (excluding Hospital Support Areas 1,335,000 - 165,000 = 1,170,000 square feet). These values appear to be near the lower end of the range of daily trip generation observed by Kimley-Horn at the four existing Kaiser sites in Southern California. Furthermore, these values are well below the average of the SANDAG rates, assuming a 2:1 ratio of hospital to medical office uses at a typical Medical Center site. As stated in the Kimley-Horn report (Table 4 - 12/12/91) the calculated rate for combined uses under the SANDAG assumptions indicated that an average daily trip rate of 30 trips per 1,000 square feet of combined Medical Center uses.

MEMORANDUM (Continued)

JHK & Associates has conducted discussions with City of Chula Vista Engineering staff and the Eastlake Technical Review Committee related to the findings which are presented in the Kimley-Horn study. Based on these discussions and our understanding of all available data we have concluded that the average trip generation value of 19.7 to 22.5 trips per 1,000 square feet of combined Medical Center uses, under the previous trip generation assumptions, underestimates the potential amount of traffic that could be generated by the Proposed Medical Center Facility in Chula Vista. As a result, JHK's recommends that a daily trip generation rate closer to the upper end of the observed range (30 trips per 1,000 square feet of combined Medical Center use) be applied to this traffic impact analysis. The observation of relatively high trip generation values at two of the Kaiser facilities in the Los Angeles area indicates a scenario which could occur at the Chula Vista site in the future. Based on JHK's review of these observed rates, the following recommendations for conducting the traffic impact analysis and determining adequate mitigation measures are presented for consideration by the City of Chula Vista.

Summary of Traffic Analysis Recommendations
JHK & Associates - January 31, 1992

Average Daily Traffic Calculations

Upper End of Observed Trip Generation Values for Existing Kaiser Sites (Combined Medical Center Uses)	30 trips/1000 sq. ft.
Range of Observed Trip Generation Values for Existing Kaiser Sites Based on:	
• Upper End of Combined Medical Center Uses in Square Feet (Data Set Range 18 to 30 trips/1000 sq. ft.)	30 trips/1000 sq. ft.
• Upper End of Trips Per Bed (Data Set Range 45, 74, 35, 70)	74 trips/bed
• Upper End of Trips Per Employee (Data Set Range 5.7, 8.2, 3.9, 9.6)	9.6 trips/employee

Ranges of Medical Center ADT Volume Estimates

SANDAG Trip Rates without Administrative and Central Plant Uses (Bed Rate and Square Footage Estimates):

• Hospital 820,000 sq.ft./439 Beds (439 Beds x 20 trips/Bed)	8,780
• Medical Office (350,000 sq. ft. x 50 trips/1000 sq. ft.)	17,500
Total Trip Generation Value	26,280 daily trips

MEMORANDUM (Continued)

SANDAG Trip Rates with Entire Project(Square Footage Estimate):

• Hospital (985,000 sq. ft. x 20 trips/1,000 sq. ft.)	19,700
• Medical Office (350,000 sq. ft. x 50 trips/1000 sq. ft.)	17,500
Total Trip Generation Value	37,200 daily trips

Range of Observed ADT Volume Estimates Based on Observed Kaiser Data Applied to Proposed Chula Vista Project:

• Trips Per 1000 sq. ft./Upper End (1.335 million sq. ft. x 30 trips/1000 sq. ft.)	40,050 daily trips
• Trips Per Bed/Upper End (439 Beds x 74 trips/Bed)	32,500 daily trips
• Trips Per Employee/Upper End (4000 Employees x 9.6 trips/Employee)	38,400 daily trips

Average of Calculated ADT Volume Estimates Based on Observed Kaiser Data Applied to Proposed Chula Vista Project:

- Data Set Range (See above)
  - 26,280 daily trips
  - 37,200 daily trips
  - 40,050 daily trips
  - 32,500 daily trips
  - 38,400 daily trips
- Average of Data Set — 34,886 daily trips
- Trips Generation for Combined Medical Center Uses (34,886 ÷ 1.335 million sq. ft.) — 26 trips/1000 sq. ft.
- Recommended ADT Value for Combined Medical Center Uses (1.335 million sq. ft. x 26 trips/1000 sq. ft.) — 34,710 daily trips

The utilization of this trip generation rate would result in approximately 34,710 daily trips to be generated by the Medical Center portion of the SPA Amendment area at buildout. The Pre-SR 125 interim trip generation value would be approximately 20,670 daily trips. By utilizing this trip generation value for interim and ultimate transportation modelling and impact analysis the City of Chula Vista will be assured that the recommended mitigation measures will be adequate to allow the transportation system to perform at acceptable levels in the future. It is further recommended that the peaking

MEMORANDUM (Continued)

characteristics of existing Kaiser Sites, as documented in the Kimley-Horn study, be utilized in this project to determine peak hour traffic generating characteristics for the proposed project. The following values represent JHK recommended approach to calculating peak hour traffic conditions for this project. The use of the JHK recommended values will also enable JHK to salvage previously compiled work efforts and complete the project on schedule.

Peak Hour Traffic Calculations

Average of Observed PM Peak Hour Trip Ends for Existing Kaiser Sites (Combined Medical Center Uses/Including High Site Value (2.84) From Woodland Hills)	1.83 trips/1000 sq. ft.
Total Combined Medical Center Site (Proposed Project)	1,335,000 sq. ft.
Calculated PM Peak Hour Trip Ends (1.83 x 1.335 million sq. ft.)	2,443 trip ends
Previously Calculated and Analyzed PM Peak Hour Trips Ends (SANDAG rates) (26,280 Daily Trips x .10 (Peak Hour Percentage))	2,630 trip ends
Calculated Safety Factor if SANDAG Peak Hour Trip Estimates are Retained	7.6 percent
Calculated PM Peak Hour Percentage Utilizing Recommended Values (2,630/34,710)	7.6 percent
Average of Observed PM Peak Hour Percentages for Existing Kaiser Sites (Data Set Range 7.8, 9.5, 8.2, 5.2)	7.7 percent

By utilizing the daily trip generation and the peak hour methodology recommended by JHK, the City of Chula Vista will be designing a transportation system which will operate at acceptable daily and peak hour levels of service in accordance with the adopted threshold standards and long range transportation planning guidelines as recommended by the City Traffic Engineering division. However, it is recommended that prior to the construction of Phase III of the Medical Center Facility (540,000 sq. ft. X 26 trips/1000 sq. ft. = 14,040 daily trips) a traffic study be prepared to document the actual trip generation rate for the complex to the satisfaction of the City Engineer. Based on these findings, modifications to the mitigation plan as recommended in this EIR, could be developed for consideration by the City Engineer.

DFM/wv

cc: Cliff Swanson
Bruce McIntyre
Bud Gray
Marylin Ponseggi
Vance Furukawa
John Keating
Bruce Sloan
Andy Schlaefli

APPENDIX E

COMPARISON OF TRIP GENERATION VALUES FOR DIFFERENT LAND USE ASSUMPTIONS

TABLE 1

Trip Generation for the Proposed SPA Amendment Area under Original Eastlake I SPA Land Use Assumption

TABLE 2

Trip Generation for the Proposed SPA Amendment Area under TPP "Approved Projects" Land Use Assumption

TABLE 3

Trip Generation for the Proposed SPA Amendment Area under Adopted General Plan Land Use Assumption

Table 1-5

TRIP GENERATION FOR THE PROPOSED SPA AMENDMENT AREA UNDER ORIGINAL EASTLAKE I SPA LAND USE ASSUMPTION

Activity Center (East of Eastlake Parkway)

Area/Parcel	Land Use Type	Trip Rate	Land Use Intensity	Total Daily Trips
VC-2	Office	300/AC	12.0 AC	3,600
		Subtotal	**12.0 AC**	**3,600**

Village Center (West of Eastlake Parkway)

Area/Parcel	Land Use Type	Trip Rate	Land Use Intensity	Total Daily Trips
R-14	MFDU	8/DU	300 DU (15.0 AC)	2,400
R-15	MFDU	8/DU	105 DU (3.0 AC)	840
VC-1	Commercial	700/AC	22.2AC	15,540
OS	Open Space	N/A	18.6 AC	0
OS	Library	400/AC	1.0 AC	400
		Subtotal	**405 DU 59.8 AC**	**19,180**
	TOTAL		**405 DU 71.8 AC**	**22,780***

Note: * In addition to the 22,780 daily trips generated by the SPA Amendment Area, it was determined that the remainder of the SPA would generate an additional 16,354 daily trips, resulting in a total trip generation value for the entire Eastlake I SPA of 39,134 under its Adopted Land Use Plan.

Source: Eastlake Development Company.

Table ~~1-6~~ 2

TRIP GENERATION FOR THE PROPOSED SPA AMENDMENT AREA UNDER TPP "APPROVED PROJECTS" LAND USE ASSUMPTION

Traffic Analysis Zone	Land Use Intensity	Land Use Type	SANDAG Code	Daily Trip Generation Rate	Daily Trips
313	11 AC	Office (VC-2)	600	300/AC	3,300
		Daily Trip Subtotal - TAZ 313			**3,300**
317	577 DU	Multi-Family Residential (34.8 AC)	130	8/DU	4,616
	26 AC	Commercial	525	500/AC	13,000
		Daily Trip Subtotal - TAZ 317			**17,616**
TOTAL	**577 DU**				**20,916***
	71.8 AC				

Note: * In addition to the 20,916 daily trips coded into the TPP model for the SPA Amendment Area, it was determined that the remainder of the SPA was estimated to generate 13,200 trips (66 acres of Industrial/Business Park @ 200 trips/acre). These coding assumptions resulted in a total of 34,116 daily trips generated by the entire Eastlake I SPA.

Source: Final Eastern Chula Vista Transportation Phasing Plan Update (TPP), Willdan Associates, January 1991.

3

Table ~~1-4~~

TRIP GENERATION FOR THE PROPOSED SPA AMENDMENT AREA UNDER ADOPTED GENERAL PLAN LAND USE ASSUMPTION

Traffic Analysis Zone	Adopted	General Plan Land Use	SANDAG Land Use Type	SANDAG Code	Daily Trip Generation Rate	Daily Trips
345 *	28 AC 8 AC	Commercial Retail Vacant Land	Regional Shopping Center	520	500/AC	14,000
346 **	9 AC 26.8 AC	Professional/ Administration Vacant Land	Office	600	300/AC base up	2,700 **16,700** ***
TOTAL	**71.8 AC**					

Note: * Old SANDAG TAZ Number 345 (Prior to August 1988) equal to New SANDAG TAZ Number 317.

** Old SANDAG TAZ Number 346 (Prior to August 1988) equal to New SANDAG TAZ Number 313.

*** In addition to the 16,700 daily trips generated by the SPA Amendment Area it was determined tha the remainder of the SPA was estimated to generate an additional 27,050 trips. Thus, the entir Eastlake I SPA was estimated to generate approximately 43,750 daily trips by the Travel Forecas Model coded for the Adopted General Plan Circulation Element.

Source: City of Chula Vista Adopted General Plan (Scenario 4) Land Use Plan as coded into the Circulatic Element Travel Forecast Model.

APPENDIX F

SIGNALIZED INTERSECTIONS CAPACITY ANALYSIS WORKSHEETS

INTERIM (PRE-SR 125) PROPOSED PROJECT CONDITION

HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: BOS8A2 SUMMARY REPORT

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INTERSECTION: BONITA RD /I-805 SB RAMP TIME: AM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	855	250	0	50	4	3
WB	457	850	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	341	0	538	538	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12
NB								
SB	L	12	L	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	26.5	3
SB	0	2	N	0	0	.90	Y	26.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR	R *						
WB	LT	T							
NB									
SB			LR						
GREEN	34	34	30	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

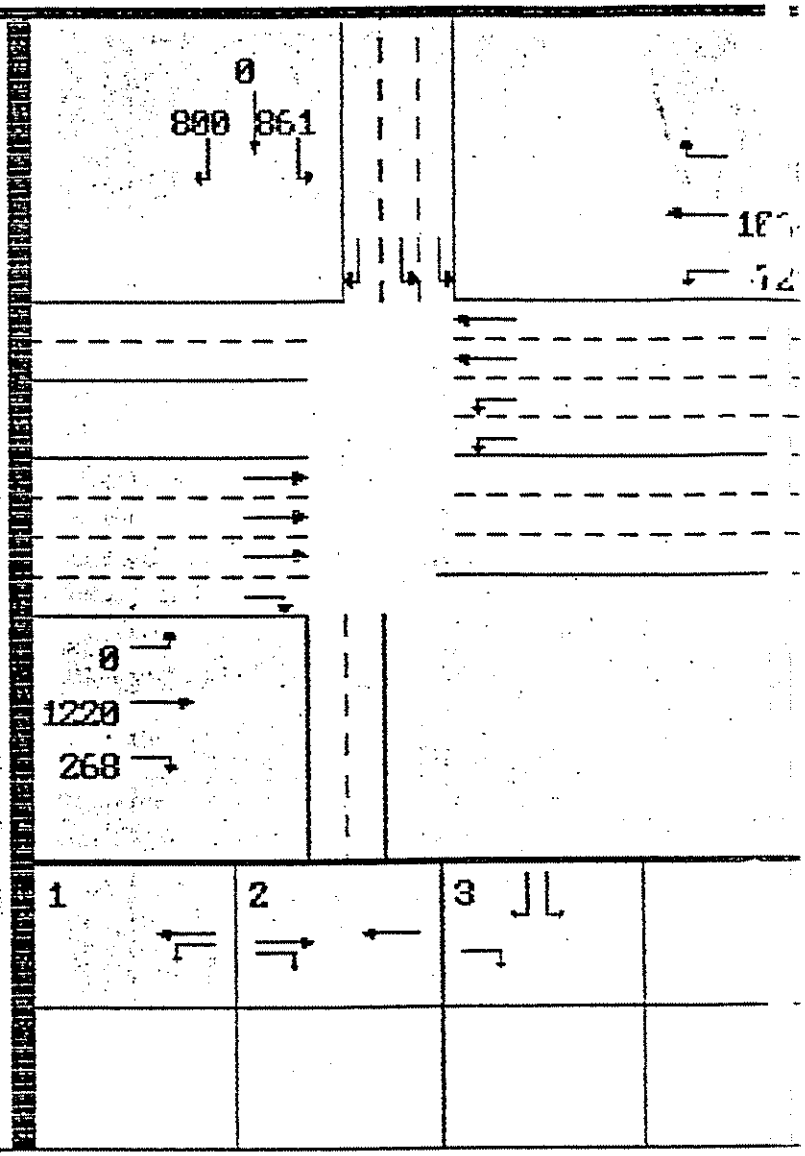
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.61	.32	T	.20	17.5	C	EB	14.9	B
	R	.31	.60	R	.18	5.1	B			
WB	L	.51	.32	L	.16	23.6	C	WB	10.9	B
	T	.42	.66	T	.28	4.1	A			
SB	L	.43	.28	L	.12	24.7	C	SB	24.7	C
	R	.00	.28	R	.00	.0	A			

INTERSECT: DELAY = 14.2 SEC/VEH Xc = .52 LOS = B Sum(v/s)CR = .48

HCM Summary Results for Case: BOS8P2 BONITA RD /I-805 SB RAI

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.28	.99	35.6	D
	R	.20	.38	3.9	A
	All			38.3	D
WB	*L	.26	.98	49.9	E
	T	.35	.61	8.6	B
	All			25.4	D
SB	*L	.31	.82	27.8	D
	R	.00	.00	.0	A
	All			27.8	D
Intersect:		.84	.92	27.5	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: BOS8P2 SUMMARY REPORT

****

INTERSECTION: BONITA RD /I-805 SB RAM TIME: PM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1220	268	0	50	4	3
WB	726	1064	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	861	0	800	800	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12
NB								
SB	L	12	L	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	PED. BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	26.5	3
SB	0	2	N	0	0	.90	Y	26.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR	R						
WB	LT	T							
NB									
SB			LR						
GREEN	28	30	40	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

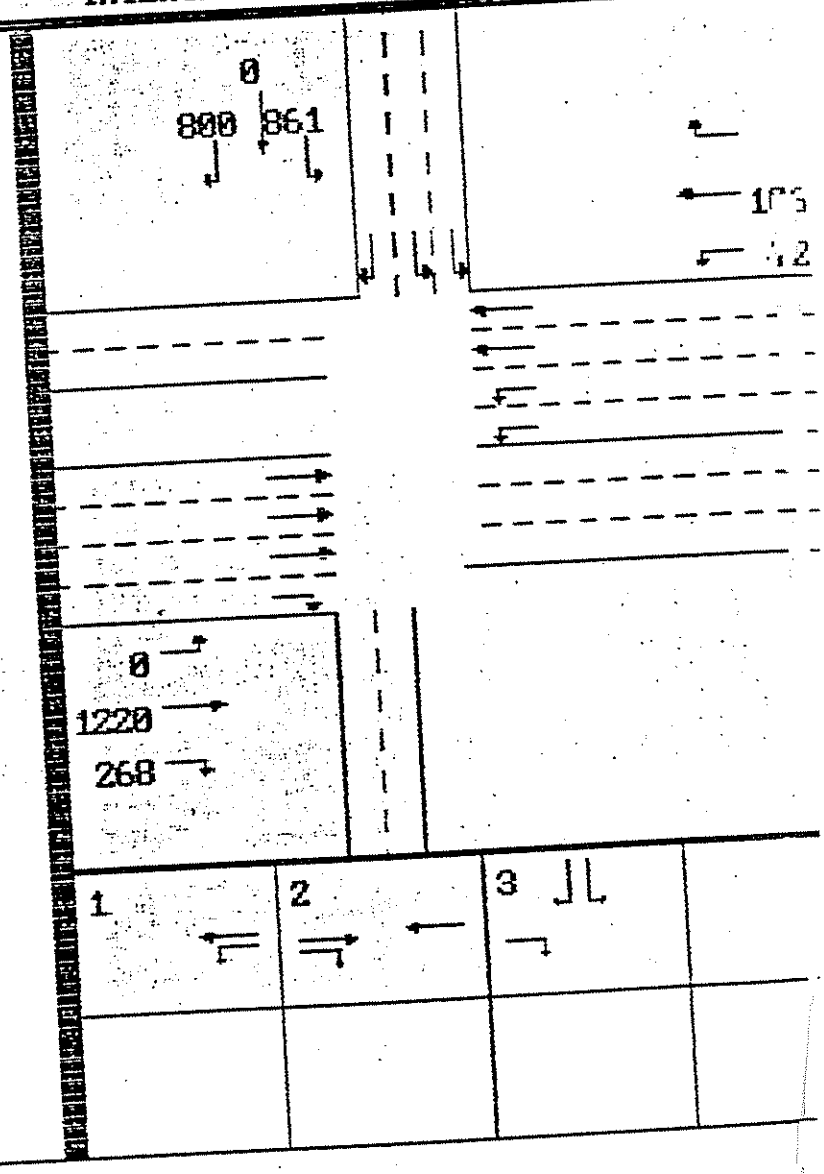
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.99	.28	T	.28	35.6	D	EB	30.3	D
	R	.30	.65	R	.20	3.9	A			
WB	L	.98	.26	L	.26	49.9	E	WB	25.4	D
	T	.61	.57	T	.35	8.6	B			
SB	L	.82	.37	L	.31	27.0	D	SB	27.0	D
	R	.00	.37	R	.00	.0	A			

INTERSECT: DELAY = 27.5 SEC/VEH Xc = .92 LOS = D Sum(v/s)CR = .84

HCM Summary Results for Case: BOS8P2 BONITA RD /I-805 SB RA

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.28	.99	35.6	D
	R	.20	.30	3.9	A
	All			30.3	D
WB	*L	.26	.98	49.9	E
	T	.35	.61	8.6	B
	All			25.4	D
SB	*L	.31	.82	27.0	D
	R	.00	.00	.0	A
	All			27.0	D
Intersect:		.84	.92	27.5	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: BON8A2 SUMMARY REPORT

****

INTERSECTION: Bonita Road /I-805 NB Ram TIME: A.M. PEAK
ANALYST: JHK DATE: 12/27/91
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	427	769	0	0	50	4	2
WB	0	1104	520	0	50	3	3
NB	203	0	552	0	50	3	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB	L	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	TR						
NB			R	LR					
SB									
GREEN	20	31	18	25	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

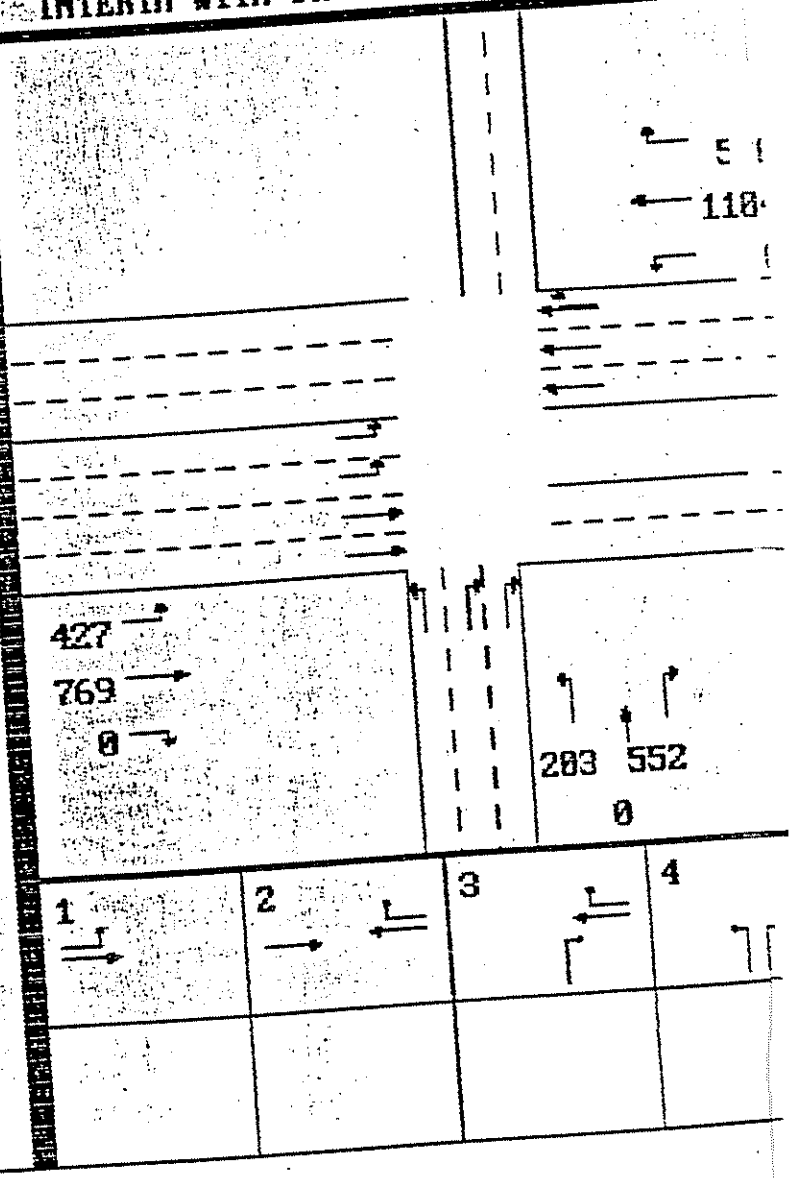
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.80	.19	L	.15	37.2	D	EB	18.7	C
	T	.49	.51	T	.25	8.5	B			
WB	TR	.80	.49	TR	.39	13.6	B	WB	13.6	B
NB	L	.56	.24	L	.13	29.5	D	NB	20.2	C
	R	.59	.41	R	.24	16.9	C			

INTERSECT: DELAY = 16.6 SEC/VEH Xc = .85 LOS = C

HCM Summary Results for Case: BONBA2 Bonita Road /I-805 NB Ram
INTERIM WITH PROPOSED PROJECT
A.M. PEAK

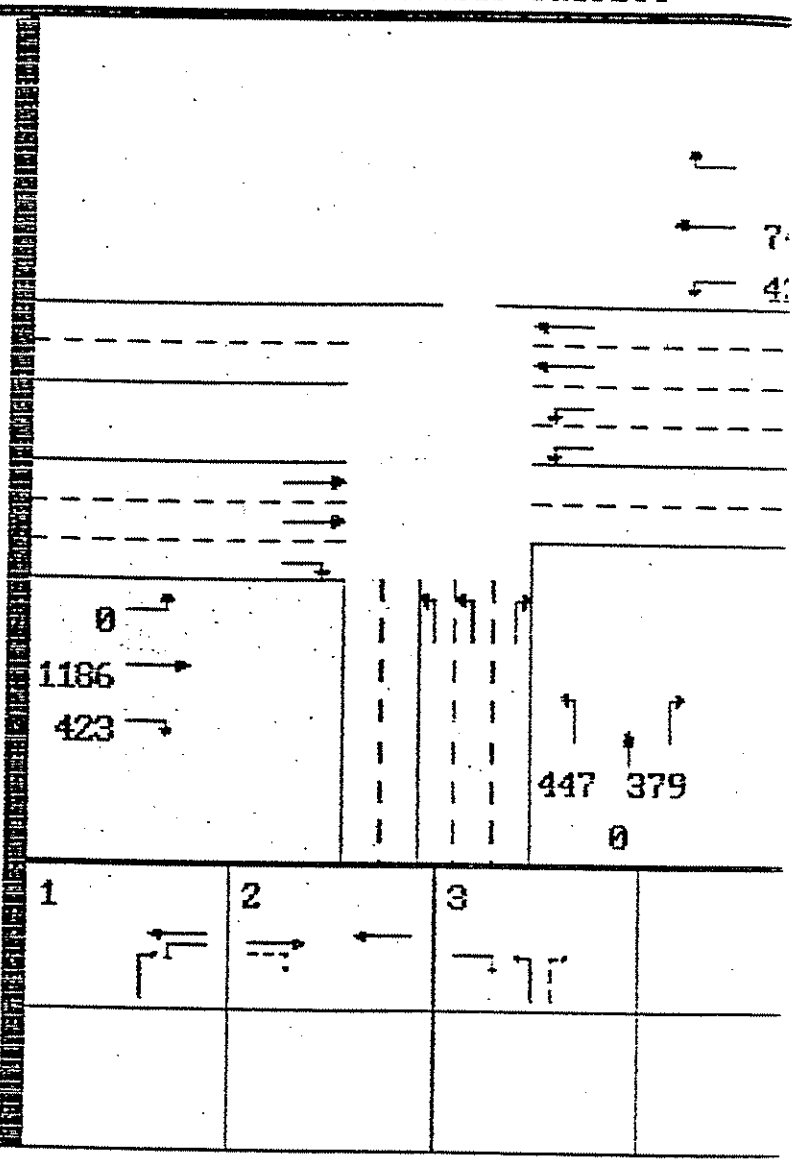
App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.15	.80	37.2	D
	T	.25	.49	8.5	B
	All			18.7	C
WB	*TR	.39	.80	13.6	B
	All			13.6	B
NB	L	.13	.56	29.5	D
	*R	.24	.59	16.9	C
	All			20.2	C
Intersect:		.78	.85	16.6	C



HCM Summary Results for Case: BOOLP2 BONITA DRIVE/OTAY LAKES R

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.39	.87	19.5	C
	R	.32	.45	3.5	A
	All			15.5	C
WB	*L	.15	.79	36.8	D
	T	.24	.37	3.9	A
	All			15.7	C
NB	L	.16	.56	26.3	D
	*R	.28	.63	13.7	B
	All			20.7	C
Intersect:		.82	.89	16.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HSBA2

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INTERSECTION: H STREET /SB I-805 RAM TIME: AM PEAK

ANALYST: KK DATE: 02-13-92

COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1686	281	0	50	4	3
WB	430	1060	0	0	50	3	2
NB	0	0	894	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	
NB	R	12	R	12	R	12	
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 8 PE

PHASE:	1	2	3	4	5	6	7	8
EB		TR						
WB	LT	T						
NB	R		R					
SB								
GREEN	46	46	6	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0
RED	0	0	0	0	0	0	0	0

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

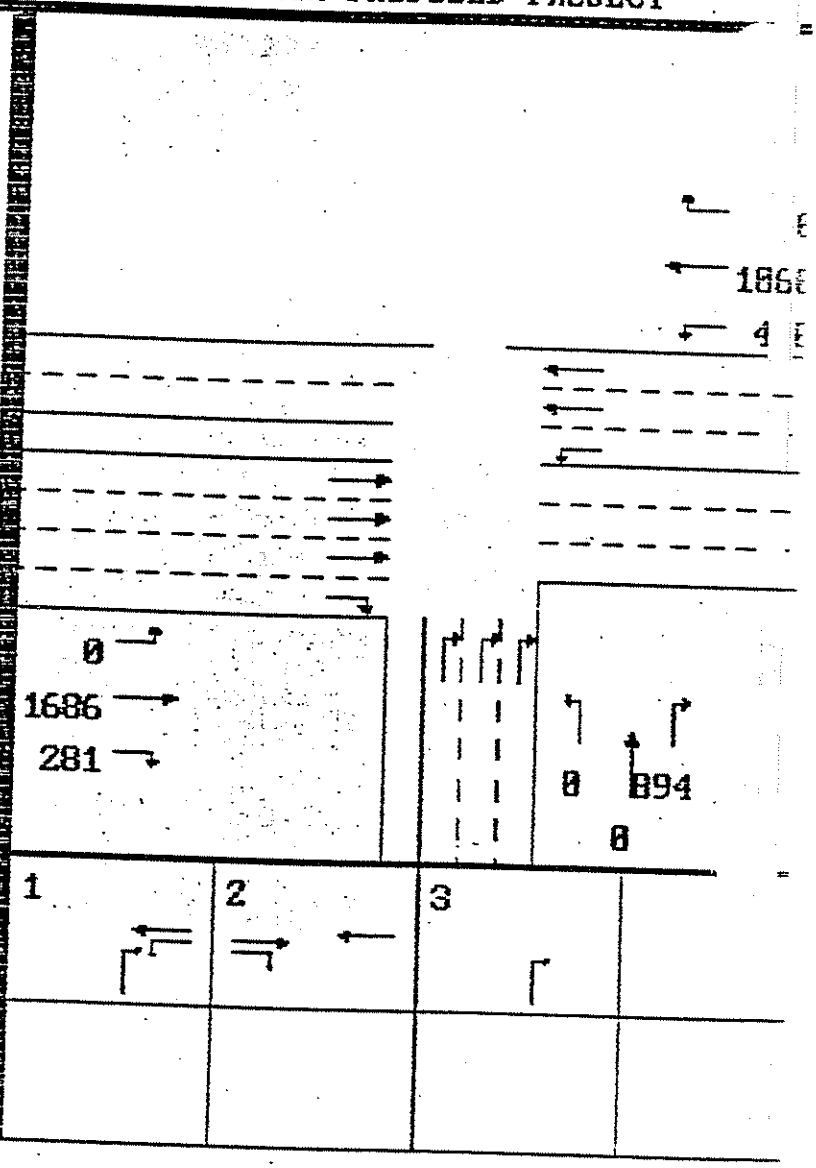
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH: DE
EB	T	.90	.43	T	.39	20.5	C	EB 1
	R	.48	.43	R	.21	11.0	B	
WB	L	.66	.43	L	.28	20.7	C	WB
	T	.39	.88	T	.35	.6	A	
NB	R	.49	.49	R	.24	12.2	B	NB

INTERSECT: DELAY = 13.4 SEC/VEH Xc = .99 LOS = B Sum(

HCM Summary Results for Case: HS8A2 H STREET /SB I-885 RAM
AM PEAK INTERIM WITH PROPOSED PROJECT'

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.39	.90	20.5	C
	R	.21	.48	11.0	B
	All			19.2	C
WB	*L	.28	.66	20.7	C
	T	.35	.39	.6	A
	All			6.2	B
NB	*R	.24	.49	12.2	B
	All			12.2	B
Intersect:		.91	.99	13.4	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HS8P2
****
INTERSECTION: H STREET /SB I-805 RAM TIME: PM PEAK
ANALYST: KK DATE: 02-13-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1692	237	0	50	4	3
WB	200	1348	0	0	50	3	2
NB	0	0	2021	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12
WB	L	12	T	12	T	12		
NB	R	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH

PHASE:	1	2	3	4	5	6	7	8	P
EB		TR							
WB	LT	T							
NB	R		R						
SB									
GREEN	53	42	3	0	0	0	0	0	
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

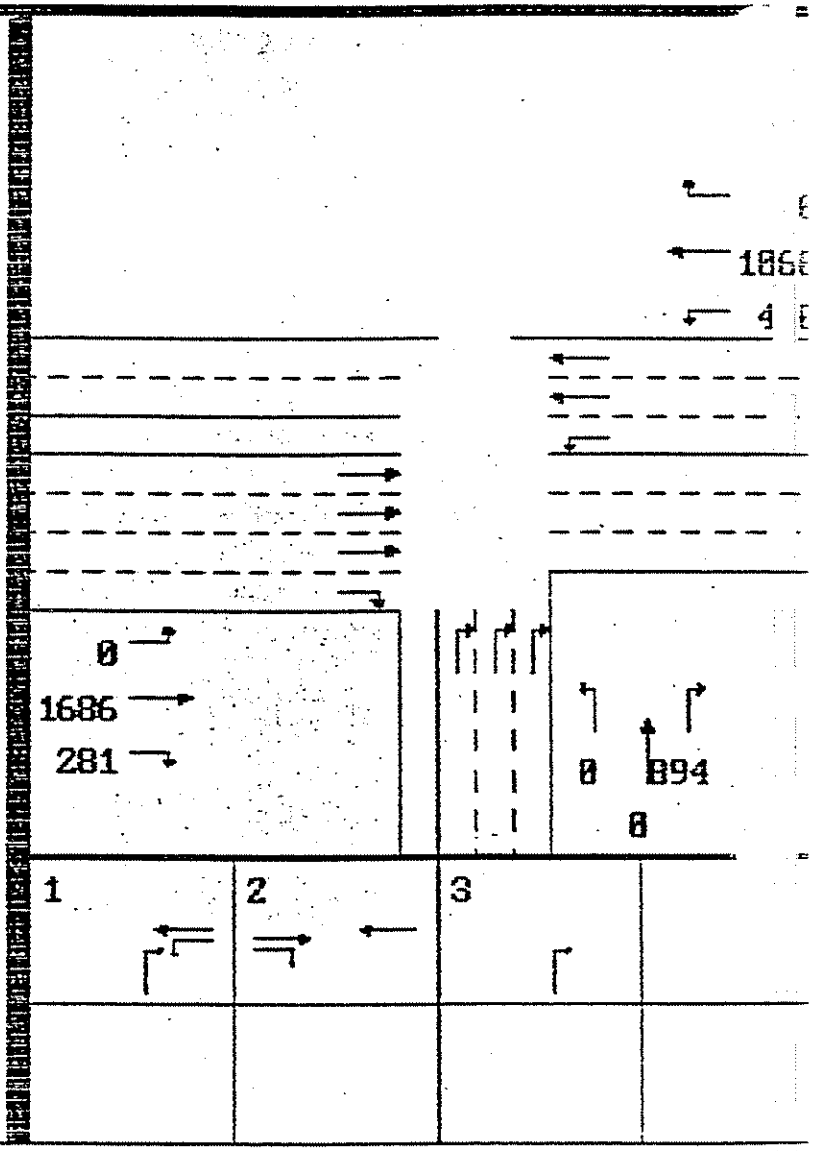
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH: D
EB	T	.99	.39	T	.39	29.9	D	EB
	R	.44	.39	R	.17	11.9	B	
WB	L	.27	.49	L	.13	12.5	B	WB
	T	.49	.91	T	.44	.4	A	
NB	R	1.03	.53	R	.54	35.6	D	NB

DELAY = 23.7 SEC/VEH Xc = 1.16 LOS = C Su

HCM Summary Results for Case: HS8A2 H STREET /SB I-885 RAM

AM PEAK INTERIM WITH PROPOSED PROJECT'

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.39	.90	20.5	C
	R	.21	.48	11.0	B
	All			19.2	C
WB	*L	.28	.66	20.7	C
	T	.35	.39	.6	A
	All			6.2	B
NB	*R	.24	.49	12.2	B
	All			12.2	B
Intersect:		.91	.99	13.4	B



HCM/Cinema V1.28
HCM SIGNALIZED INTERSECTION LICENSEE: JHK & Associates
****
CASE: HS8P2
INTERSECTION: H STREET /SB I-805 RAM SUMMARY REPOR
ANALYST: KK TIME: PM PEAK
COMMENT: INTERIM WITH PROPOSED PROJECT DATE: 02-13-92
AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1692	237	0	50	4	3
WB	200	1348	0	0	50	3	2
NB	0	0	2021	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	
NB	R	12	R	12	R	12	
SB							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED
OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR							
WB	LT	T							
NB	R								
SB			R						
GREEN	53	42	3	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

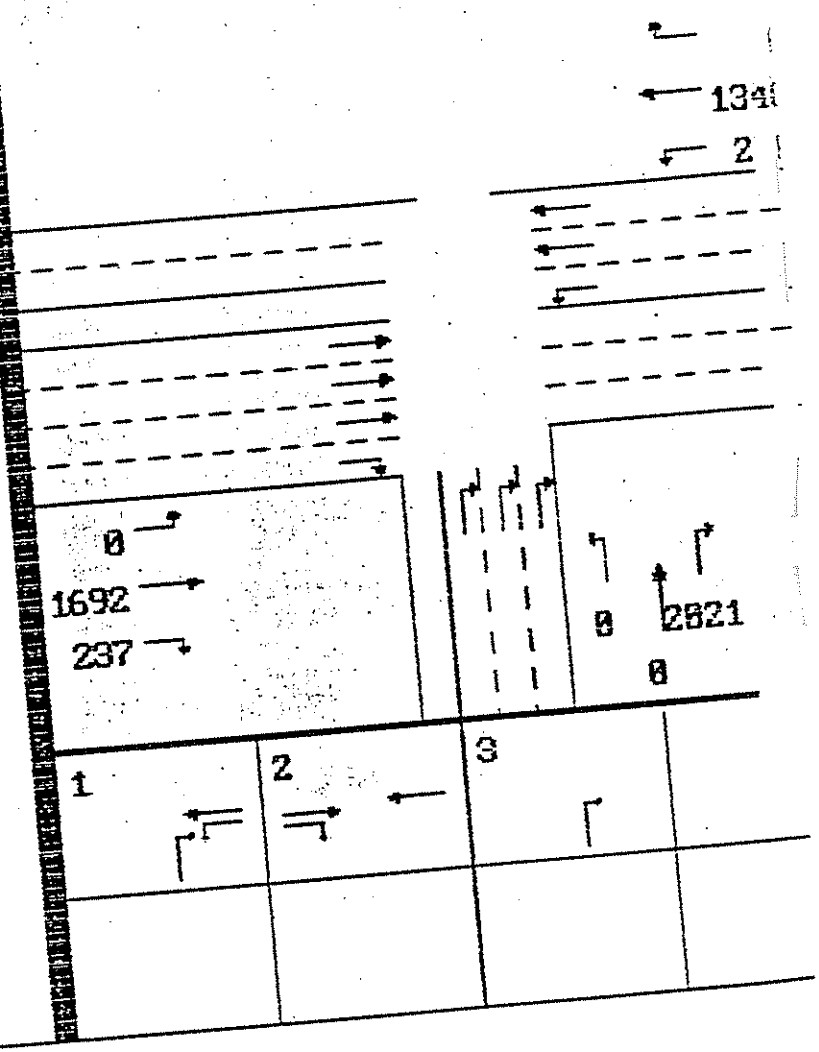
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.99	.39	T	.39	29.9	D	EB	27.9	D
	R	.44	.39	R	.17	11.9	B			
WB	L	.27	.49	L	.13	12.5	B	WB	1.9	A
	T	.49	.91	T	.44	.4	A			
NB	R	1.03	.53	R	.54	35.6	D	NB	35.6	D

INTERSECTION DELAY = 23.7 SEC/VEH XC = 1.16 LOS = C Sum(v/s)CR = 1.06

HCM Summary Results for Case: HS8P2 H STREET /SB I-805 RAM
INTERIM WITH PROPOSED PROJECT
PM PEAK

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.39	.99	29.9	D
	R	.17	.44	11.9	B
	All			27.9	D
WB	*L	.13	.27	12.5	B
	T	.44	.49	.4	A
	All			1.9	A
NB	*R	.54	1.03	35.6	D
	All			35.6	D
Intersect:		1.86	1.16	23.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HN8A2

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INTERSECTION: H Street /NB I-805 Ram TIME: A.M. PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1949	0	0	50	3	3
WB	0	1259	0	0	50	2	2
NB	231	0	202	0	50	3	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12		
NB	L	12	LR	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	17.5	3
SB	0	2	N	0	0	.90	Y	17.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: PED O

PHASE:	1	2	3	4	5	6	7	8
EB	T							
WB	T							
NB		LR						
SB								
GREEN	61	41	0	0	0	0	0	0
YELLOW	3	3	0	0	0	0	0	0
RED	1	1	0	0	0	0	0	0

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

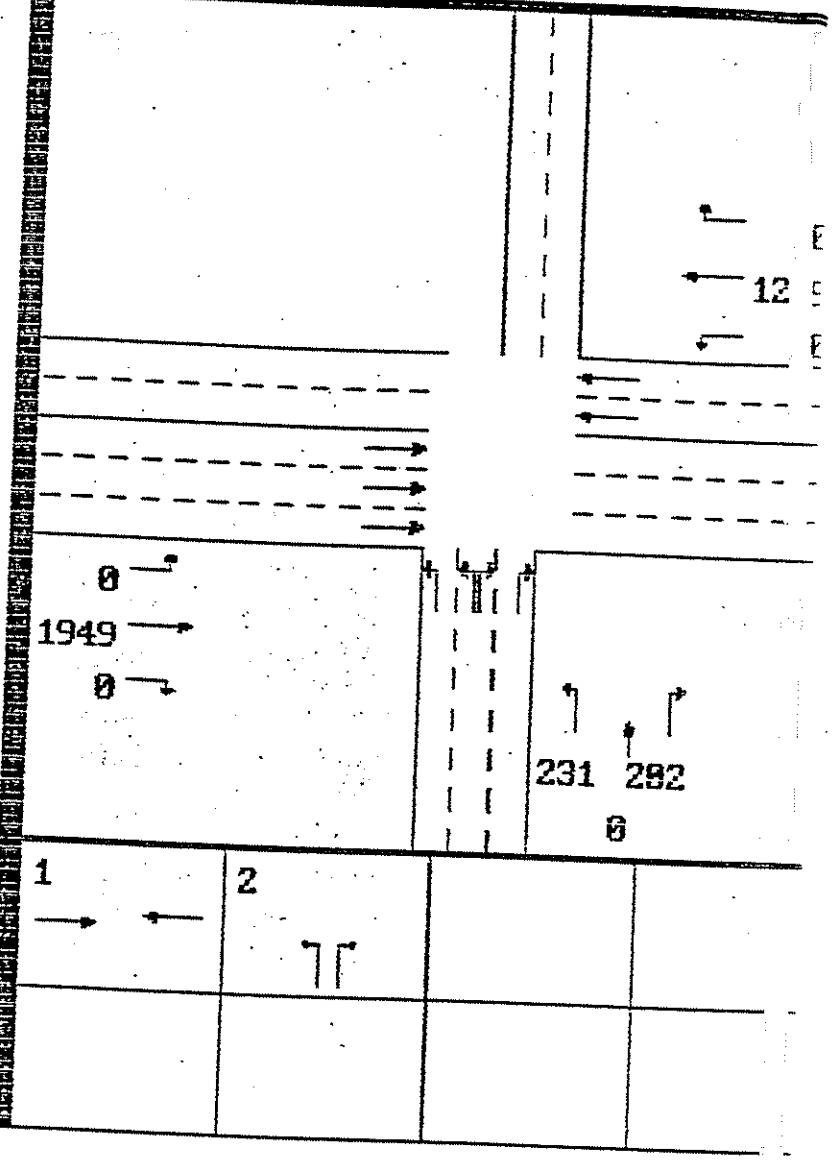
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	c/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	T	.79	.56	T	.45	11.0	B	EB	11.0
WB	T	.73	.56	T	.41	10.3	B	WB	10.3
NB	L	.25	.38	L	.10	17.7	C	NB	16.0
	LR	.26	.38	LR	.10	15.1	C		
	R	.26	.38	R	.10	15.1	C		

INTERSECT: DELAY = 11.3 SEC/VEH Xc = .58 LOS = B Sum(v/s)CR

HCM Summary Results for Case: HN8A2 H Street /NB I-885 Ram
A.M. PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*T	.45	.79	11.0	B
	All			11.0	B
WB	T	.41	.73	10.3	B
	All			10.3	B
NB	L	.10	.25	17.7	C
	*LR	.10	.26	15.1	C
	R	.10	.26	15.1	C
	All			16.0	C
Intersect:		.55	.58	11.3	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: HN8P2

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INTERSECTION: H Street /NB I-805 Ram TIME: PM PEAK

ANALYST: JHK DATE: 12/30/91

COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	3313	0	0	50	3	3
WB	0	1163	0	0	50	2	2
NB	313	0	429	0	50	3	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12		
NB	L	12	LR	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	17.5	3
SB	0	2	N	0	0	.90	Y	17.5	3

OPERATIONAL ANALYSIS CYCLE LENGTH: 1

SIGNAL SETTINGS: ACTUATED PED ON

PHASE:	1	2	3	4	5	6	7	8
EB	T							
WB	T							
NB		L R						
SB								
GREEN	76	26	0	0	0	0	0	0
YELLOW	3	3	0	0	0	0	0	0
RED	1	1	0	0	0	0	0	0

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

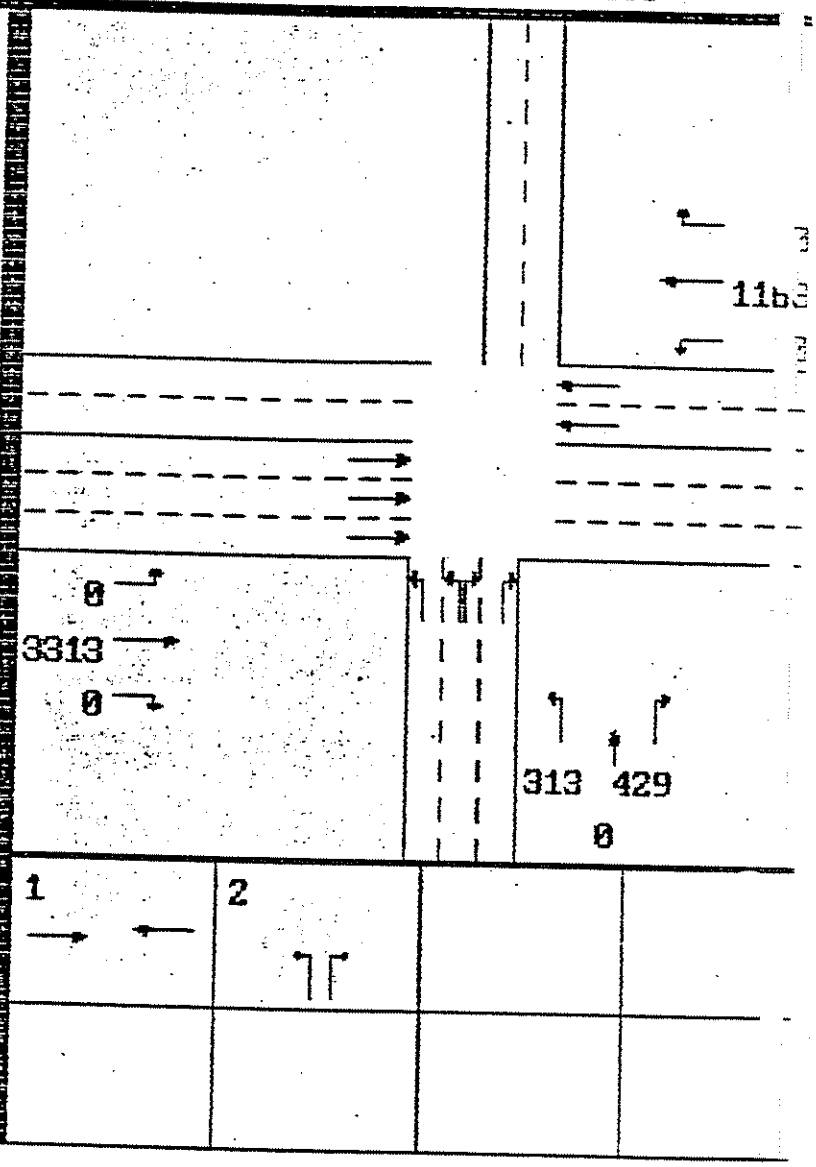
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	T	1.08	.70	T	.76	39.6	D	EB	39.6	
WB	T	.54	.70	T	.38	3.9	A	WB	3.9	
NB	L	.60	.25	L	.15	29.7	D	NB	29.7	
	LR	.74	.25	LR	.18	28.8	D			
	R	.77	.25	R	.19	30.4	D			

INTERSECT: DELAY = 30.5 SEC/VEH Xc = 1.00 LOS = D Sum(v/s)CR =

HCM Summary Results for Case: HN8P2 H Street /NB I-805 Ram
PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.76	1.08	39.6	D
	All			39.6	D
WB	T	.38	.54	3.9	A
	All			3.9	A
NB	L	.15	.60	29.7	D
	LR	.18	.74	28.8	D
	*R	.19	.77	30.4	D
	All			29.7	D
Intersect:		.95	1.00	30.5	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HHIA2
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INTERSECTION: H STREET /HIDDEN VISTA TIME: AM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	26	1994	105	0	50	6	4
WB	53	2629	15	0	50	5	4
NB	193	1	23	0	50	3	1
SB	37	17	175	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12	T	12	R 12
WB	L	12	T	12	T	12	T	12	TR	12	
NB	L	12	LTR	12	R	12					
SB	L	12	LTR	12	R	12					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	35.5	3
SB	0	2	N	0	0	.90	Y	35.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR	R						
WB	L	TR							
NB			LTR						
SB				LTR					
GREEN	8	57	19	10	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

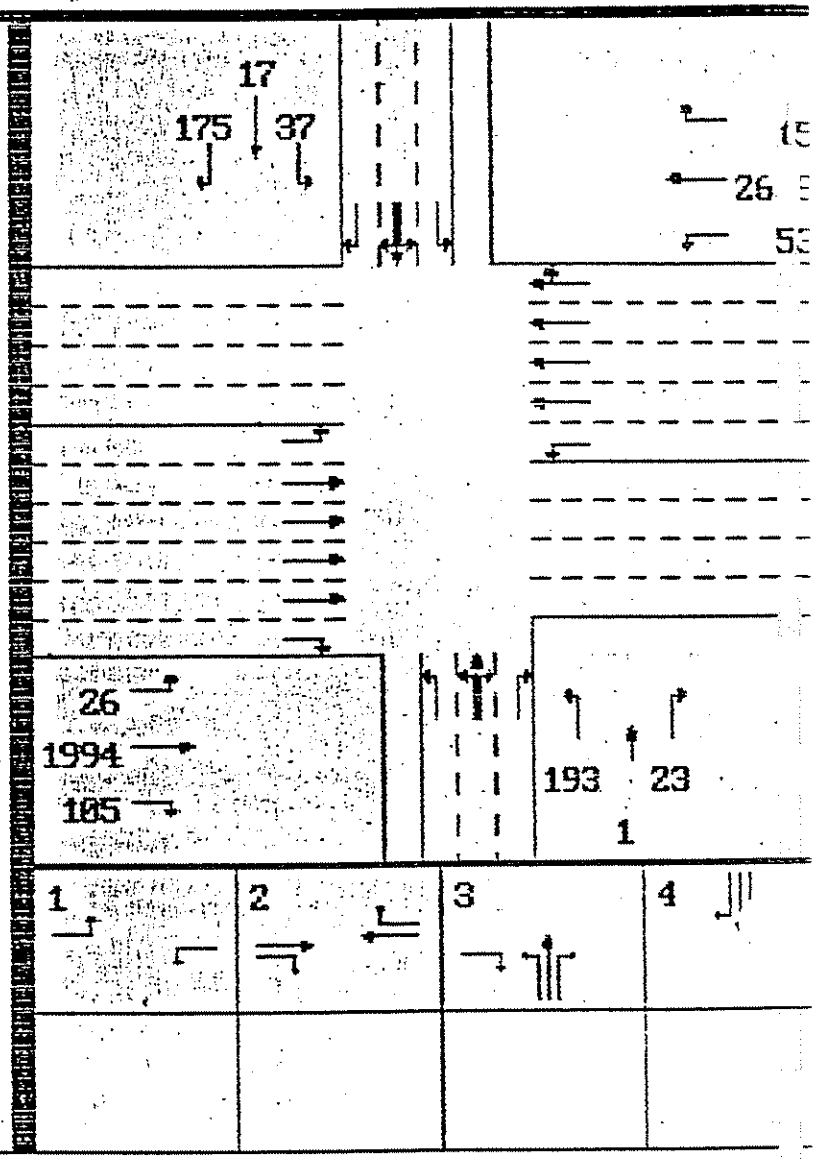
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.21	.08	L	.02	36.0	D	EB	10.2	B
	T	.65	.53	T	.34	10.3	B			
	R	.11	.71	R	.08	2.4	A			
WB	L	.42	.08	L	.03	37.8	D	WB	15.0	C
	TR	.86	.53	TR	.45	14.6	B			
NB	L	.35	.18	L	.06	30.2	D	NB	27.5	D
	LTR	.35	.18	LTR	.06	25.6	D			
	R	.09	.18	R	.02	24.2	C			
SB	L	.24	.10	L	.02	34.9	D	SB	37.5	D
	LTR	.68	.10	LTR	.07	37.3	D			
	R	.70	.10	R	.07	38.7	D			

INTERSECT DELAY = 14.4 SEC/VEH Xc = .70 LOS = B Sum(v/s)CR = .5

HCM Summary Results for Case: HHIA2 H STREET /HIDDEN VISTA

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.02	.21	36.0	D
	T	.34	.65	10.3	B
	R	.08	.11	2.4	A
	All			10.2	B
WB	*L	.03	.42	37.8	D
	*TR	.45	.86	14.6	B
	All			15.0	C
NB	*L	.06	.35	30.2	D
	LTR	.06	.35	25.6	D
	R	.02	.09	24.2	C
	All			27.5	D
SB	L	.02	.24	34.9	D
	LTR	.07	.68	37.3	D
	*R	.07	.70	38.7	D
	All			37.5	D
Intersect:		.62	.70	14.4	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: HHIP2 SUMMARY REPORT

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INTERSECTION: H STREET /HIDDEN VISTA TIME: PM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	132	3186	291	0	50	6	4
WB	77	1565	22	0	50	5	4
NB	629	37	179	0	50	3	1
SB	26	34	101	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12	T	12	R	12
WB	L	12	T	12	T	12	T	12	TR	12		
NB	L	12	LTR	12	R	12						
SB	L	12	LTR	12	R	12						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	35.5	3
SB	0	2	N	0	0	.90	Y	35.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR	R						
WB	L	TR							
NB			LTR						
SB				LTR					
GREEN	9	56	21	8	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

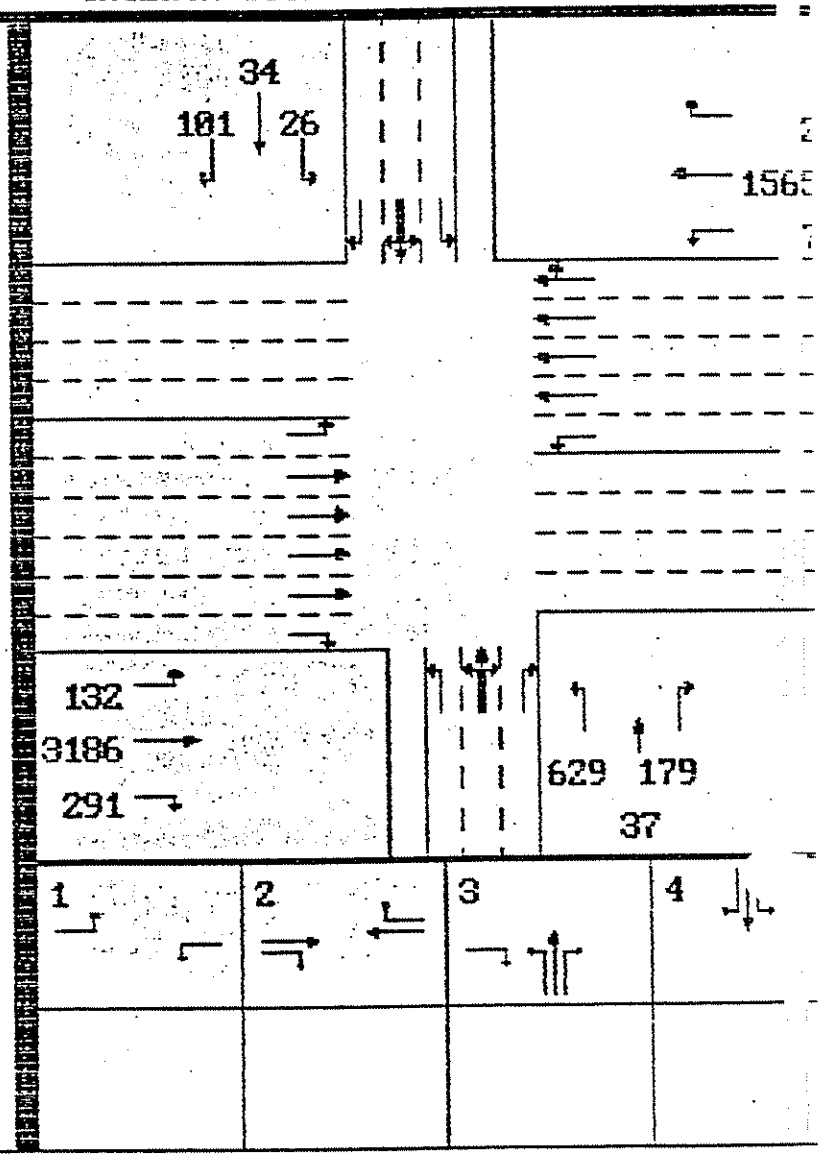
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.95	.09	L	.09	80.8	F	EB	35.8	D
	T	1.05	.52	T	.55	36.8	D			
	R	.30	.72	R	.21	2.6	A			
WB	L	.56	.09	L	.05	39.7	D	WB	9.7	B
	TR	.53	.52	TR	.27	8.3	B			
NB	L	1.09	.20	L	.22	102.7	F	NB	77.9	F
	LTR	1.07	.20	LTR	.21	79.3	F			
	R	.66	.20	R	.13	29.2	D			
SB	L	.21	.08	L	.02	36.0	D	SB	35.5	D
	LTR	.56	.08	LTR	.05	34.5	D			
	R	.60	.08	R	.05	36.3	D			

HCM Summary Results for Case: HHIP2 H STREET /HIDDEN VISTA

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.09	.95	80.8	F
	*T	.55	1.05	36.8	D
	R	.21	.30	2.6	A
	All			35.8	D
WB	L	.05	.56	39.7	D
	TR	.27	.53	8.3	B
	All			9.7	B
NB	*L	.22	1.09	102.7	F
	LTR	.21	1.07	79.3	F
	R	.13	.66	29.2	D
	All			77.9	F
SB	L	.02	.21	36.0	D
	LTR	.05	.56	34.5	D
	*R	.05	.68	36.3	D
	All			35.5	D
Intersect:		.90	1.01	34.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: HPLA2 SUMMARY REPORT

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INTERSECTION: H STREET /PASEO DEL RY TIME: AM PEAK
ANALYST: JHK & ASSOCIATES DATE: SPRING92
COMMENT: WITH PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	234	1544	293	0	50	6	3
WB	185	1762	72	0	50	5	3
NB	288	65	222	0	50	3	2
SB	80	40	80	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	TR	12		
NB	L	12	LT	12	R	12						
SB	L	12	LT	12	R	12						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	29.5	3
SB	0	2	N	0	0	.90	Y	29.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R					
WB		TR	LTR						
NB			R	LTR					
SB	R				LTR				
GREEN	15	28	19	18	10	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

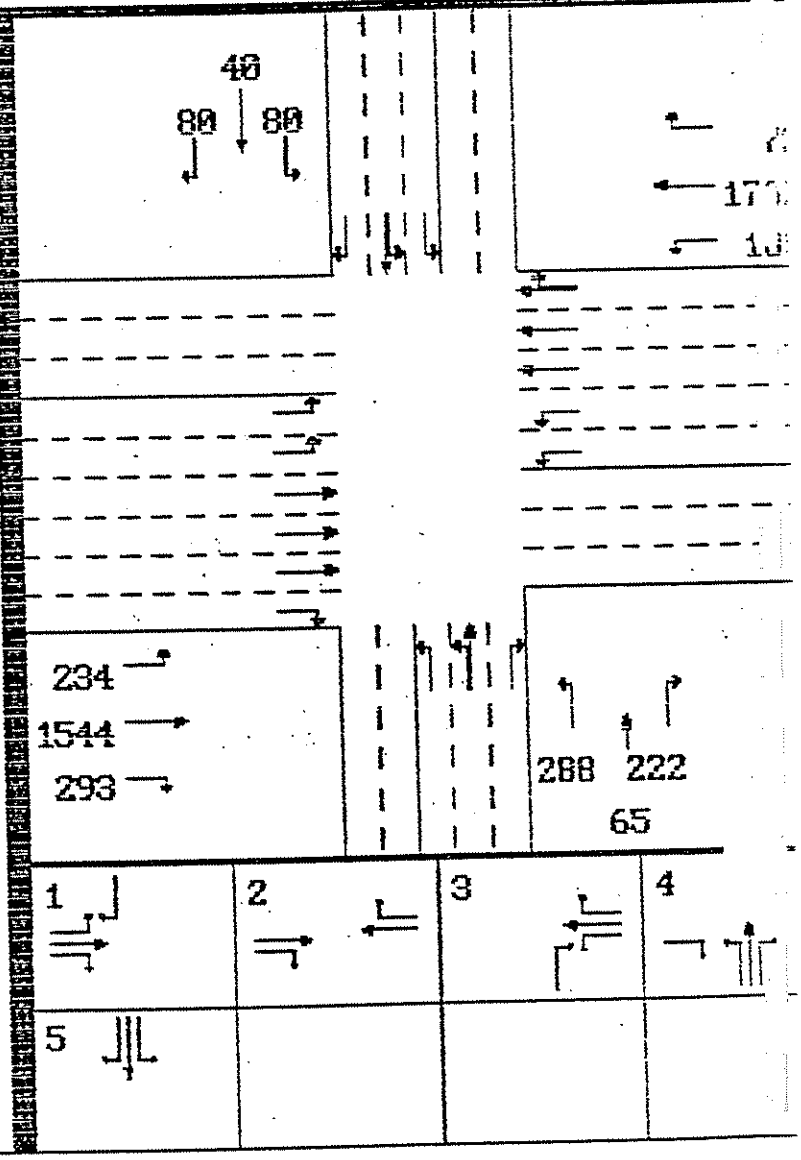
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.57	.15	L	.08	34.5	D	EB	17.6	C
	T	.81	.44	T	.35	17.3	C			
	R	.35	.61	R	.22	5.1	B			
WB	L	.36	.18	L	.07	30.1	D	WB	19.3	C
	TR	.89	.47	TR	.42	18.2	C			
NB	L	.66	.17	L	.11	35.9	D	NB	27.5	D
	LT	.67	.17	LT	.12	30.9	D			
	R	.46	.35	R	.16	18.1	C			
SB	L	.38	.10	L	.04	36.0	D	SB	28.5	D
	LT	.37	.10	LT	.04	30.6	D			
	R	.24	.25	R	.06	21.5	C			

HCM Summary Results for Case: HPLA2 H STREET /PASEO DEL R

AM PEAK WITH PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.08	.57	34.5	D
	T	.35	.81	17.3	C
	R	.22	.35	5.1	B
	All			17.6	C
WB	L	.07	.36	30.1	D
	*TR	.42	.89	18.2	C
	All			19.3	C
NB	L	.11	.66	35.9	D
	LT	.12	.67	30.9	D
	*R	.16	.46	18.1	C
	All			27.5	D
SB	L	.04	.38	36.0	D
	LT	.04	.39	30.6	D
	*R	.06	.24	21.5	C
	All			28.5	D
Intersect:		.73	.82	19.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HPLP2

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INTERSECTION: H STREET /PASED DEL RY TIME: PM PEAK
ANALYST: JHK & ASSOCIATES DATE: SPRING92
COMMENT: WITH PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	220	2226	468	0	50	6	3
WB	220	1232	139	0	50	5	3
NB	219	124	262	0	50	3	2
SB	180	60	380	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R 12
WB	L	12	L	12	T	12	T	12	TR	12	
NB	L	12	LT	12	R	12					
SB	L	12	LT	12	R	12					

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	29.5	3
SB	0	2	N	0	0	.90	Y	29.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R					
WB		TR	LTR						
NB			R	LTR					
SB	R				LTR				
GREEN	23	27	8	19	14	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

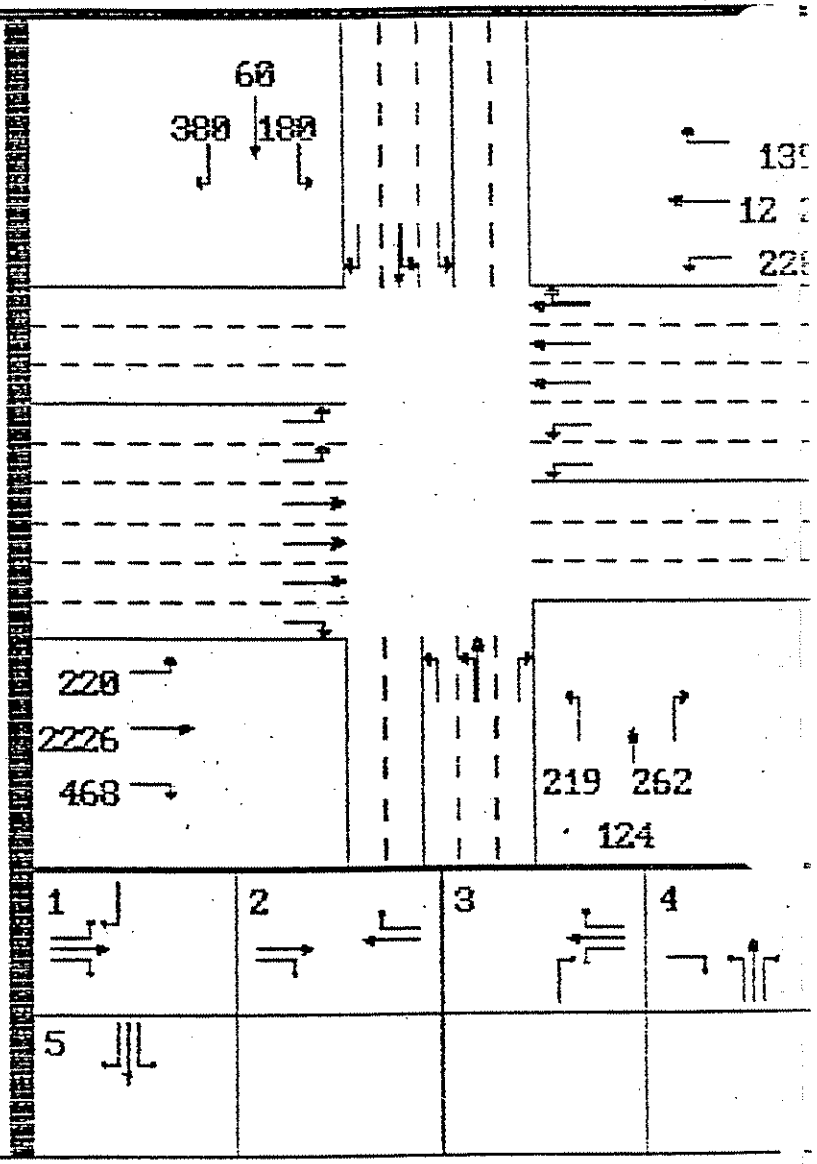
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.36	.22	L	.08	27.9	D	EB	26.0	D
	T	1.02	.50	T	.51	29.9	D			
	R	.51	.67	R	.34	4.5	A			
WB	L	.96	.08	L	.08	69.5	F	WB	28.4	D
	TR	.87	.36	TR	.32	22.1	C			
NB	L	.64	.17	L	.11	35.4	D	NB	31.2	D
	LT	.64	.17	LT	.11	30.0	D			
	R	.75	.25	R	.19	29.2	D			
SB	L	.56	.14	L	.08	36.1	D	SB	28.3	D
	LT	.58	.14	LT	.08	30.9	D			
	R	.79	.35	R	.28	25.0	C			

HCM Summary Results for Case: HPLP2 H STREET /PASEO DEL RY

PM PEAK WITH PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.08	.36	27.9	D
	*T	.51	1.02	29.9	D
	R	.34	.51	4.5	A
	All			26.8	D
WB	*L	.08	.96	69.5	F
	TR	.32	.87	22.1	C
	All			28.4	D
NB	L	.11	.64	35.4	D
	LT	.11	.64	30.8	D
	*R	.19	.75	29.2	D
	All			31.2	D
SB	L	.08	.56	36.1	D
	LT	.08	.58	30.9	D
	*R	.28	.79	25.8	C
	All			28.3	D
Intersect:		1.06	1.19	27.4	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: HPRA2 SUMMARY REPORT

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INTERSECTION: H STREET /PASED RANCHE TIME: AM PEAK

ANALYST: KK DATE: 02-14-92

COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	40	1868	50	0	50	5	3
WB	28	1338	24	0	50	5	3
NB	128	52	82	0	50	2	1
SB	86	18	170	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	TR	12
NB	L	12	TR	12						
SB	L	12	T	12	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	22.8	4
WB	0	2	N	0	0	.90	Y	22.8	4
NB	0	2	N	0	0	.90	Y	37.8	3
SB	0	2	N	0	0	.90	Y	37.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	L	TR P							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	15	57	26	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

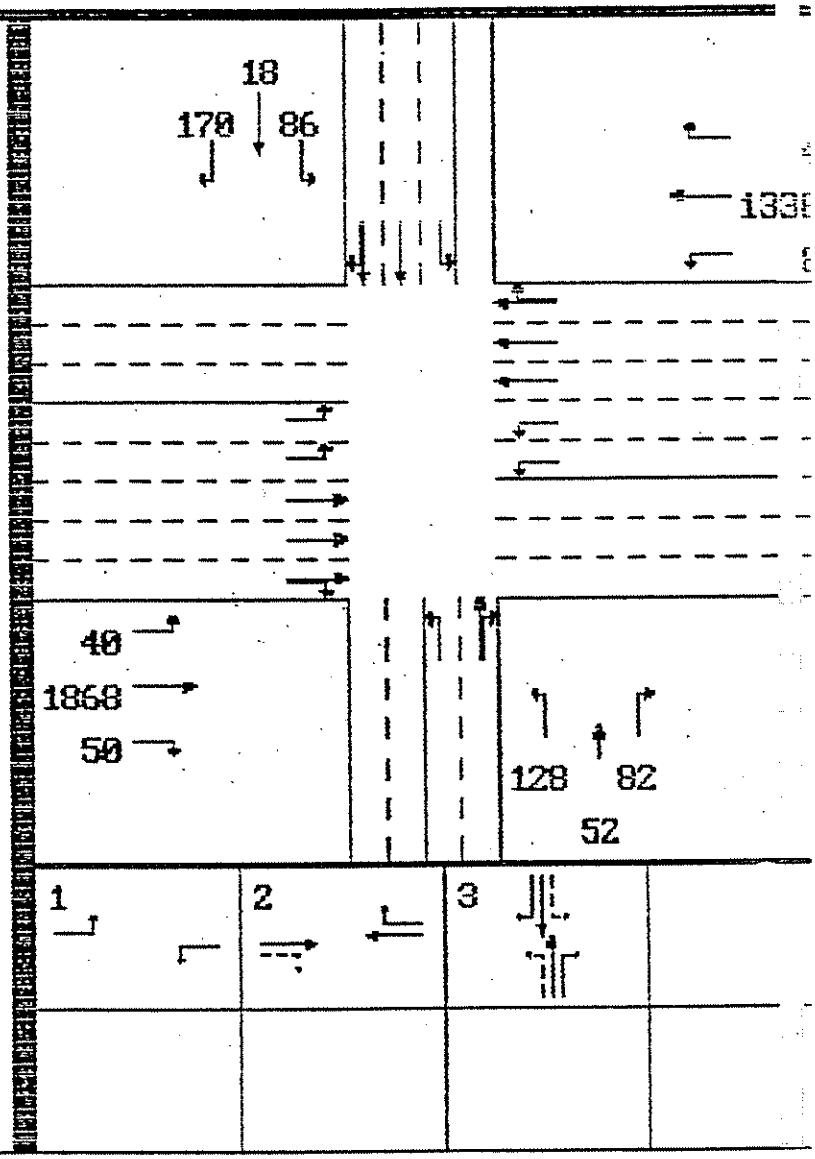
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.10	.15	L	.01	31.0	D	EB	14.7	B
	TR	.84	.53	TR	.44	14.3	B			
WB	L	.07	.15	L	.01	30.8	D	WB	9.0	B
	TR	.59	.53	TR	.31	8.6	B			
NB	L	.47	.25	L	.12	27.9	D	NB	25.1	D
	TR	.38	.25	TR	.09	22.5	C			
SB	L	.34	.25	L	.08	26.2	D	SB	23.2	C
	TR	.29	.25	TR	.07	21.8	C			

HCM Summary Results for Case: HPRA2 H STREET /PASEO RANCHE

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.01	.10	31.0	D
	*TR	.44	.84	14.3	B
	All			14.7	B
WB	L	.01	.07	38.8	D
	TR	.31	.59	8.6	B
	All			9.0	B
NB	*L	.12	.47	27.9	D
	TR	.09	.38	22.5	C
	All			25.1	D
SB	L	.08	.34	26.2	D
	TR	.07	.29	21.8	C
	All			23.2	C
Intersect:		.57	.62	13.8	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HPRP2

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INTERSECTION: H STREET /PASEO RANCHE TIME: PM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	185	2174	300	0	50	5	3
WB	81	1103	140	0	50	5	3
NB	91	100	40	0	50	2	1
SB	94	100	170	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	TR	12
NB	L	12	TR	12						
SB	L	12	T	12	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	22.8	4
WB	0	2	N	0	0	.90	Y	22.8	4
NB	0	2	N	0	0	.90	Y	37.8	3
SB	0	2	N	0	0	.90	Y	37.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR P							
WB	L	TR							
NB			LTR						
SB			LTR						
GREEN	15	62	21	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

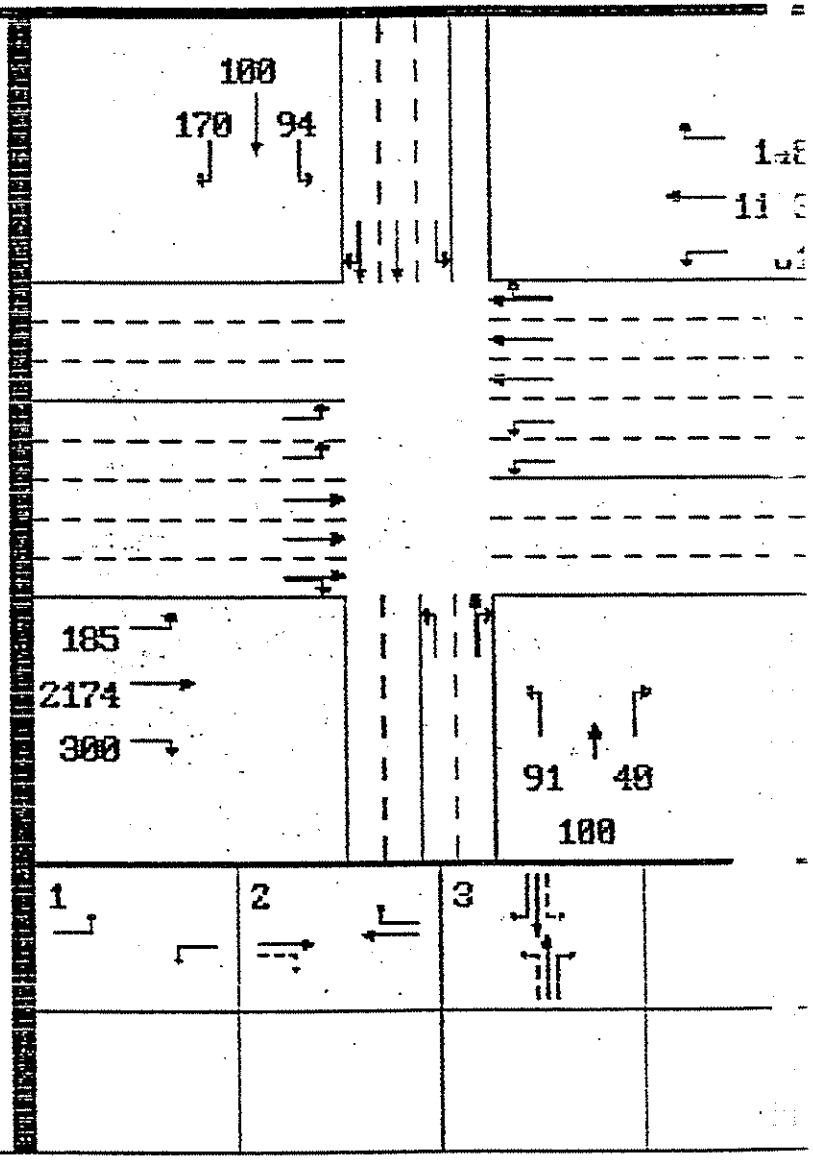
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.45	.15	L	.07	33.2	D	EB	25.8	D
	TR	1.01	.57	TR	.58	25.3	D			
WB	L	.20	.15	L	.03	31.5	D	WB	8.2	B
	TR	.50	.57	TR	.29	6.7	B			
NB	L	.50	.20	L	.10	31.3	D	NB	27.8	D
	TR	.45	.20	TR	.09	25.6	D			
SB	L	.48	.20	L	.10	30.9	D	SB	26.9	D
	TR	.49	.20	TR	.10	25.6	D			

INTERSECT: DELAY = 20.8 SEC/VEH Xc = .81 LOS = C Sum(v/s)CR = .74

HCM Summary Results for Case: HPRP2 H STREET /PASEO RANCHL

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.07	.45	33.2	D
	*TR	.58	1.01	25.3	D
	All			25.8	D
WB	L	.03	.20	31.5	D
	TR	.29	.50	6.7	B
	All			8.2	B
NB	*L	.10	.50	31.3	D
	TR	.09	.45	25.6	D
	All			27.8	D
SB	L	.10	.48	30.9	D
	TR	.10	.49	25.6	D
	All			26.9	D
Intersect:		.74	.81	20.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: EHOTA2 SUMMARY REPORT

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INTERSECTION: OTAY LAKES /EAST H ST TIME: A.M. PEAK
ANALYST: JHK & ASSOCIATES DATE: 1-7-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	215	280	218	0	50	6	3
WB	86	623	135	0	50	5	3
NB	392	636	877	0	50	6	3
SB	162	543	322	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	TR	12		
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	29.5	4
SB	0	2	N	0	0	.90	Y	29.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	L	TR	R						
	WB	L	TR	R						
	NB	R		L	TR					
	SB	R		L	TR					
GREEN		9	19	13	53	0	0	0	0	0
YELLOW		3	3	3	3	0	0	0	0	
RED		1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

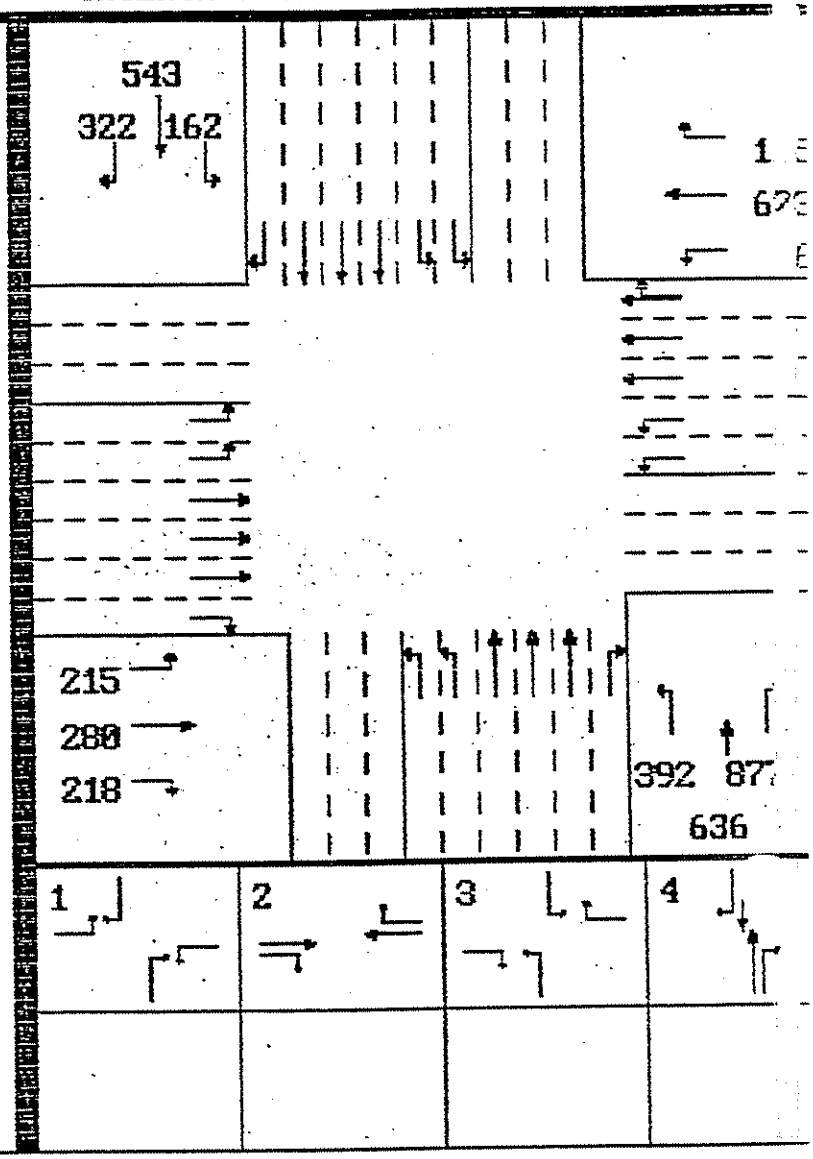
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.84	.09	L	.08	50.5	E	EB	27.2	D
	T	.35	.18	T	.06	18.6	C			
	R	.52	.31	R	.16	15.2	C			
WB	L	.34	.09	L	.03	35.9	D	WB	40.2	E
	TR	.98	.18	TR	.18	40.7	E			
NB	L	1.10	.13	L	.14	104.5	F	NB	51.0	E
	T	.30	.49	T	.15	7.9	B			
	R	1.11	.58	R	.64	60.2	F			
SB	L	.45	.13	L	.06	34.3	D	SB	11.4	B
	T	.25	.49	T	.12	7.7	B			
	R	.41	.58	R	.24	6.0	B			

INTERSECT: DELAY = 36.0 SEC/VEH Xc = 1.16 LOS = D Sum(v/s)CR = 1.04

HCM Summary Results for Case: EHOTA2 OTAY LAKES /EAST H ST

A.M. PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.08	.84	50.5	E
	T	.06	.35	18.6	C
	R	.16	.52	15.2	C
	All			27.2	D
WB	L	.03	.34	35.9	D
	*TR	.18	.98	40.7	E
	All			40.2	E
NB	*L	.14	1.10	104.5	F
	T	.15	.30	7.9	B
	*R	.64	1.11	60.2	F
	All			51.0	E
SB	L	.06	.45	34.3	D
	T	.12	.25	7.7	B
	R	.24	.41	6.0	B
	All			11.4	B
Intersect:		1.04	1.16	36.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: EHOTP2

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INTERSECTION: OTAY LAKES /EAST H ST TIME: PM PK
ANALYST: JHK & ASSOCIATES DATE: 1-7-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	191	402	190	0	50	6	3
WB	41	361	100	0	50	5	3
NB	418	1287	688	0	50	6	3
SB	309	538	306	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	TR	12		
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	29.5	4
SB	0	2	N	0	0	.90	Y	29.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
EB	L		TR	R						
WB	L		TR	R						
NB	R			L	TR					
SB	R			L	TR					
GREEN		7	19	15	53	0	0	0	0	0
YELLOW		3	3	3	3	0	0	0	0	
RED		1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.94	.07	L	.07	68.3	F
	T	.51	.18	T	.09	19.3	C
	R	.43	.33	R	.14	13.9	B
WB	L	.20	.07	L	.01	36.5	D
	TR	.60	.18	TR	.11	20.0	C
NB	L	1.02	.15	L	.15	73.1	F
	T	.60	.49	T	.29	9.7	B
	R	.89	.56	R	.50	19.2	C
SB	L	.75	.15	L	.11	38.9	D
	T	.25	.49	T	.12	7.7	B
	R	.40	.56	R	.22	6.5	B

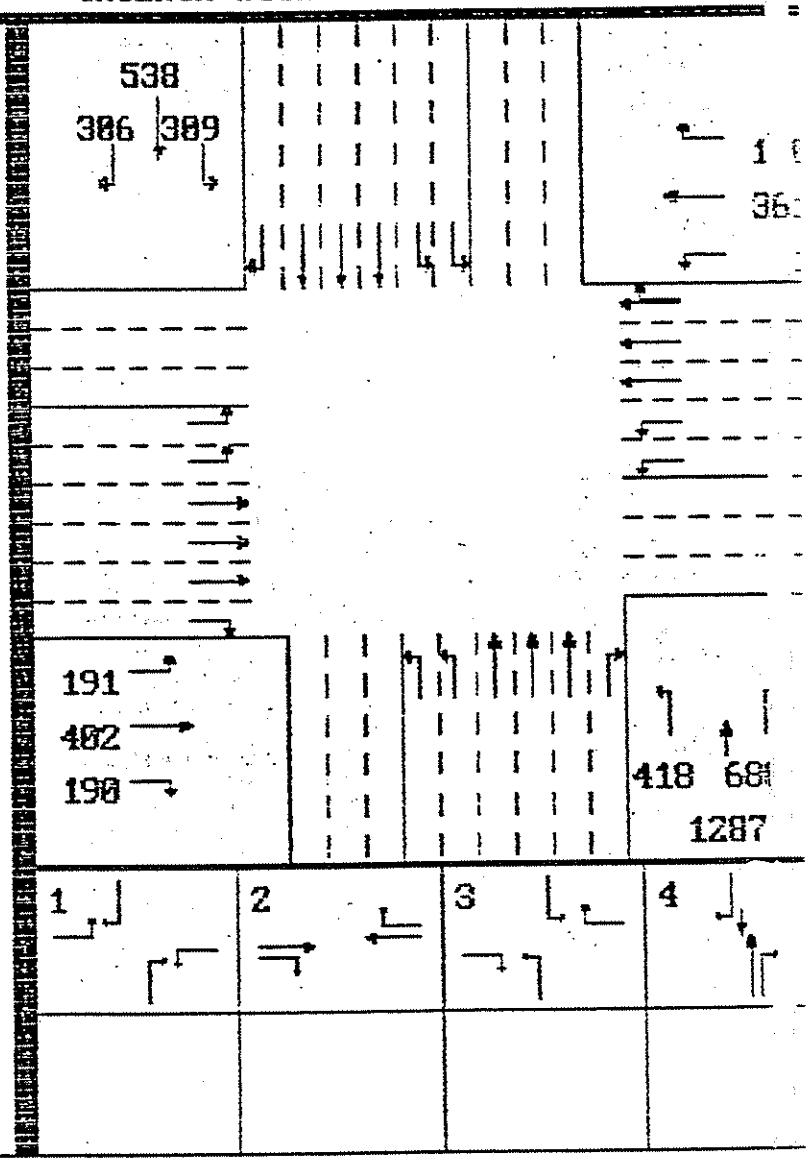
APPROACH:	DELAY	LOS
EB	29.9	D
WB	21.3	C
NB	23.2	C
SB	15.7	C

INTERSECT: DELAY = 22.3 SEC/VEH Xc = .97 LOS = C Sum(v/s)CP = .8

HCM Summary Results for Case: EHOTP2 OTAY LAKES /EAST H ST

PM PK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.07	.94	68.3	F
	T	.09	.51	19.3	C
	*R	.14	.43	13.9	B
	All			29.9	D
WB	L	.01	.20	36.5	D
	TR	.11	.60	20.0	C
	All			21.3	C
NB	*L	.15	1.02	73.1	F
	T	.29	.60	9.7	B
	*R	.50	.89	19.2	C
	All			23.2	C
SB	L	.11	.75	38.9	D
	T	.12	.25	7.7	B
	R	.22	.40	6.5	B
	All			15.7	C
Intersect:		.86	.97	22.3	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HRUA2

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INTERSECTION: H STREET /RUTGERS TIME: AM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	142	787	378	0	50	3	2
WB	12	313	25	0	50	3	2
NB	127	77	23	0	50	3	2
SB	81	84	412	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12
WB	L	12	T	12	TR	12
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: PRETIMED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR						
NB				LTR					
SB				LTR					
GREEN	4	20	33	37	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

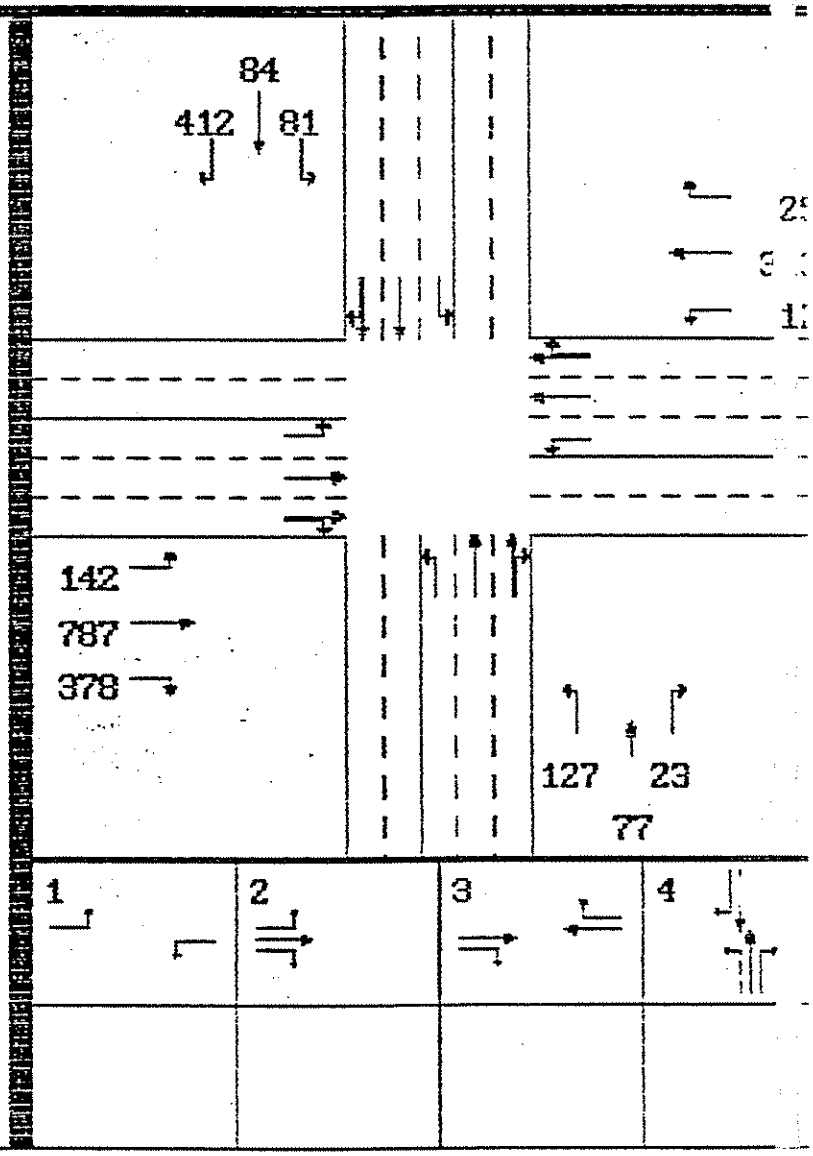
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.35	.26	L	.09	25.2	D	EB	15.1	C
	TR	.76	.53	TR	.40	13.9	B			
WB	L	.17	.05	L	.01	38.5	D	WB	17.0	C
	TR	.36	.31	TR	.11	16.2	C			
NB	L	.55	.35	L	.19	24.0	C	NB	21.5	C
	TR	.10	.35	TR	.03	18.5	C			
SB	L	.19	.35	L	.06	19.2	C	SB	22.0	C
	TR	.54	.35	TR	.19	22.4	C			

INTERSECT: DELAY = 17.6 SEC/VEH Xc = .65 LOS = C Sum(v/s)CR = .60

HCM Summary Results for Case: HRUA2 H STREET /RUTGERS

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.09	.35	25.2	D
	*TR	.48	.76	13.9	B
	All			15.1	C
WB	*L	.01	.17	38.5	D
	TR	.11	.36	16.2	C
	All			17.8	C
NB	*L	.19	.55	24.8	C
	TR	.03	.18	18.5	C
	All			21.5	C
SB	L	.06	.19	19.2	C
	TR	.19	.54	22.4	C
	All			22.8	C
Intersect:		.60	.65	17.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HRUP2

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INTERSECTION: H STREET /RUTGERS TIME: PM PEAK
DATE: 02-14-92
ANALYST: KK AREA TYPE: NON-CBD
COMMENT: INTERIM WITH PROPOSED PROJECT

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	410	653	284	0	50	3	2
WB	18	304	47	0	50	3	2
NB	58	90	35	0	50	3	2
SB	70	69	170	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12
WB	L	12	T	12	TR	12
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: PRETIMED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR						
NB				LTR					
SB				LTR					
GREEN	4	30	33	27	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

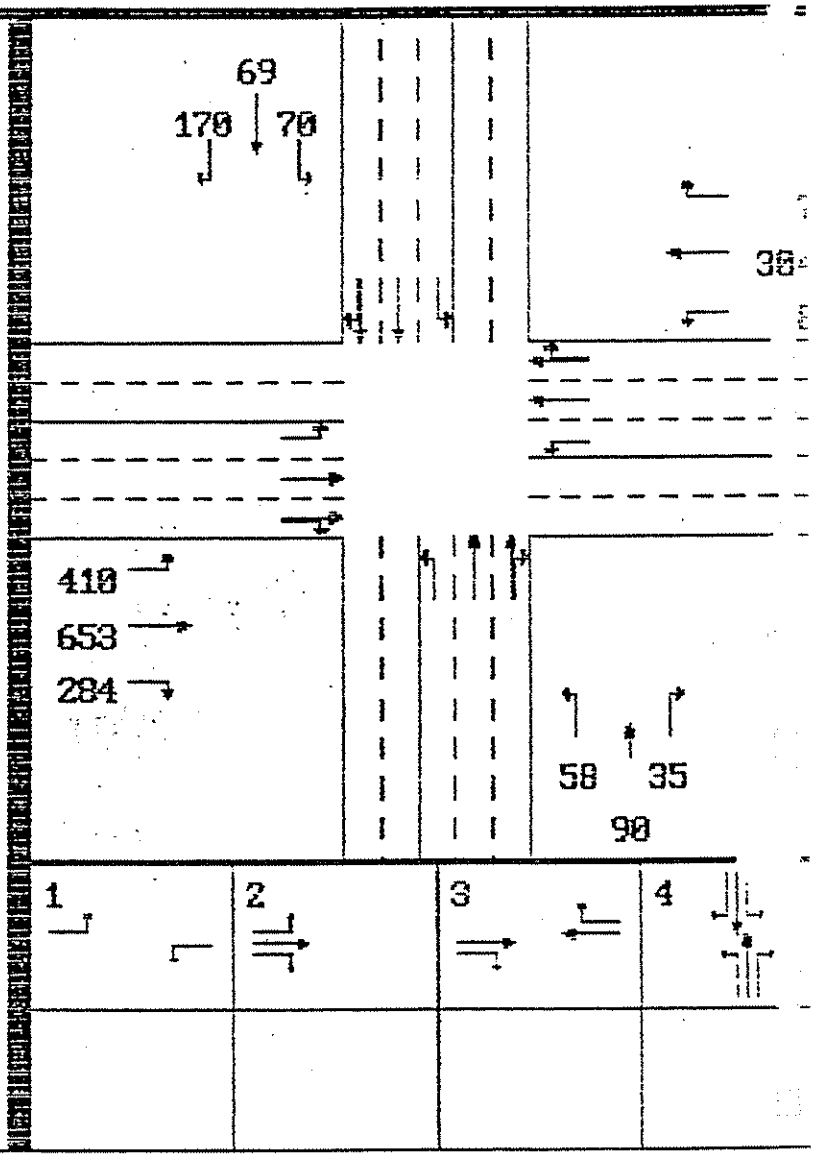
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.76	.35	L	.27	27.7	D	EB	12.8	B
	TR	.52	.62	TR	.32	6.6	B			
WB	L	.26	.05	L	.01	39.0	D	WB	17.4	C
	TR	.38	.31	TR	.12	16.4	C			
NB	L	.23	.25	L	.06	24.7	C	NB	24.4	C
	TR	.17	.25	TR	.04	24.3	C			
SB	L	.23	.25	L	.06	24.7	C	SB	25.4	D
	TR	.34	.25	TR	.09	25.6	D			

INTERSECT: DELAY = 16.3 SEC/VEH Xc = .52 LOS = C Sum(v/s)CR = .47

HCM Summary Results for Case: HRUP2 H STREET /RUTGERS

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.27	.76	27.7	D
	TR	.32	.52	6.6	B
	All			12.8	B
WB	L	.01	.26	39.8	D
	*TR	.12	.38	16.4	C
	All			17.4	C
NB	L	.06	.23	24.7	C
	TR	.04	.17	24.3	C
	All			24.4	C
SB	L	.06	.23	24.7	C
	*TR	.09	.34	25.6	D
	All			25.4	D
Intersect:		.47	.52	16.3	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: HELA2

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INTERSECTION: "H" STREET /EASTLAKE PW TIME: AM PEAK
DATE: 1/9/92
ANALYST: JHK AREA TYPE: NON-CBD
COMMENT: INTERIM WITH PROPOSED PROJECT

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	52	158	680	0	50	3	2
WB	12	67	8	0	50	3	2
NB	212	155	7	0	50	3	2
SB	12	450	68	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12
WB	L	12	T	12	TR	12
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	PED. BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	17.5	3
SB	0	2	N	0	0	.90	Y	17.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	7	13	26	7	11	22	0	0	0
YELLOW	3	3	3	3	3	3	0	0	
RED	1	1	1	1	1	1	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

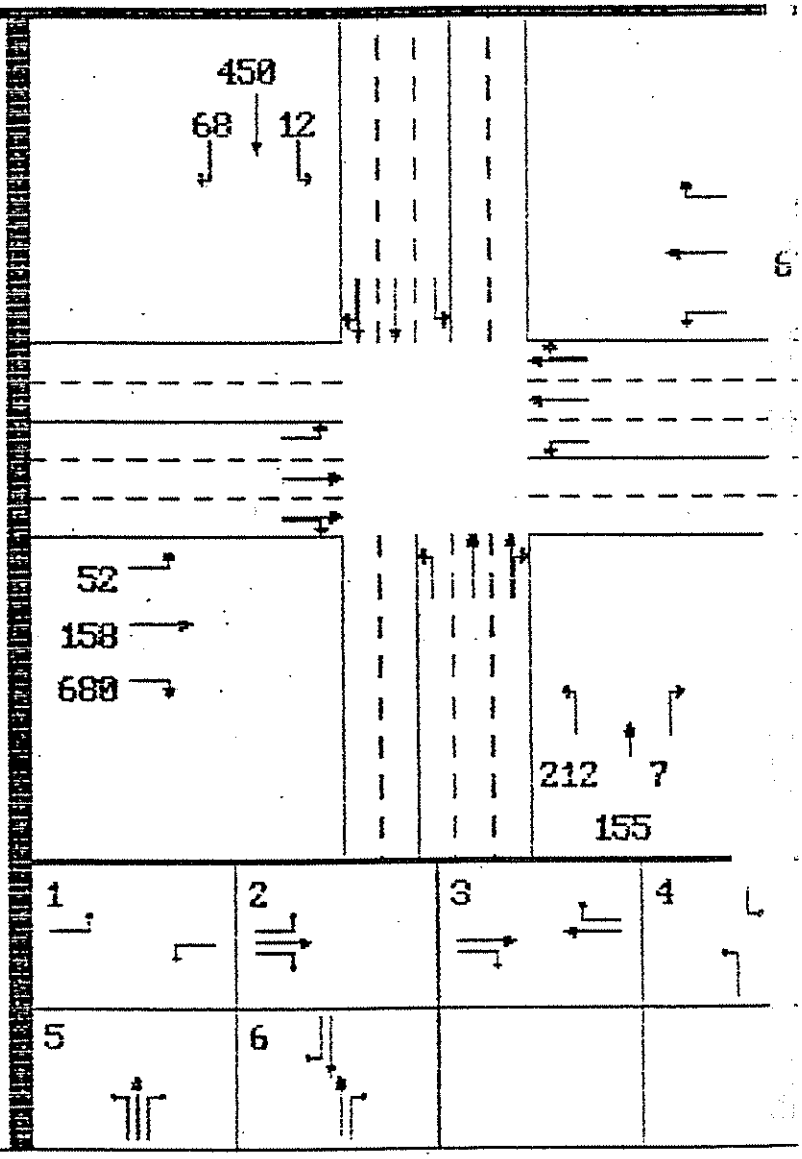
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.15	.23	L	.03	25.9	D	EB	17.7	C
	TR	.78	.40	TR	.31	17.2	C			
WB	L	.11	.07	L	.01	36.2	D	WB	17.9	C
	TR	.10	.25	TR	.02	15.1	C			
NB	L	.67	.21	L	.14	33.6	D	NB	25.8	D
	TR	.15	.35	TR	.05	16.1	C			
SB	L	.11	.07	L	.01	36.2	D	SB	31.7	D
	TR	.83	.21	TR	.17	31.6	D			

INTERSECT DELAY = 23.2 SEC/VEH Xc = .71 LOS = C Sum(v/s)CR = .03

HCM Summary Results for Case: HELA2 "H" STREET /EASTLAKE PW

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.03	.15	25.9	D
	*TR	.31	.78	17.2	C
	All			17.7	C
WB	*L	.01	.11	36.2	D
	TR	.02	.10	15.1	C
	All			17.9	C
NB	*L	.14	.67	33.6	D
	TR	.05	.15	16.1	C
	All			25.8	D
SB	L	.01	.11	36.2	D
	*TR	.17	.83	31.6	D
	All			31.7	D
Intersect:		.63	.71	23.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: HELP2 SUMMARY REPORT

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INTERSECTION: "H" STREET /EASTLAKE PW TIME: PM PEAK
ANALYST: JHK DATE: 1/9/92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	99	106	511	0	50	3	2
WB	3	58	11	0	50	3	2
NB	256	470	23	0	50	3	2
SB	16	182	57	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	TR	12
WB	L	12	T	12	TR	12
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	17.5	3
SB	0	2	N	0	0	.90	Y	17.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	7	13	26	7	11	22	0	0	0
YELLOW	3	3	3	3	3	3	0	0	
RED	1	1	1	1	1	1	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

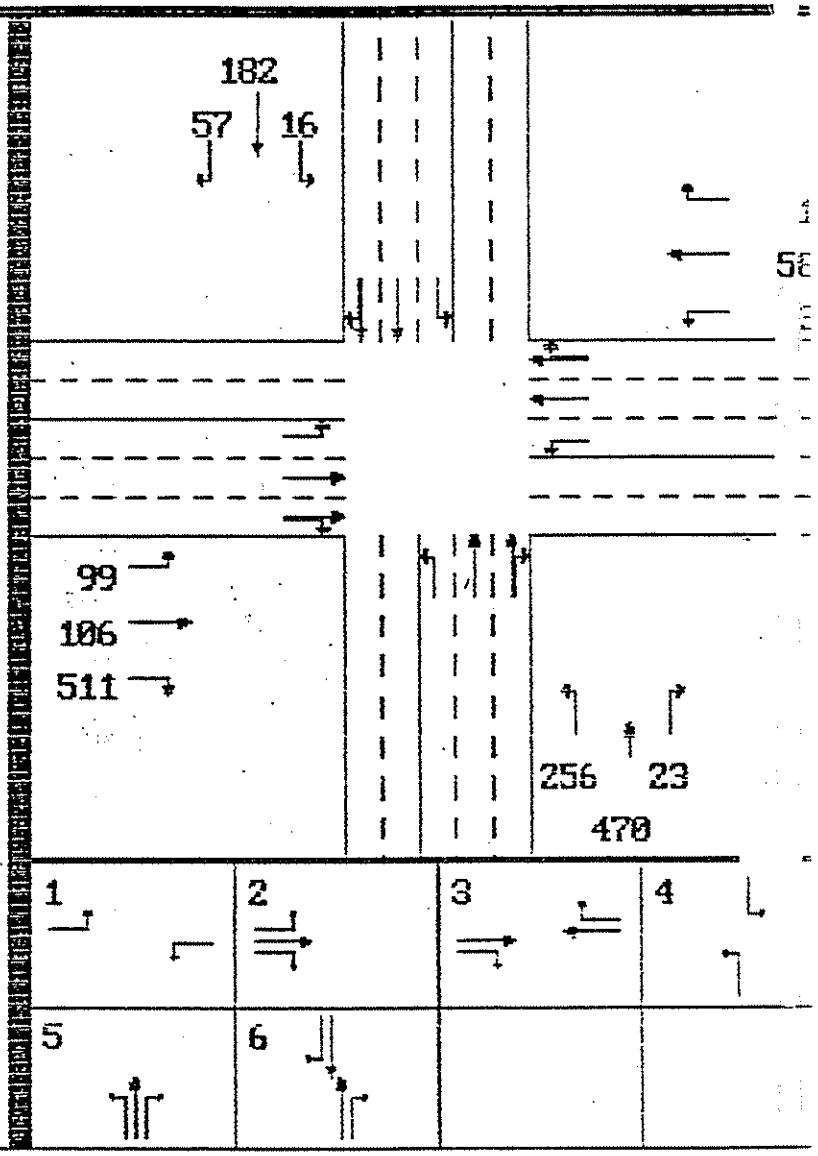
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.29	.23	L	.06	26.8	D	EB	14.3	B
	TR	.58	.40	TR	.23	12.4	B			
WB	L	.02	.07	L	.00	36.0	D	WB	15.9	C
	TR	.09	.25	TR	.02	15.1	C			
NB	L	.80	.21	L	.17	40.0	D	NB	25.5	D
	TR	.47	.35	TR	.16	18.4	C			
SB	L	.15	.07	L	.01	36.4	D	SB	25.1	D
	TR	.39	.21	TR	.08	24.3	C			

INTERSECT DELAY = 20.6 SEC/VEH Xc = .54 LOS = C Sum(v/s)CR = .48

HCM Summary Results for Case: HELP2 "H" STREET /EASTLAKE PW

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.06	.29	26.8	D
	*TR	.23	.58	12.4	B
	All			14.3	B
WB	*L	.00	.02	36.0	D
	TR	.02	.09	15.1	C
	All			15.9	C
NB	*L	.17	.80	40.0	D
	TR	.16	.47	18.4	C
	All			25.5	D
SB	L	.01	.15	36.4	D
	*TR	.00	.39	24.3	C
	All			25.1	D
Intersect:		.48	.54	20.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: TES8A2 SUMMARY REPORT

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INTERSECTION: TELEGRAPH /I-805 SB Ram TIME: A.M. Peak

ANALYST: JHK DATE: 12/27/91

COMMENT: INTERIM W/ PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1037	0	0	50	2	3
WB	462	536	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	0	0	670	0	50	2	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12				
WB	L	12	L	12	T	12	T	12
NB								
SB	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	8.5	4
WB	0	2	N	0	0	.90	Y	8.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		T	T						
WB	LT	T							
NB									
SB			R	R					
GREEN	26	24	19	25	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

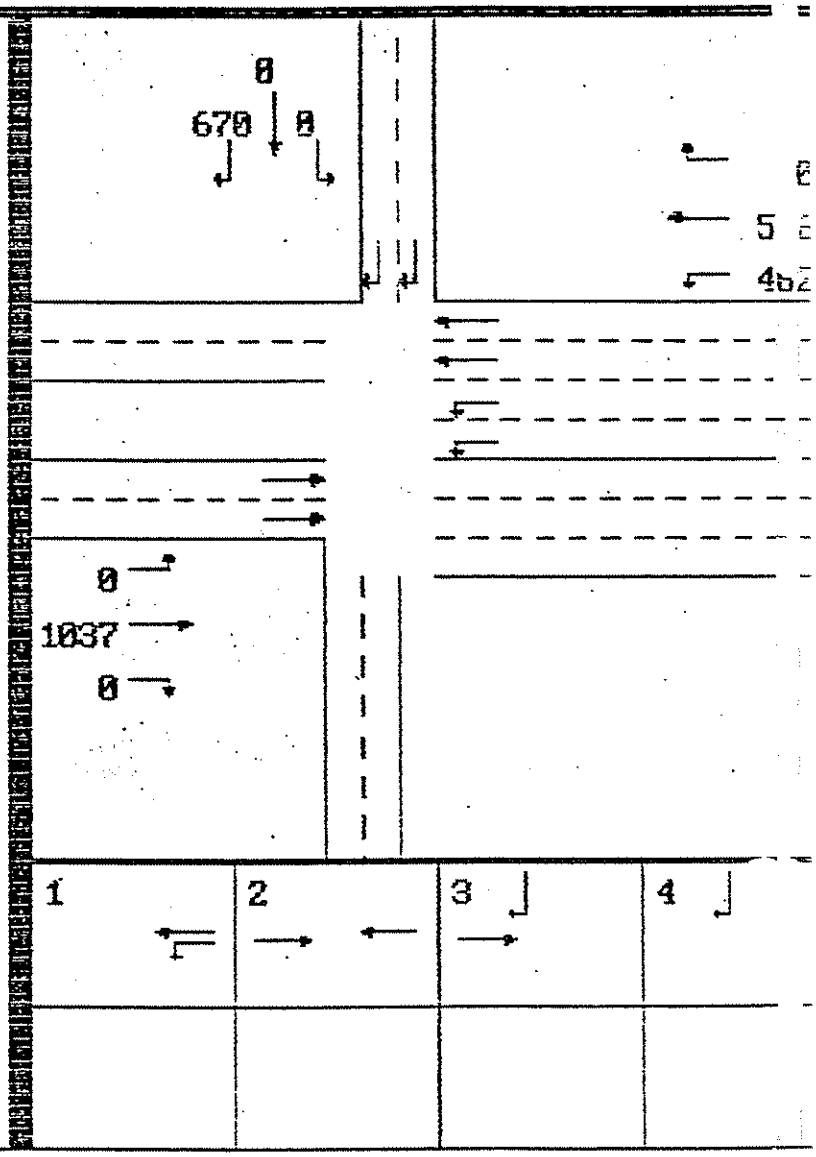
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.78	.44	T	.34	15.6	C	EB	15.6	C
WB	L	.67	.25	L	.16	30.0	D	WB	18.1	C
	T	.35	.50	T	.18	7.9	B			
SB	R	.70	.42	R	.29	18.1	C	SB	18.1	C

INTERSECT: DELAY = 17.1 SEC/VEH Xc = .87 LOS = C Sum(v/s)CR = .80

HCM Summary Results for Case: TES8A2 TELEGRAPH /I-805 SB Ram

A.M. Peak INTERIM W/ PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.34	.78	15.6	C
	All			15.6	C
WB	*L	.16	.67	38.8	D
	T	.18	.35	7.9	B
	All			18.1	C
SB	*R	.29	.78	18.1	C
	All			18.1	C
Intersect:		.88	.87	17.1	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TES8P2 SUMMARY REPORT

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INTERSECTION: TELEGRAPH /I-805 SB Ram TIME: P.M. Peak
ANALYST: JHK DATE: 12/27/91
COMMENT: INTERIM W/ PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1487	0	0	50	2	3
WB	485	644	0	0	50	4	2
NB	0	0	0	0	50	0	0
SB	0	0	812	0	50	2	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12				
WB	L	12	L	12	T	12	T	12
NB								
SB	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	8.5	4
WB	0	2	N	0	0	.90	Y	8.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		T	T						
WB	LT	T							
NB									
SB			R	R					
GREEN	20	21	29	24	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

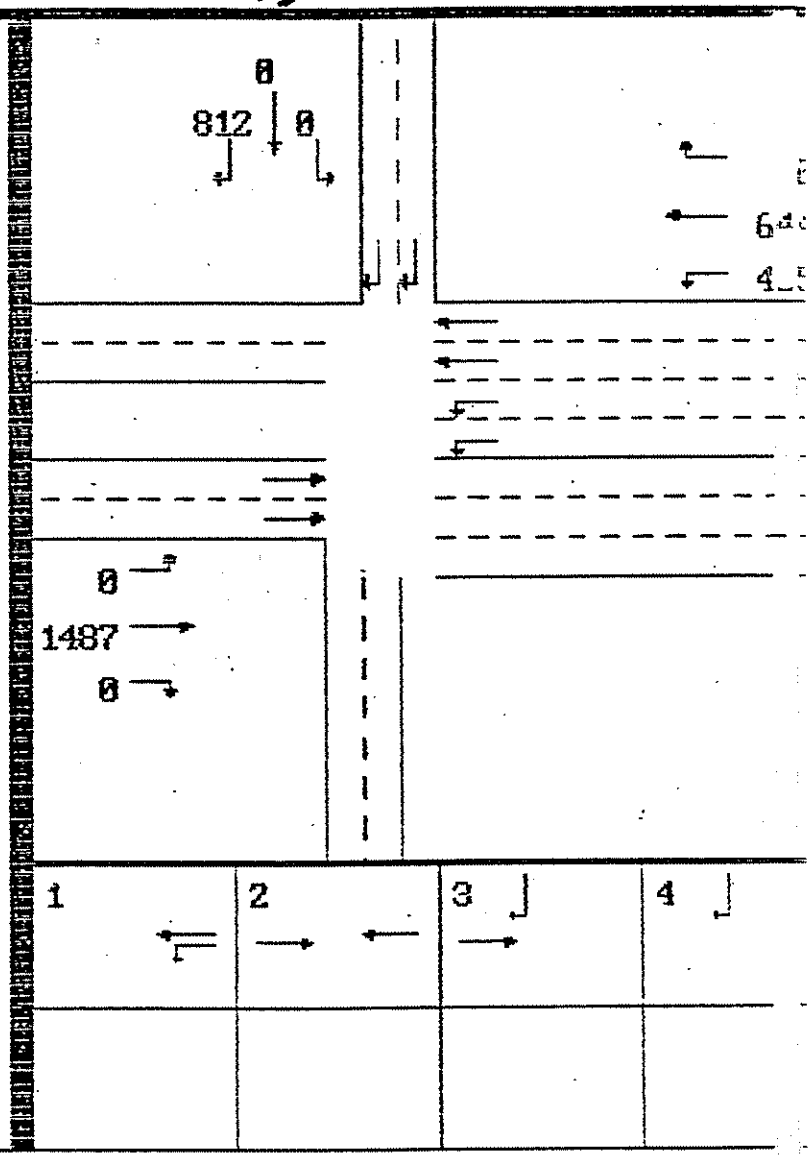
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.97	.50	T	.49	24.9	C	EB	24.9	C
WB	L	.90	.19	L	.17	44.9	E	WB	25.7	D
	T	.50	.42	T	.21	11.3	B			
SB	R	.71	.50	R	.35	14.8	B	SB	14.8	B

INTERSECT: DELAY = 22.8 SEC/VEH Xc = 1.10 LOS = C Sum(v/s)CR = 1.01

HCM Summary Results for Case: TES8P2 TELEGRAPH /I-805 SB Ram

P.M. Peak INTERIM W/~~O~~ PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.49	.97	24.9	C
	All			24.9	C
WB	*L	.17	.98	44.9	E
	T	.21	.50	11.3	B
	All			25.7	D
SB	*R	.35	.71	14.8	B
	All			14.8	B
Intersect:		1.01	1.10	22.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEN8A2 SUMMARY REPORT

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INTERSECTION: TELEGRAPH CA/NB I-805 RAM TIME: AM PEAK
ANALYST: KK DATE: 02-11-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	612	1085	0	0	50	4	2
WB	0	807	848	0	50	4	2
NB	189	0	618	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12	R	12
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	.0	4
WB	0	2	N	0	0	.90	Y	.0	4
NB	0	2	N	0	0	.90	Y	.0	3
SB	0	2	N	0	0	.90	Y	.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR P							
NB			LR P						
SB									
GREEN	27	36	35	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

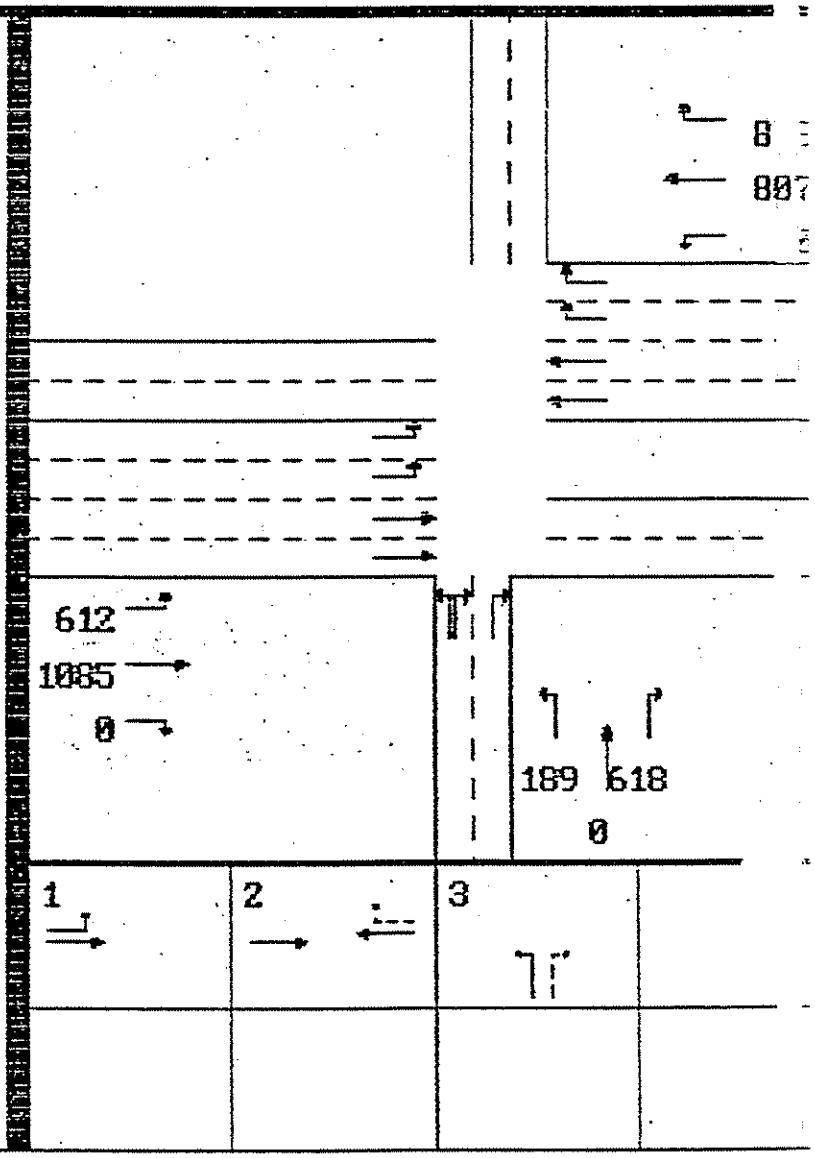
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.86	.25	L	.22	35.8	D	EB	16.8	C
	T	.57	.62	T	.36	6.0	B			
WB	T	.79	.34	T	.26	19.5	C	WB	29.3	D
	R	1.00	.34	R	.34	38.6	D			
NB	LR	.86	.33	LR	.28	30.5	D	NB	34.2	D
	R	.93	.33	R	.30	37.9	D			

INTERSECT DELAY = 25.1 SEC/VEH Xc = .93 LOS = D Sum(v/s)CR = .86

HCM Summary Results for Case: TEN8A2 TELEGRAPH CA/NB I-885 RAM

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.22	.86	35.8	D
	T	.36	.57	6.0	B
	All			16.8	C
WB	T	.26	.79	19.5	C
	*R	.34	1.00	38.6	D
	All			29.3	D
NB	LR	.28	.86	30.5	D
	*R	.38	.93	37.9	D
	All			34.2	D
Intersect:		.86	.93	25.1	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEN8P2 SUMMARY REPORT

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INTERSECTION: TELEGRAPH CA/NB I-805 RAM TIME: PM PEAK
ANALYST: KK DATE: 02-11-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	630	1684	0	0	50	4	2
WB	0	971	1017	0	50	4	2
NB	150	0	590	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12	R	12
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	.0	4
WB	0	2	N	0	0	.90	Y	.0	4
NB	0	2	N	0	0	.90	Y	.0	3
SB	0	2	N	0	0	.90	Y	.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR P							
NB			LR P						
SB									
GREEN	25	41	32	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

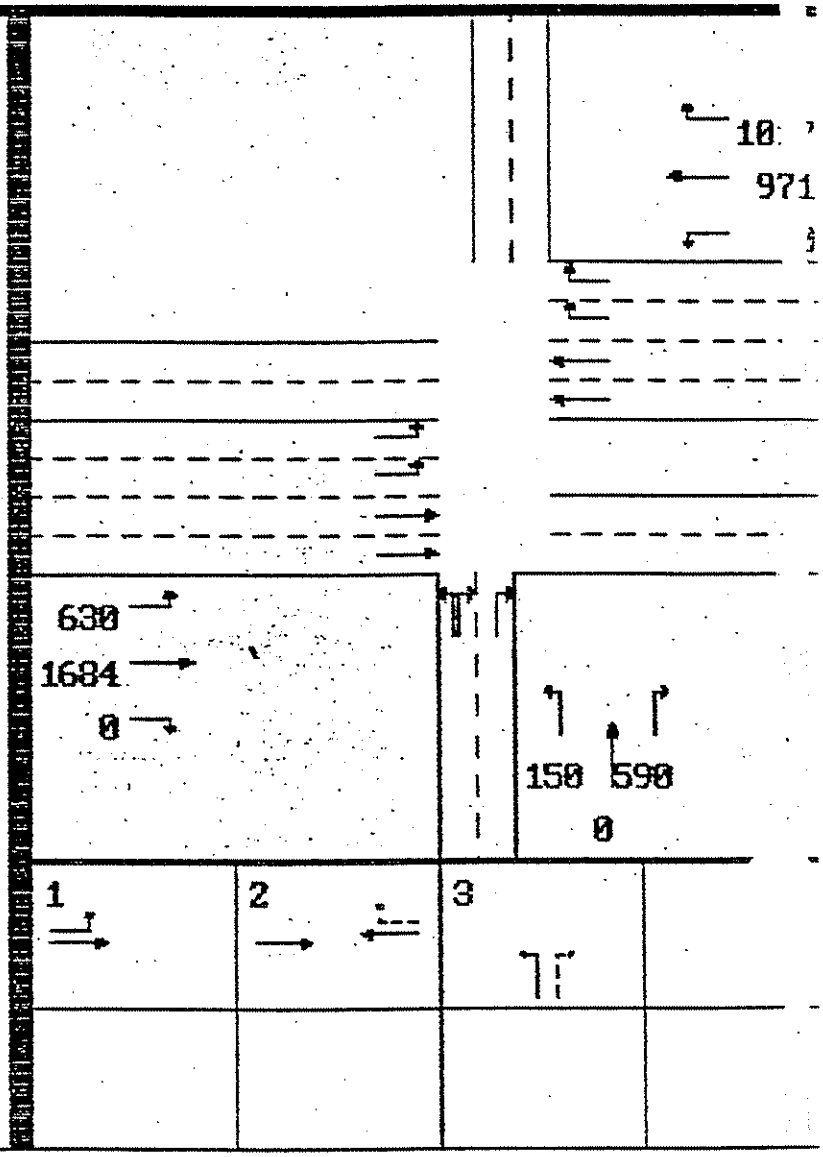
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.95	.24	L	.22	46.6	E	EB	20.7	C
	T	.85	.65	T	.55	11.0	B			
WB	T	.83	.38	T	.32	20.8	C	WB	35.2	D
	R	1.06	.38	R	.40	48.9	E			
NB	LR	.86	.30	LR	.26	32.5	D	NB	36.7	D
	R	.93	.30	R	.28	40.8	E			

INTERSECT: DELAY = 28.7 SEC/VEH Xc = .99 LOS = D Sum(v/s)CR = .91

HCM Summary Results for Case: TEN8P2 TELEGRAPH CA/NB I-805 RAM

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.22	.95	46.6	E
	T	.55	.85	11.0	B
	All			28.7	C
WB	T	.32	.83	20.8	C
	*R	.40	1.06	48.9	E
	All			35.2	D
NB	LR	.26	.86	32.5	D
	*R	.28	.93	40.8	E
	All			36.7	D
Intersect:		.91	.99	28.7	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEHAA2 SUMMARY REPORT

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INTERSECTION: Tel. Canyon /Halecrest Dr TIME: AM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: INTERIM W/ PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	99	1643	0	0	50	4	3
WB	0	1515	15	0	50	4	3
NB	0	0	0	0	50	0	1
SB	31	0	138	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	TR	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR							
NB									
SB	R		LR						
GREEN	25	48	25	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

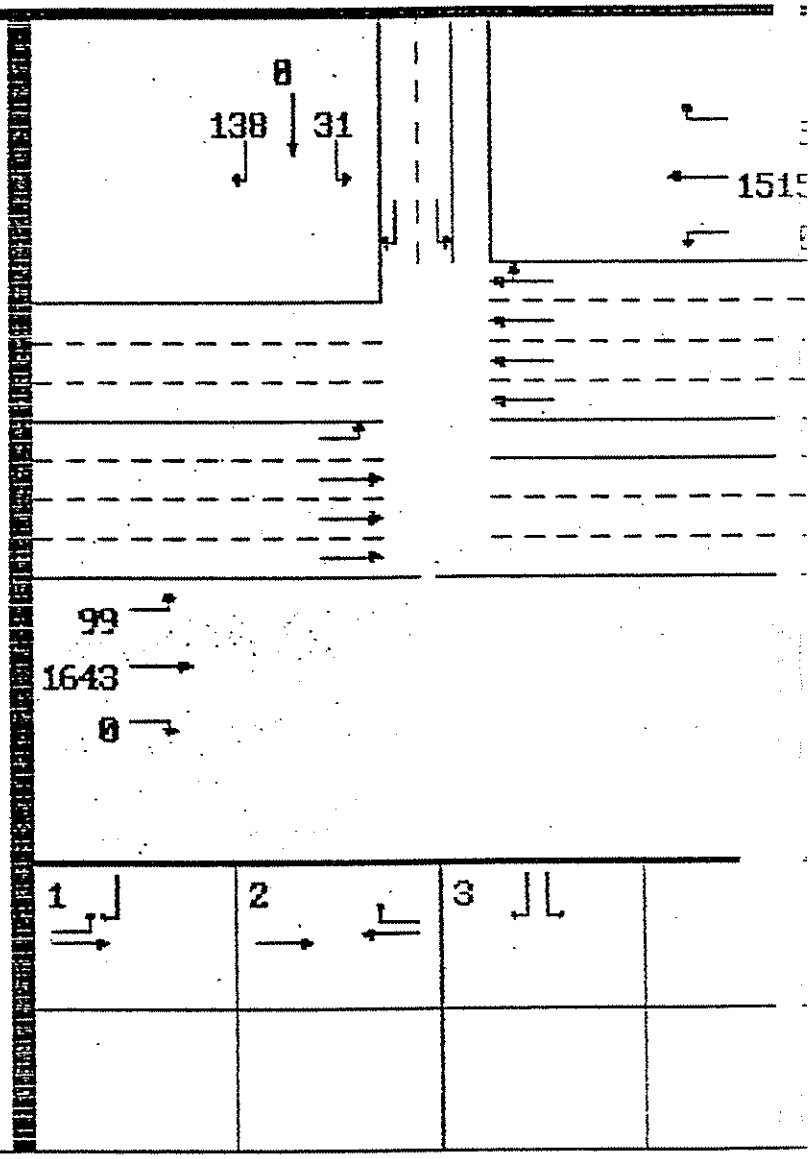
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.28	.24	L	.06	26.2	D	EB	4.8	A
	T	.53	.71	T	.38	3.6	A			
WB	TR	.59	.45	TR	.26	10.9	B	WB	10.9	B
SB	L	.09	.24	L	.02	24.9	C	SB	13.5	B
	R	.21	.47	R	.10	11.0	B			

INTERSECT: DELAY = 7.9 SEC/VEH Xc = .50 LOS = B Sum(v/s)CR = .48

HCM Summary Results for Case: TEHAA2 Tel. Canyon /Halecrest Dr

AM PEAK INTERIM W/ PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.06	.28	26.2	D
	*T	.38	.53	3.6	A
	All			4.8	A
WB	TR	.26	.59	10.9	B
	All			10.9	B
SB	L	.02	.09	24.9	C
	*R	.10	.21	11.0	B
	All			13.5	B
Intersect:		.48	.50	7.9	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEHAP2 SUMMARY REPORT

****

INTERSECTION: Tel. Canyon /Halecrest Dr TIME: PM PEAK
ANALYST: JHK DATE: 1/2/92
COMMENT: INTERIM W/ PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	410	1864	0	0	50	4	3
WB	0	1809	38	0	50	4	3
NB	0	0	0	0	50	0	1
SB	40	0	165	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	TR	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	Y	20	0	.90	N	14.0	4
WB	0	2	Y	20	0	.90	N	14.0	4
NB	0	2	Y	20	0	.90	N	26.0	3
SB	0	2	Y	20	0	.90	N	26.0	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	LT	T							
	WB		TR							
	NB									
	SB	R		LR						
GREEN		35	39	24	0	0	0	0	0	0
YELLOW		3	3	3	0	0	0	0	0	
RED		1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

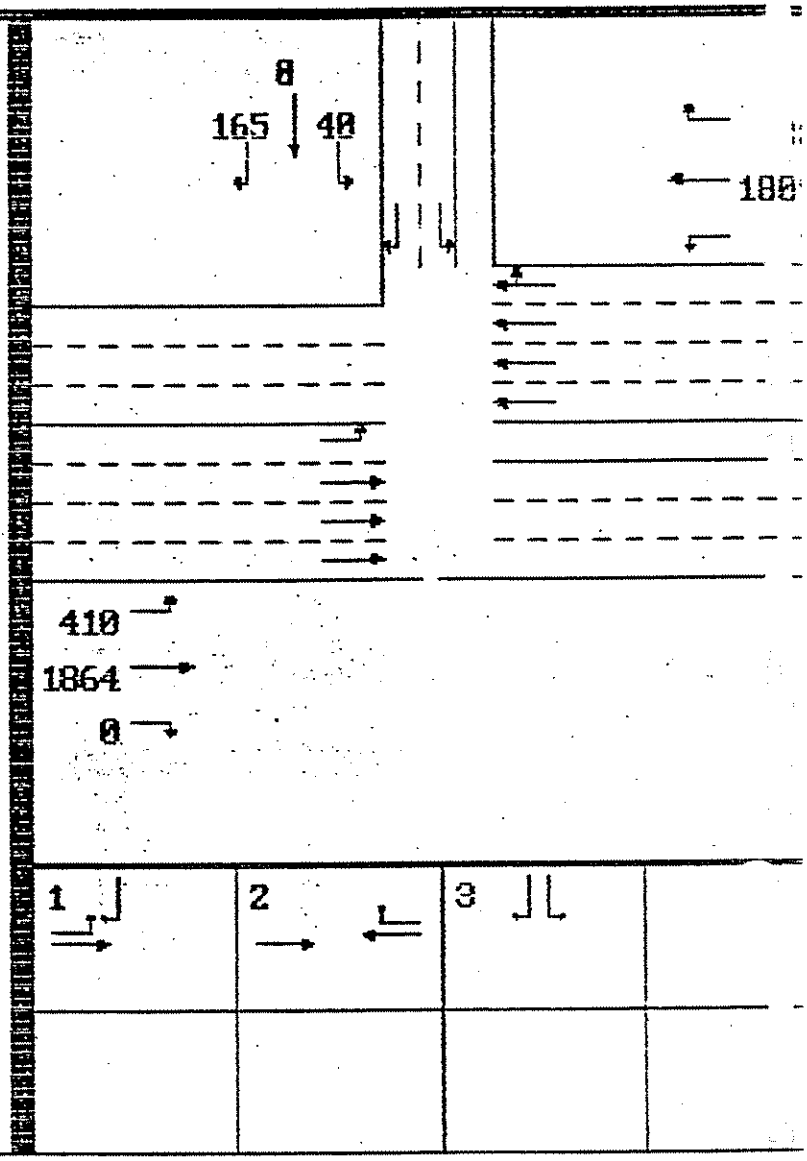
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.82	.33	L	.27	32.7	D	EB	9.2	B
	T	.64	.72	T	.46	4.5	A			
WB	TR	.87	.36	TR	.32	21.4	C	WB	21.4	C
SB	L	.11	.23	L	.03	25.6	D	SB	11.7	B
	R	.27	.55	R	.15	8.4	B			

INTERSECT. DELAY = 14.[illegible] SEC/VEH X c = .80 LOS = B Sum(v s)CR = .74

HCM Summary Results for Case: TEHAP2 Tel. Canyon /Halecrest D

PM PEAK INTERIM W/ PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.27	.82	32.7	D
	T	.46	.64	4.5	A
	All			9.2	B
WB	*TR	.32	.87	21.4	C
	All			21.4	C
SB	L	.03	.11	25.6	D
	*R	.15	.27	8.4	B
	All			11.7	B
Intersect:		.74	.80	14.6	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEOLA2 SUMMARY REPORT

****

INTERSECTION: TELE CYN RD /CREST DR TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	27	1341	105	0	50	4	3
WB	127	1145	23	0	50	4	3
NB	301	88	135	0	50	2	1
SB	34	68	48	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	10	T	12	T	12	TR	12
WB	L	10	T	12	T	12	TR	12
NB	L	10	TR	12				
SB	L	10	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	13.5	4
WB	0	2	N	0	0	.90	Y	13.5	4
NB	0	2	N	0	0	.90	Y	25.5	3
SB	0	2	N	0	0	.90	Y	25.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	12	47	8	13	10	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

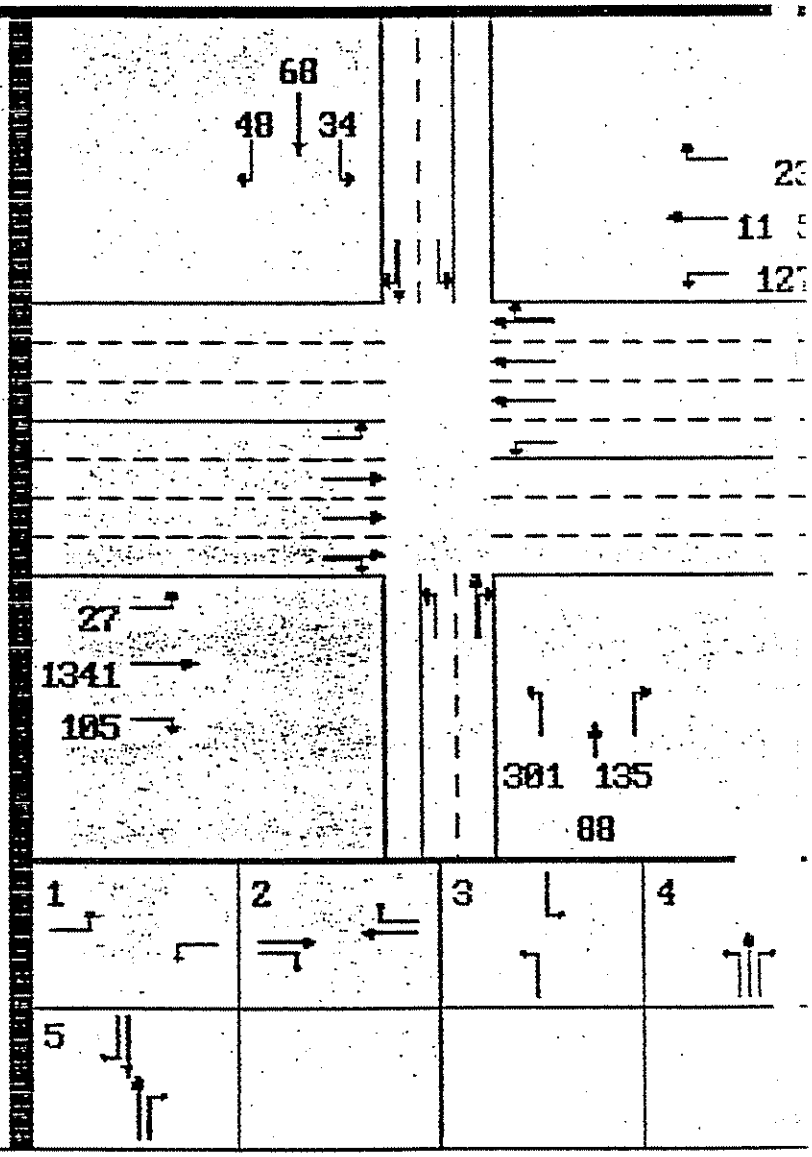
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.16	.12	L	.02	33.2	D	EB	15.3	C
	TR	.77	.44	TR	.33	15.0	B			
WB	L	.76	.12	L	.09	46.6	E	WB	16.1	C
	TR	.61	.44	TR	.27	13.1	B			
NB	L	.90	.24	L	.21	47.6	E	NB	37.9	D
	TR	.60	.25	TR	.15	24.8	C			
SB	L	.29	.08	L	.02	36.5	D	SB	41.0	E
	TR	.77	.10	TR	.08	42.3	E			

INTERSECT: DELAY = 19.8 SEC/VEH Xc = .80 LOS = C Sum(v/s)CR = .71

HCM Summary Results for Case: TEOLA2 TELE CYN RD /CREST DR
AM PK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.02	.16	33.2	D
	*TR	.33	.77	15.8	B
	All			15.3	C
WB	*L	.09	.76	46.6	E
	TR	.27	.61	13.1	B
	All			16.1	C
NB	*L	.21	.98	47.6	E
	TR	.15	.60	24.8	C
	All			37.9	D
SB	L	.02	.29	36.5	D
	*TR	.08	.77	42.3	E
	All			41.0	E
Intersect:		.71	.80	19.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEOLP2 SUMMARY REPORT

****

INTERSECTION: TELE CYN RD /CREST DR TIME: PM PEAK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	139	1413	345	0	50	4	3
WB	109	1633	34	0	50	4	3
NB	255	103	108	0	50	2	1
SB	123	164	34	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	10	T	12	T	12	TR	12
WB	L	10	T	12	T	12	TR	12
NB	L	10	TR	12				
SB	L	10	TR	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	13.5	4
WB	0	2	N	0	0	.90	Y	13.5	4
NB	0	2	N	0	0	.90	Y	25.5	3
SB	0	2	N	0	0	.90	Y	25.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	12	45	11	8	14	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

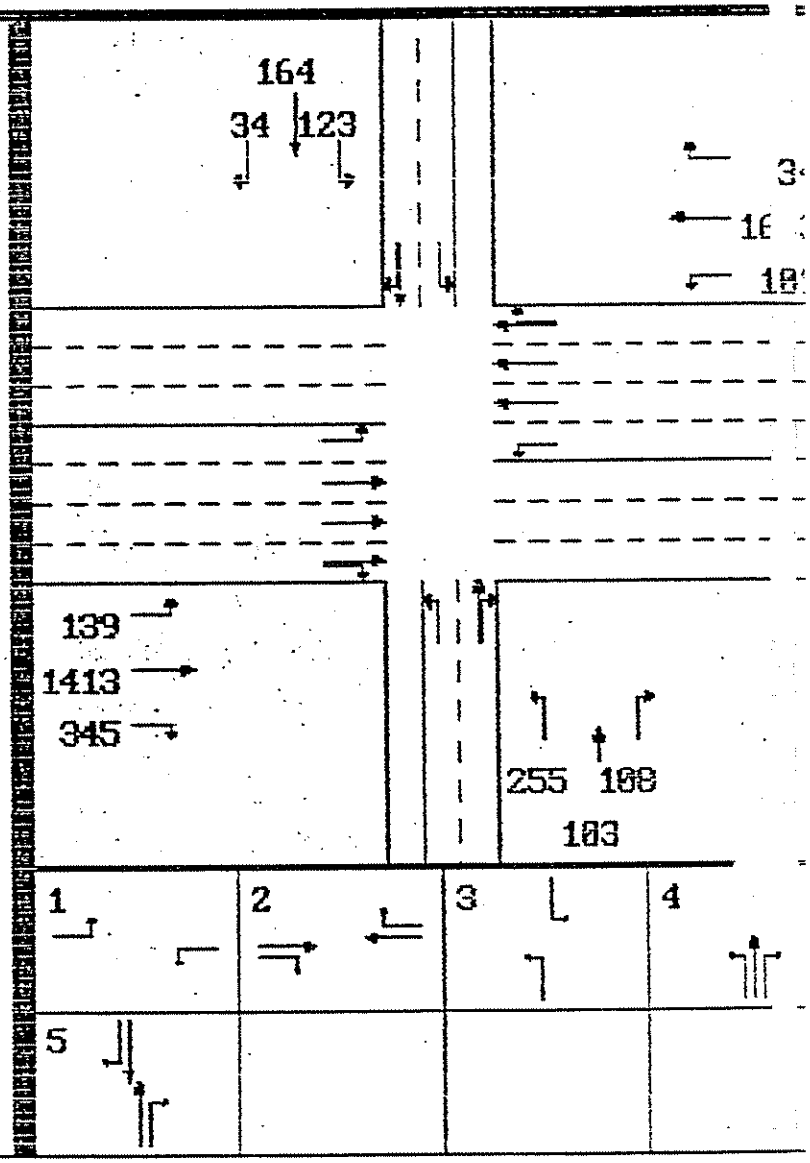
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.83	.12	L	.10	53.3	E	EB	30.4	D
	TR	.99	.42	TR	.41	28.8	D			
WB	L	.65	.12	L	.08	40.5	E	WB	22.5	C
	TR	.91	.42	TR	.38	21.5	C			
NB	L	.83	.22	L	.18	41.5	E	NB	34.0	D
	TR	.58	.25	TR	.14	24.9	C			
SB	L	.80	.11	L	.09	51.3	E	SB	53.1	E
	TR	.93	.14	TR	.13	54.2	E			

INTERSECTION DELAY = 24.1 SEC/VEH Xc = .93 LOS = D SUM(v/s)CR = .82

HCM Summary Results for Case: TEOLP2 TELE CYN RD /CREST DR

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.10	.83	53.3	E
	*TR	.41	.99	28.8	D
	All			30.4	D
WB	L	.08	.65	48.5	E
	TR	.38	.91	21.5	C
	All			22.5	C
NB	*L	.18	.83	41.5	E
	TR	.14	.58	24.9	C
	All			34.0	D
SB	L	.09	.80	51.3	E
	*TR	.13	.93	54.2	E
	All			53.1	E
Intersect:		.82	.92	29.1	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEPAA2 SUMMARY REPORT

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INTERSECTION: TELE CYN RD /PASEO DEL RE TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	342	1507	8	0	50	4	3
WB	2	1086	69	0	50	3	2
NB	4	2	0	0	50	2	1
SB	100	5	364	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR	12
WB	L	12	T	12	TR	12		
NB	LT	12	R	12				
SB	L	12	T	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	TR							
WB		TR	LT						
NB			R	LTR					
SB	R			LTR					
GREEN	33	15	31	15	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

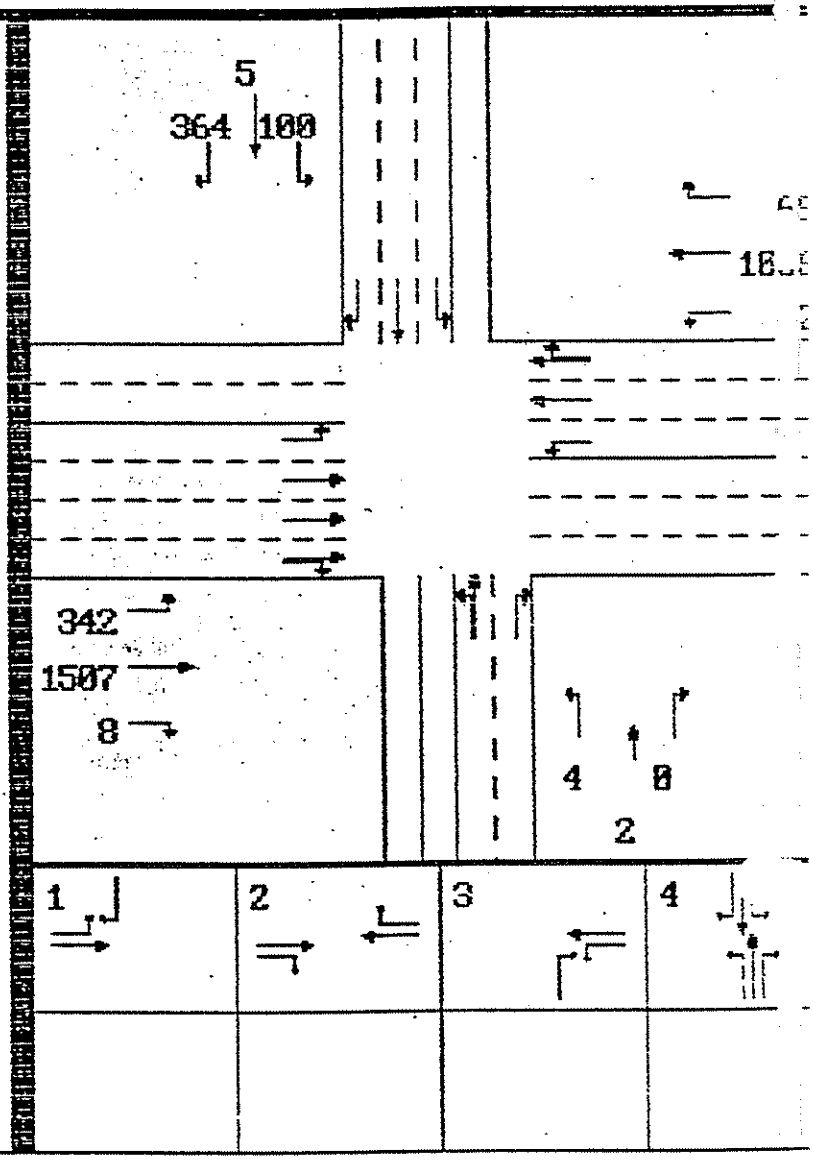
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.73	.31	L	.22	29.2	D	EB	15.5	C
	TR	.72	.48	TR	.35	12.7	B			
WB	L	.00	.29	L	.00	21.0	C	WB	17.1	C
	TR	.82	.46	TR	.38	17.1	C			
NB	LT	.09	.15	LT	.01	26.3	D	NB	26.3	D
	R	.00	.44	R	.00	.0	A			
SB	L	.43	.15	L	.06	33.3	D	SB	19.2	C
	T	.02	.15	T	.00	26.0	D			
	R	.59	.45	R	.27	15.2	C			

HCM Summary Results for Case: TEPAA2 TELE CYN RD /PASEO DEL RE

AM PK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.22	.73	29.2	D
	TR	.35	.72	12.7	B
	All			15.5	C
WB	L	.00	.00	21.0	C
	*TR	.38	.82	17.1	C
	All			17.1	C
NB	LT	.01	.09	26.3	D
	R	.00	.00	.0	A
	All			26.3	D
SB	L	.06	.43	33.3	D
	T	.00	.02	26.0	D
	*R	.27	.59	15.2	C
	All			19.2	C
Intersect:		.87	.95	16.5	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEPAP2 SUMMARY REPORT

****

INTERSECTION: TELE CYN RD /PASEO DEL RE TIME: PM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	440	1211	7	0	50	4	3
WB	1	1435	79	0	50	3	2
NB	15	0	2	0	50	2	1
SB	82	2	326	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	TR	12
WB	L	12	T	12	TR	12		
NB	LT	12	R	12				
SB	L	12	T	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	TR							
WB		TR	LT						
NB			R	LTR					
SB	R			LTR					
GREEN	33	15	31	15	0	0	0	0	0
YELLOW	3	3	3	3	0	0	0	0	
RED	1	1	1	1	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

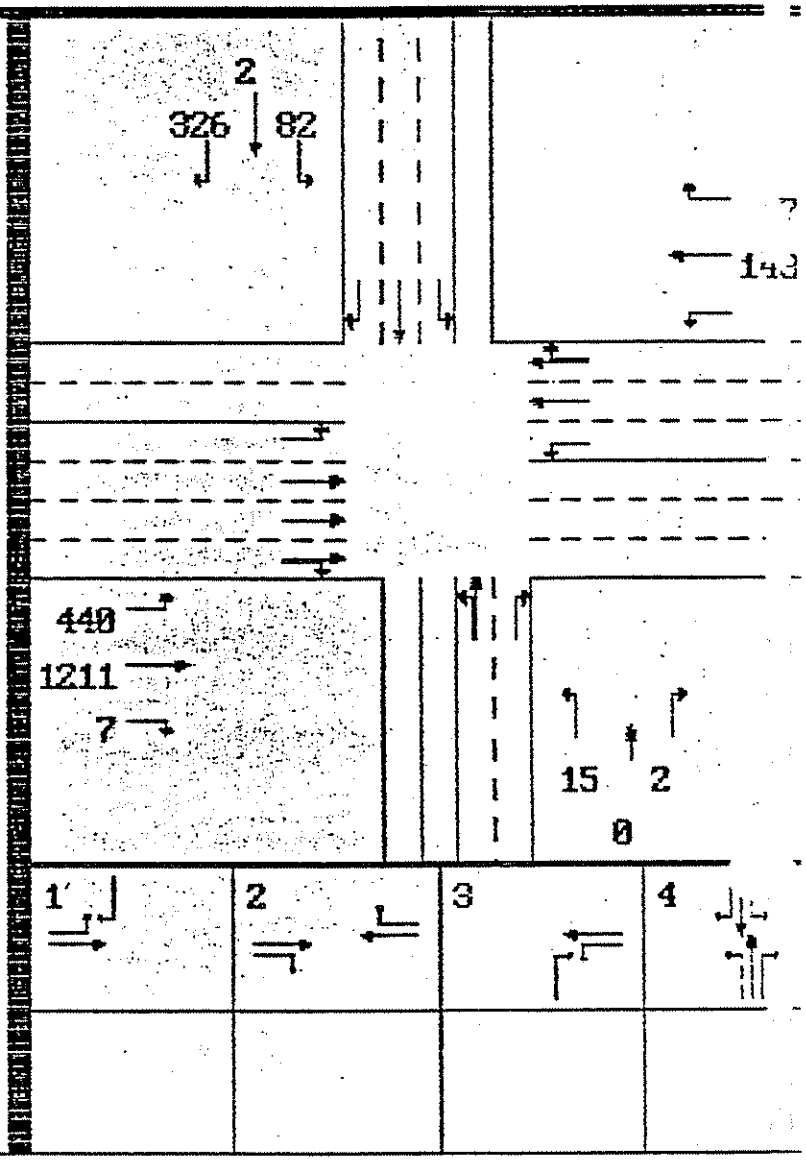
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.93	.31	L	.29	45.6	E	EB	18.7	C
	TR	.58	.48	TR	.28	9.8	B			
WB	L	.00	.29	L	.00	21.0	C	WB	49.7	E
	TR	1.08	.46	TR	.50	49.8	E			
NB	LT	.26	.15	LT	.04	27.4	D	NB	25.7	D
	R	.00	.44	R	.00	11.3	B			
SB	L	.37	.15	L	.05	32.8	D	SB	18.1	C
	T	.01	.15	T	.00	26.0	D			
	R	.53	.45	R	.24	14.4	B			

INTERSECT'N DELAY = 31.7 SEC/VEH Xc = 1.12 LOS = D Sum(v/s)CR = 1.03

HCM Summary Results for Case: TEPAP2 TELE CYN RD /PASEO DEL R..

PM PK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.29	.93	45.6	E
	TR	.28	.58	9.8	B
	All			18.7	C
WB	L	.08	.08	21.8	C
	*TR	.50	1.08	49.8	E
	All			49.7	E
NB	LT	.04	.26	27.4	D
	R	.00	.00	11.3	B
	All			25.7	D
SB	L	.05	.37	32.8	D
	T	.00	.01	26.0	D
	*R	.24	.53	14.4	B
	All			18.1	C
Intersect:		1.03	1.12	31.7	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: TELMCA2
****
INTERSECTION: TELEGRAPH CN/MEDICAL CENT TIME: AM PEAK
ANALYST: KK DATE: 02-19-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1144	426	0	50	3	3
WB	309	957	0	0	50	3	2
NB	183	0	371	0	50	4	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12		
NB	L	12	L	12	R	12	R	12
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
	0	2	N	0	0	.90	Y	17.3	4
EB	0	2	N	0	0	.90	Y	17.3	4
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	25.8	3
SB	0	2	N	0	0	.90	Y	25.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB		TR							
WB	LT	T							
NB	R		LR						
SB									
GREEN	32	47	19	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

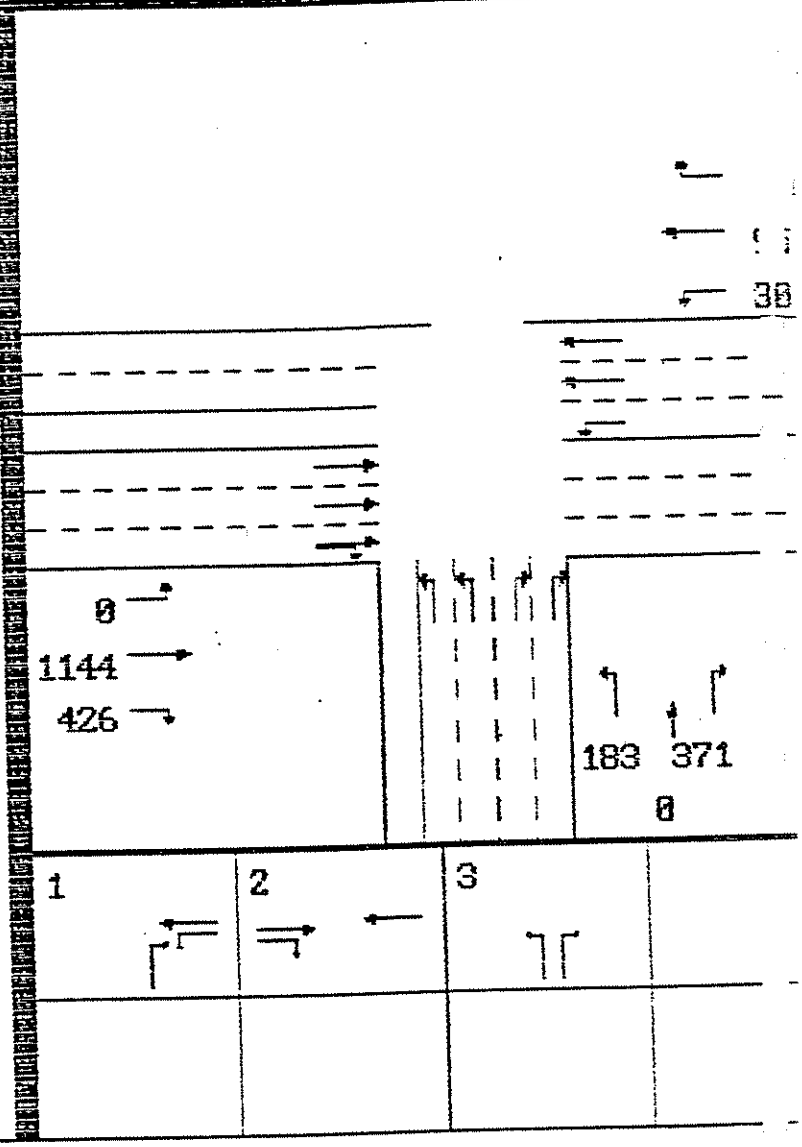
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.86	.44	TR	.37	18.5	C	EB	18.5	C
WB	L	.68	.30	L	.20	28.1	D	WB	8.3	B
	T	.41	.76	T	.31	2.1	A			
NB	L	.36	.18	L	.06	30.1	D	NB	17.6	D
	R	.34	.48	R	.16	11.4	B			

INTERSECT DELAY = [illegible] SEC/VEH v = .60 LOS = B [illegible] =

HCM Summary Results for Case: TELMCA2 TELEGRAPH CN/MEDICAL CEN

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.37	.86	18.5	C
	All			18.5	C
WB	*L	.28	.68	28.1	D
	T	.31	.41	2.1	A
	All			8.3	B
NB	L	.06	.36	30.1	D
	*R	.16	.34	11.4	B
	All			17.6	C
Intersect:		.74	.80	14.7	B



HCM/Cinema v1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TELMCP2 SUMMARY REPORT

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INTERSECTION: TELEGRAPH CN/MEDICAL CENT TIME: PM PEAK
ANALYST: KK DATE: 02-19-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1008	166	0	50	3	3
WB	437	906	0	0	50	3	2
NB	546	0	388	0	50	4	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12		
NB	L	12	L	12	R	12	R	12
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB		TR							
WB	LT	T							
NB	R		LR						
SB									
GREEN	30	41	27	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

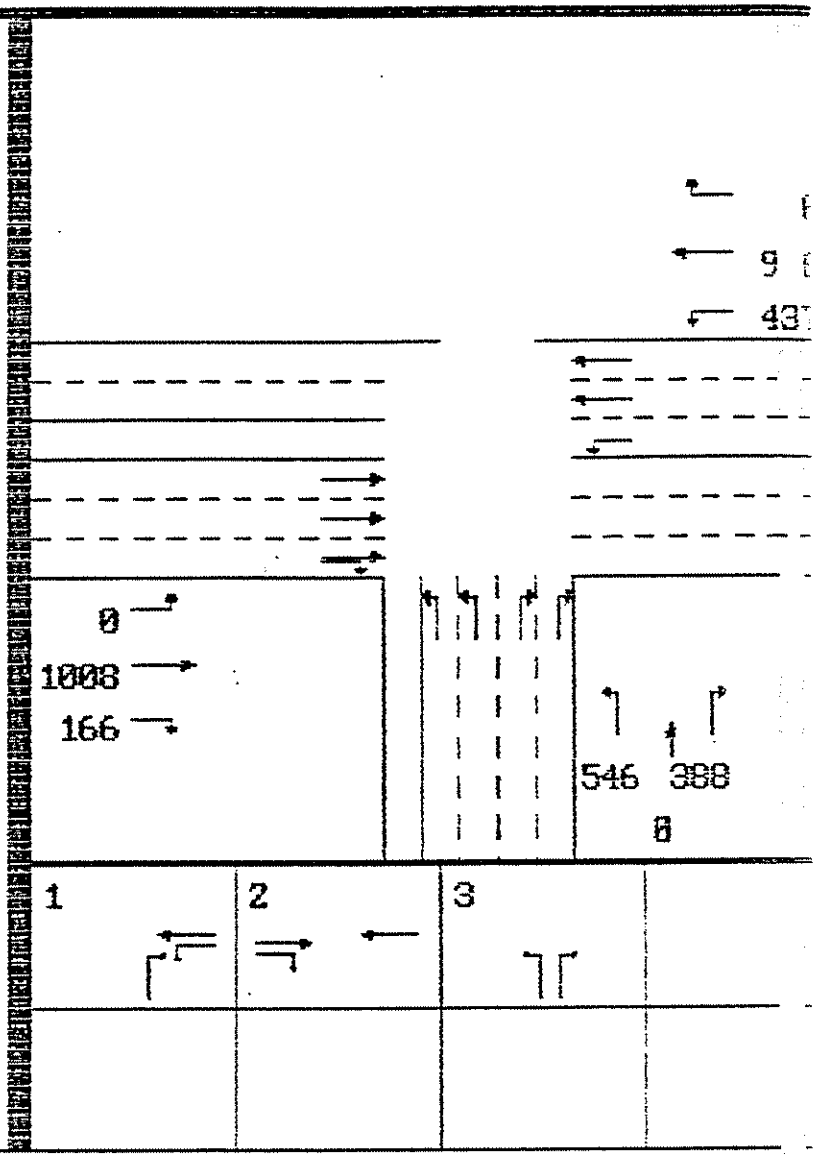
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.72	.38	TR	.27	16.3	C	EB	16.3	C
WB	L	1.02	.28	L	.29	66.8	F	WB	23.5	C
	T	.43	.69	T	.30	3.6	A			
NB	L	.76	.25	L	.19	31.8	D	NB	22.4	C
	R	.32	.54	R	.17	9.2	B			

INTERSECTION DELAY = 20.5 SEC/VEH v/c = .82 LOS = C Sum(v/s)CR = .7

HCM Summary Results for Case: TELMCP2 TELEGRAPH CN/MEDICAL CENT

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*TR	.27	.72	16.3	C
	All			16.3	C
WB	*L	.29	1.02	66.8	F
	T	.30	.43	3.6	A
	All			23.5	C
NB	*L	.19	.76	31.8	D
	R	.17	.32	9.2	B
	All			22.4	C
Intersect:		.76	.82	20.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TEOTA2 SUMMARY REPORT

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INTERSECTION: TELE CYN RD /OTAY LAKES TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	550	597	0	0	50	5	3
WB	0	719	850	0	50	5	3
NB	0	0	0	0	50	0	2
SB	956	0	324	0	50	4	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12	R	12
NB										
SB	L	12	L	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	26.5	4
SB	0	2	N	0	0	.90	Y	26.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	28	33	37	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

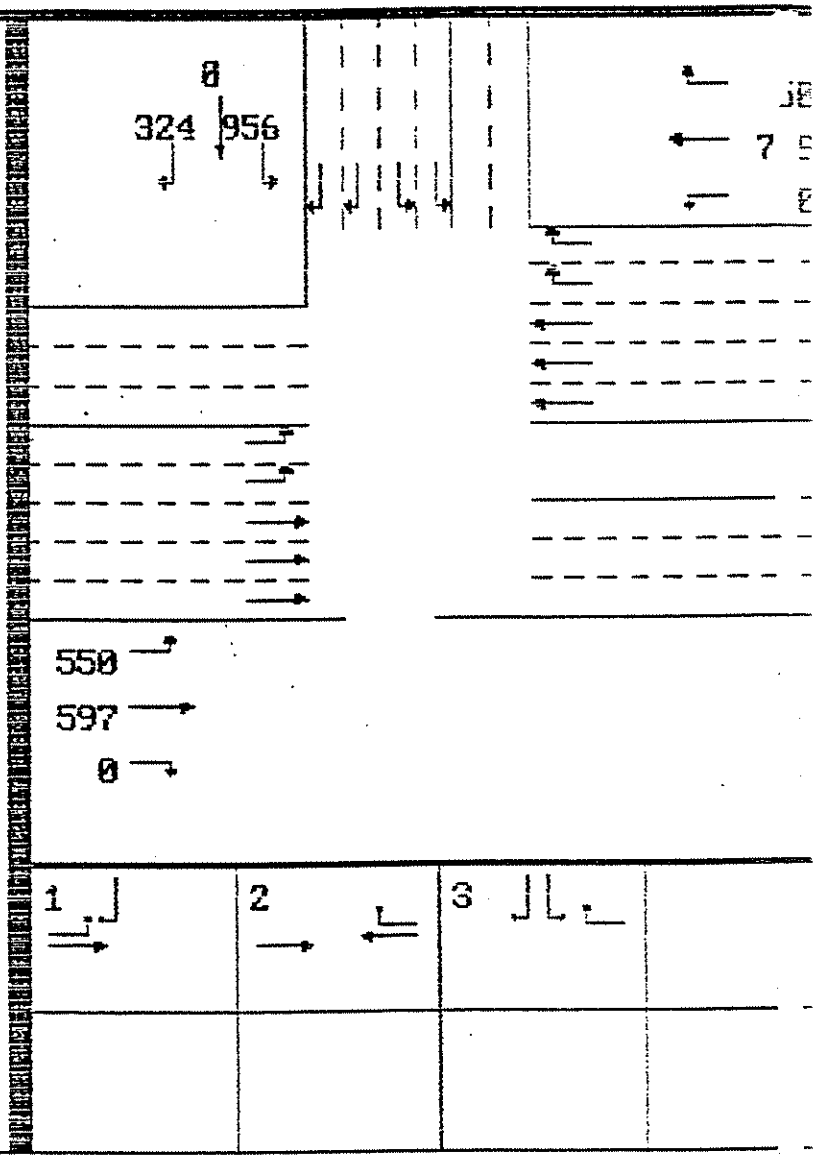
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.74	.26	L	.20	30.6	D	EB	16.9	C
	T	.23	.60	T	.14	4.8	A			
WB	T	.53	.31	T	.16	15.0	B	WB	9.8	B
	R	.57	.65	R	.37	5.1	B			
SB	L	.98	.35	L	.34	44.4	E	SB	34.3	D
	R	.23	.61	R	.14	4.6	A			

INTERSECTION DELAY = 19.6 SEC/VEH Xc = .99 LOS = C Sum v/s:CR = .91

HCM Summary Results for Case: TEOTA2 TELE CYN RD /OTAY LAKES

AM PK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.20	.74	38.6	D
	T	.14	.23	4.8	A
	All			16.9	C
WB	T	.16	.53	15.0	B
	*R	.37	.57	5.1	B
	All			9.8	B
SB	*L	.34	.98	44.4	E
	R	.14	.23	4.6	A
	All			34.3	D
Intersect:		.91	.99	19.6	C



HCM:Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: 1EDTP2 SUMMARY REPORT

INTERSECTION: TELE CYN RD /OTAY LAKES TIME: PM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	394	744	0	0	50	5	3
WB	0	837	1419	0	50	5	3
NB	0	0	0	0	50	0	2
SB	838	0	698	0	50	4	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12	R	12
NB										
SB	L	12	L	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	4
WB	0	2	N	0	0	.90	Y	20.5	4
NB	0	2	N	0	0	.90	Y	26.5	4
SB	0	2	N	0	0	.90	Y	26.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	LT	T							
	WB		TR	R						
	NB									
	SB	R		LR						
GREEN		23	36	39	0	0	0	0	0	0
YELLOW		3	3	3	0	0	0	0	0	
RED		1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

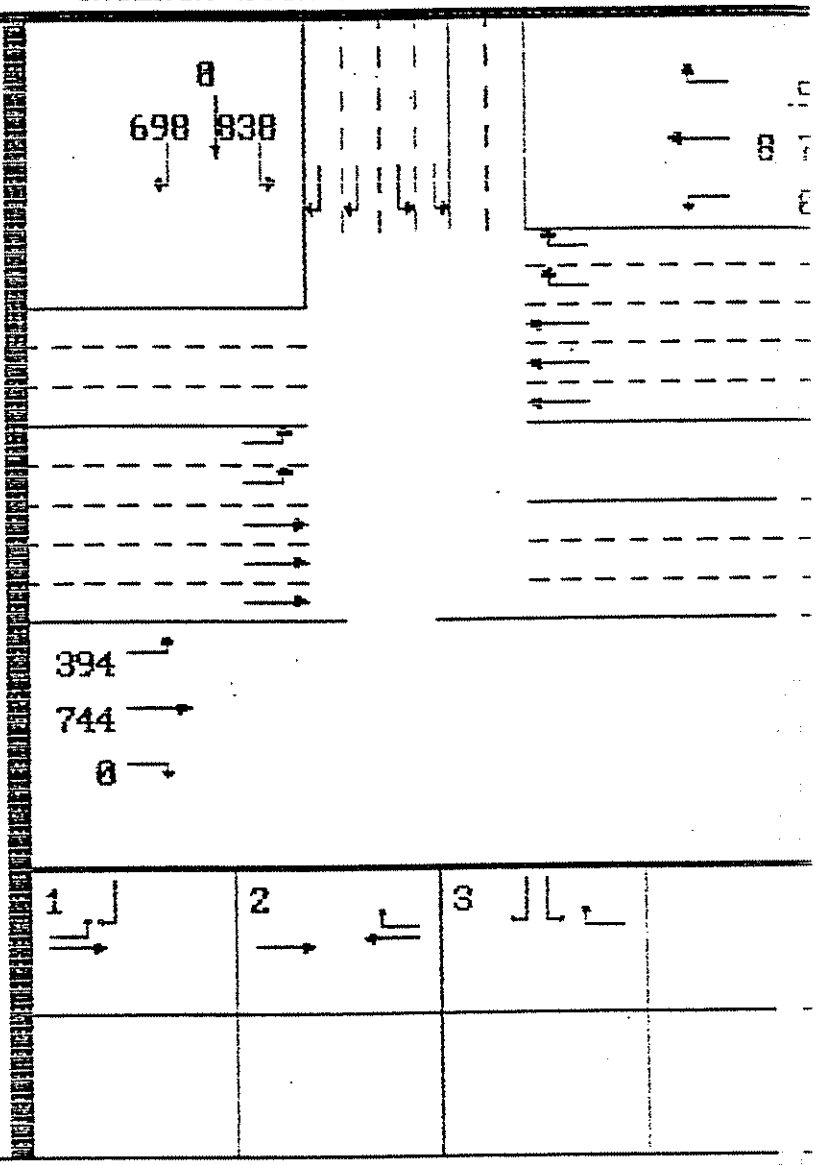
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.64	.22	L	.14	31.1	D	EB	14.1	B
	T	.29	.58	T	.17	5.5	B			
WB	T	.57	.34	T	.19	14.3	B	WB	12.1	B
	R	.89	.70	R	.62	10.8	B			
SB	L	.82	.36	L	.30	27.4	D	SB	18.0	C
	R	.32	.36	R	.30	6.7	B			

INTERSECT : DELAY = 14.4 SEC/VEH X-C = 1.16 LOS = B Sum(v/s)CR = 1.06

HCM Summary Results for Case: TEOTP2 TELE CYN RD /OTAY LAKES

PM PK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.14	.64	31.1	D
	T	.17	.29	5.5	B
	All			14.1	B
WB	T	.19	.57	14.3	B
	*R	.62	.89	10.8	B
	All			12.1	B
SB	L	.30	.82	27.4	D
	*R	.30	.52	6.7	B
	All			18.8	C
Intersect:		1.06	1.16	14.4	B



HCM/Cineme V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TERUA2 SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/RUTGERS AVE TIME: AM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	90	1646	0	0	50	4	3
WB	0	1216	92	0	50	4	3
NB	0	0	0	0	50	0	1
SB	373	0	302	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	12	50	36	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

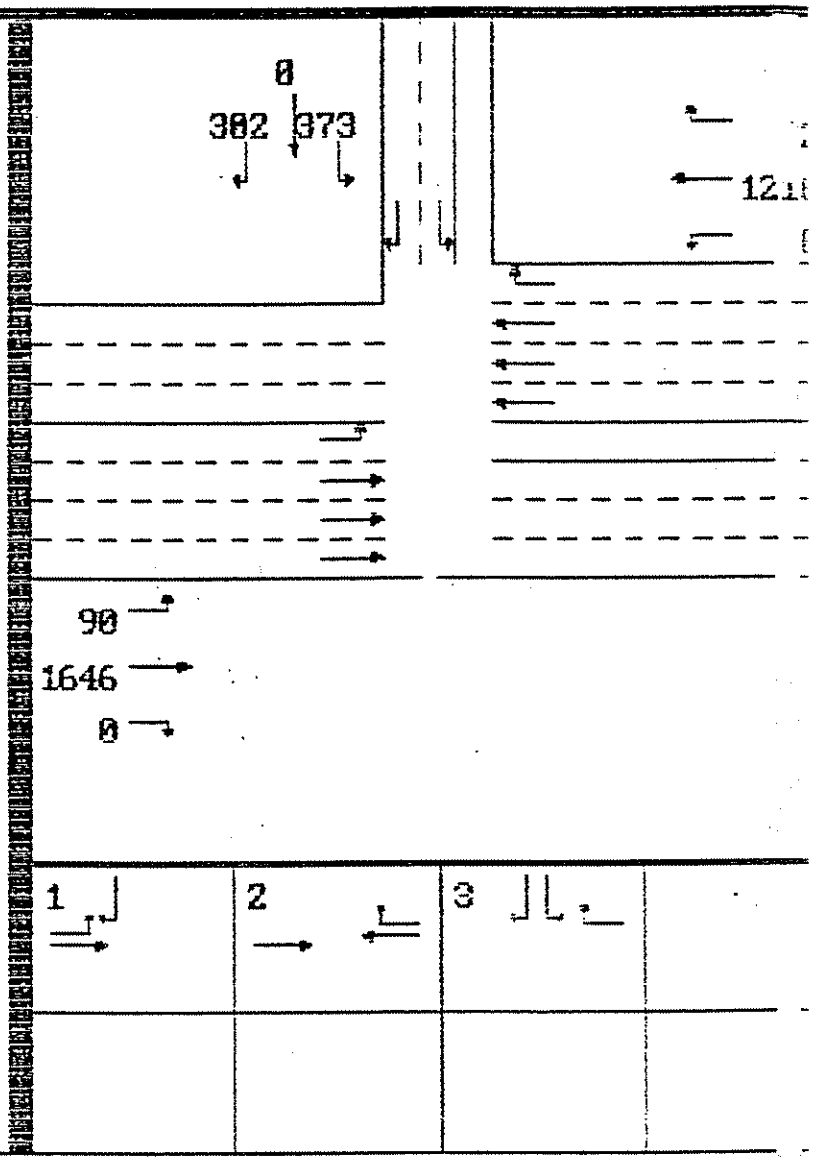
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.50	.12	L	.06	36.2	D	EB	8.8	B
	T	.62	.61	T	.38	7.5	B			
WB	T	.60	.46	T	.28	10.5	B	WB	9.9	B
	R	.08	.80	R	.07	1.1	A			
SB	L	.73	.34	L	.24	27.6	D	SB	21.5	C
	R	.49	.45	R	.22	14.0	B			

[illegible] DELAY = [illegible] SEC/VEH LOS = [illegible] LOS B [illegible] SUM/CAP = .52

HCM Summary Results for Case: TERUA2 OTAY LAKES R/RUTGERS AVE

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.06	.50	36.2	D
	*T	.38	.62	7.5	B
	All			8.8	B
WB	T	.28	.60	18.5	B
	R	.07	.08	1.1	A
	All			9.9	B
SB	*L	.24	.73	27.6	D
	R	.22	.49	14.8	B
	All			21.5	C
Intersect:		.62	.66	11.3	B



HCM/Cinems V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TERUP2 SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/RUTGERS AVE TIME: PM PEAK
ANALYST: JHK DATE: 12/30/91
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	128	1487	0	0	50	4	3
WB	0	2126	141	0	50	4	3
NB	0	0	0	0	50	0	1
SB	192	0	180	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	R	12
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	16	55	27	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

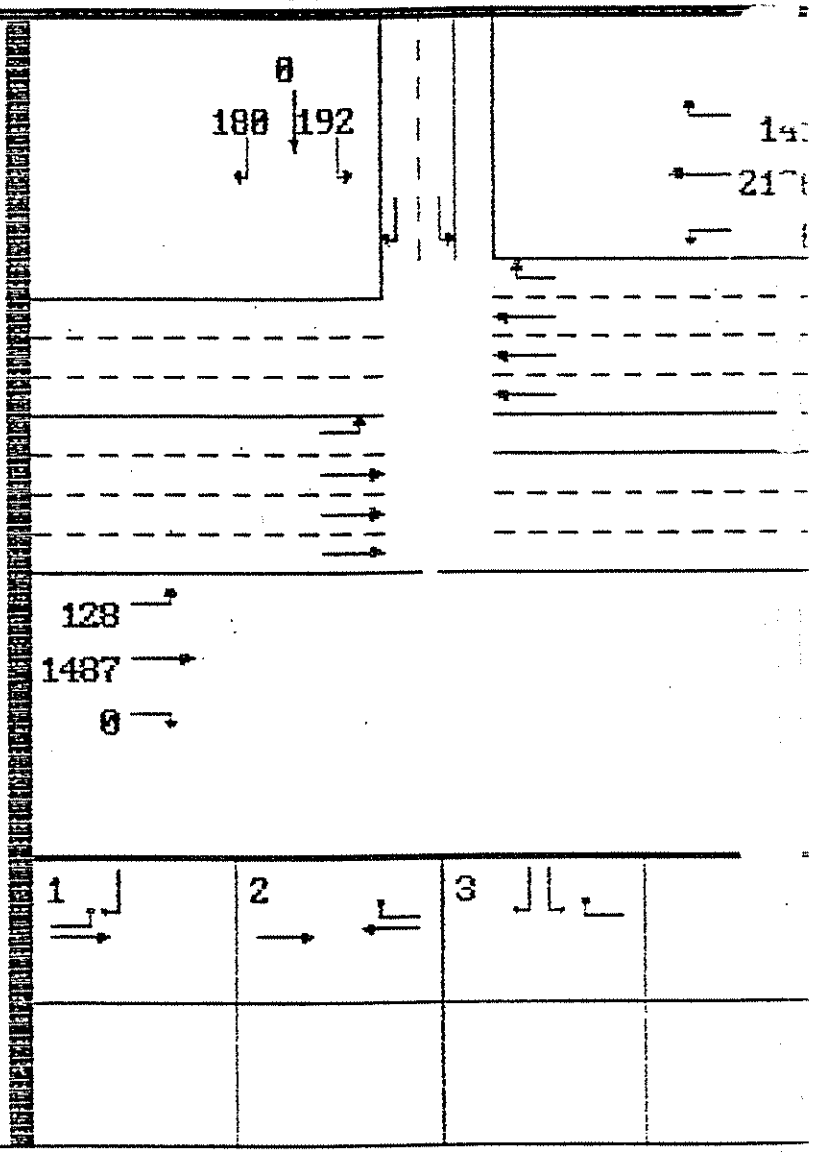
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.54	.15	L	.08	34.4	D	EB	6.0	B
	T	.49	.69	T	.34	3.8	A			
WB	T	.95	.51	T	.49	20.5	C	WB	19.4	C
	R	.14	.76	R	.10	1.6	A			
SB	L	.49	.25	L	.13	27.3	D	SB	21.1	C
	R	.32	.41	R	.13	14.4	B			

INTERSECT DELAY = 14.4 SEC/VEH XC = .76 LOS = B SUM(v/s)CP = .70

HCM Summary Results for Case: TERUP3 — OTAY LAKES R-RUTGERS AVE

PM PEAK — INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.08	.54	34.4	D
	T	.34	.49	3.8	A
	All			6.0	B
WB	*T	.49	.95	20.5	C
	R	.10	.14	1.6	A
	All			19.4	C
SB	L	.13	.49	27.3	D
	*R	.13	.32	14.4	B
	All			21.1	C
Intersect:		.70	.76	14.4	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLELAA1 SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	1185	377	477	0	50	6	2
WB	131	162	152	0	50	5	3
NB	717	502	134	0	50	4	2
SB	106	184	429	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R					
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	36	10	5	13	14	8	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

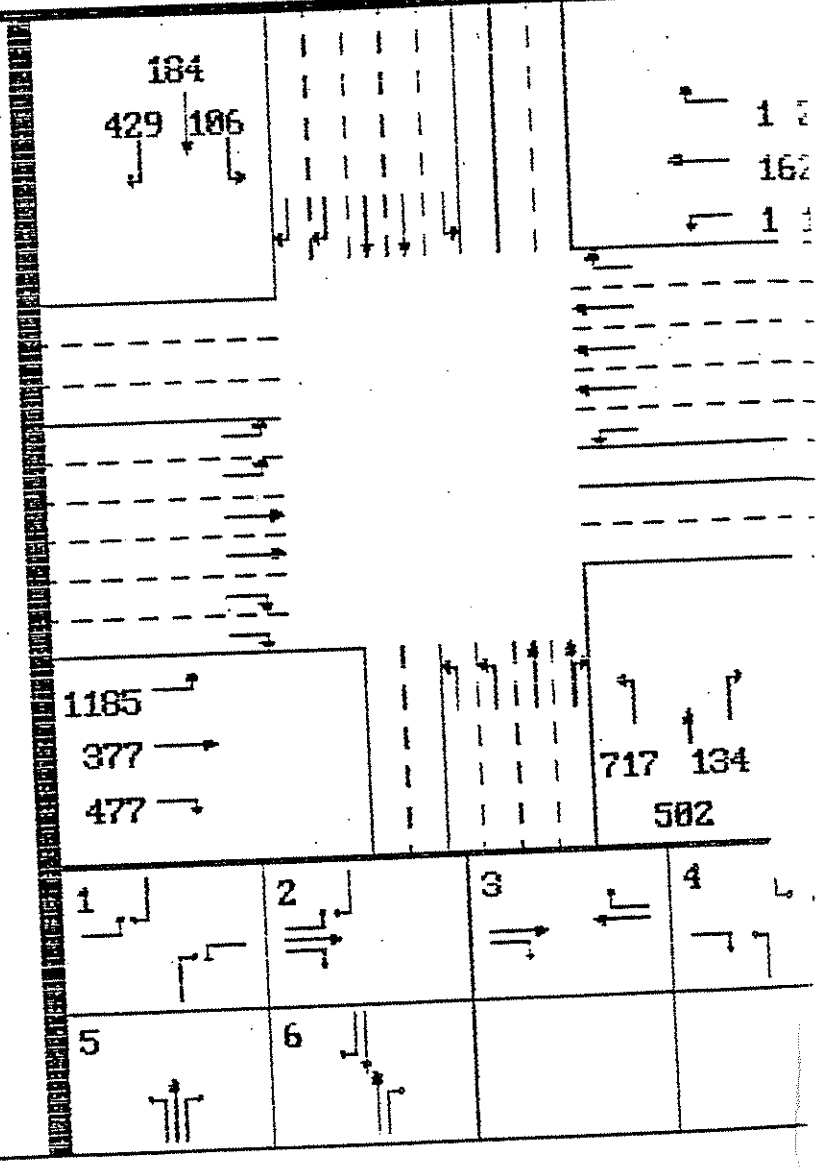
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.91	.46	L	.42	26.9	D	EB	24.6	C
	T	.68	.18	T	.12	24.1	C			
	R	.67	.31	R	.21	19.0	C			
WB	L	.26	.34	L	.09	20.2	C	WB	25.6	D
	T	.68	.05	T	.04	30.6	D			
	R	.61	.18	R	.11	24.4	C			
NB	L	.88	.29	L	.26	34.9	D	NB	32.3	D
	TR	.88	.25	TR	.22	29.3	D			
SB	L	.55	.13	L	.07	36.5	D	SB	17.1	C
	T	.73	.08	T	.06	31.0	D			
	R	.34	.55	R	.19	6.6	B			

INTERSECT: DELAY = 25.8 SEC/VEH X= .87 LOS = D

HCM Summary Results for Case: OLELAA1 OTAY LAKES R/EASTLAKE PAR

AM PEAK HOUR INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.42	.91	26.9	D
	T	.12	.68	24.1	C
	R	.21	.67	19.8	C
	All			24.6	C
WB	L	.09	.26	28.2	C
	*T	.04	.68	30.6	D
	R	.11	.61	24.4	C
	All			25.6	D
NB	*L	.26	.88	34.9	D
	TR	.22	.88	29.3	D
	All			32.3	D
SB	L	.07	.55	36.5	D
	*T	.06	.73	31.8	D
	R	.19	.34	6.6	B
	All			17.1	C
Intersect:		.77	.87	25.8	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLELPA1 SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	546	202	896	0	50	6	2
WB	168	471	222	0	50	5	3
NB	596	238	164	0	50	4	2
SB	181	518	1274	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	35.5	4
SB	0	2	N	0	0	.90	Y	35.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	L	LTR	TR	R					
	WB	L		TR	R					
	NB				L	LTR	TR			
	SB	R	R		L		TR			
GREEN		16	12	12	17	4	25	0	0	0
YELLOW		4	4	4	4	4	4	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

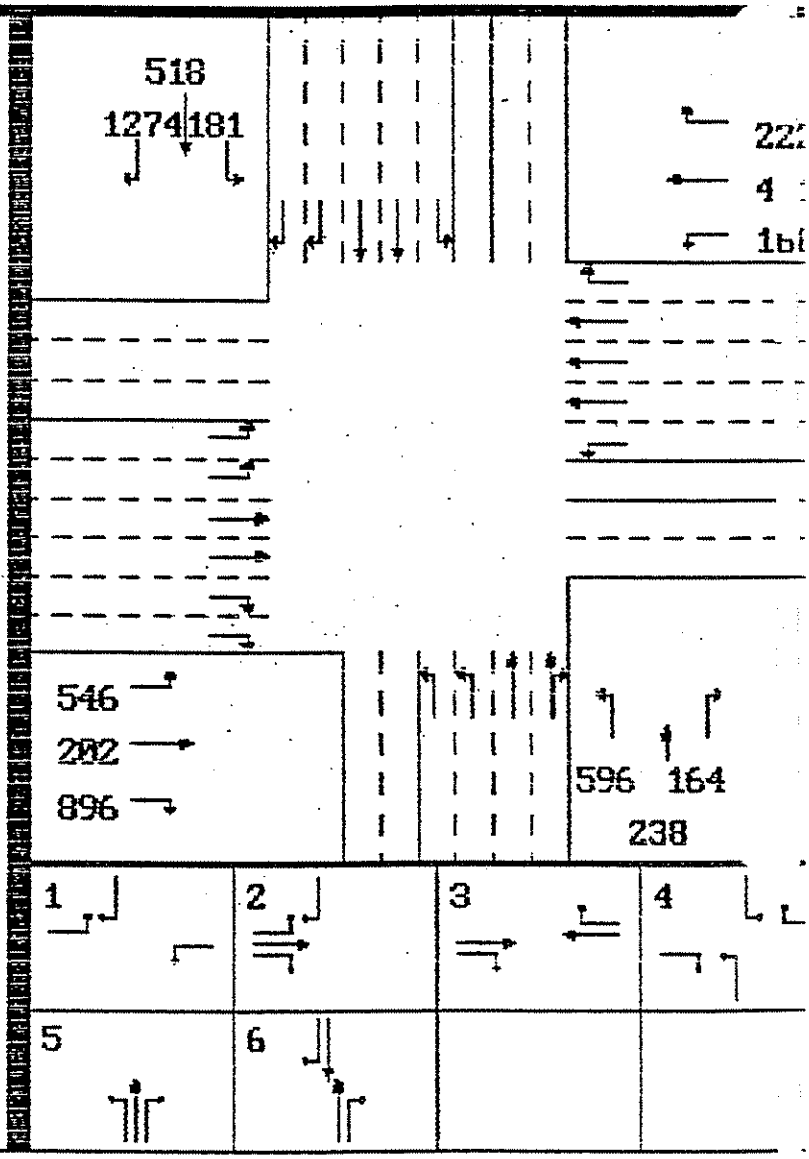
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.65	.30	L	.19	26.5	D	EB	23.7	C
	T	.25	.26	T	.07	15.1	C			
	R	.92	.43	R	.39	24.0	C			
WB	L	.71	.15	L	.11	39.6	D	WB	33.1	D
	T	.91	.12	T	.11	38.1	D			
	R	.58	.28	R	.16	16.9	C			
NB	L	.90	.24	L	.21	40.3	E	NB	29.9	D
	TR	.45	.31	TR	.14	14.5	B			
SB	L	.73	.16	L	.12	39.4	D	SB	33.3	D
	T	.72	.24	T	.17	22.3	C			
	R	1.04	.54	R	.56	37.0	D			

INTERSECT: DELAY = 29.8 SEC/VEH Xc = .77 LOS = D Sum(v/s)CR = .68

HCM Summary Results for Case: OLELPA1 OTAY LAKES R/EASTLAKE PAR

PM PEAK HOUR INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.19	.65	26.5	D
	T	.07	.25	15.1	C
	R	.39	.92	24.8	C
	All			23.7	C
WB	L	.11	.71	39.6	D
	*T	.11	.91	38.1	D
	R	.16	.58	16.9	C
	All			33.1	D
NB	*L	.21	.90	40.3	E
	TR	.14	.45	14.5	B
	All			29.9	D
SB	L	.12	.73	39.4	D
	*T	.17	.72	22.3	C
	R	.56	1.04	37.8	D
	All			33.3	D
Intersect:		.68	.77	29.8	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TELAA2 SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/LANE AVE TIME: AM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	17	616	0	0	50	4	3
WB	0	687	21	0	50	3	3
NB	0	0	0	0	50	0	1
SB	18	0	21	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	15	70	13	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

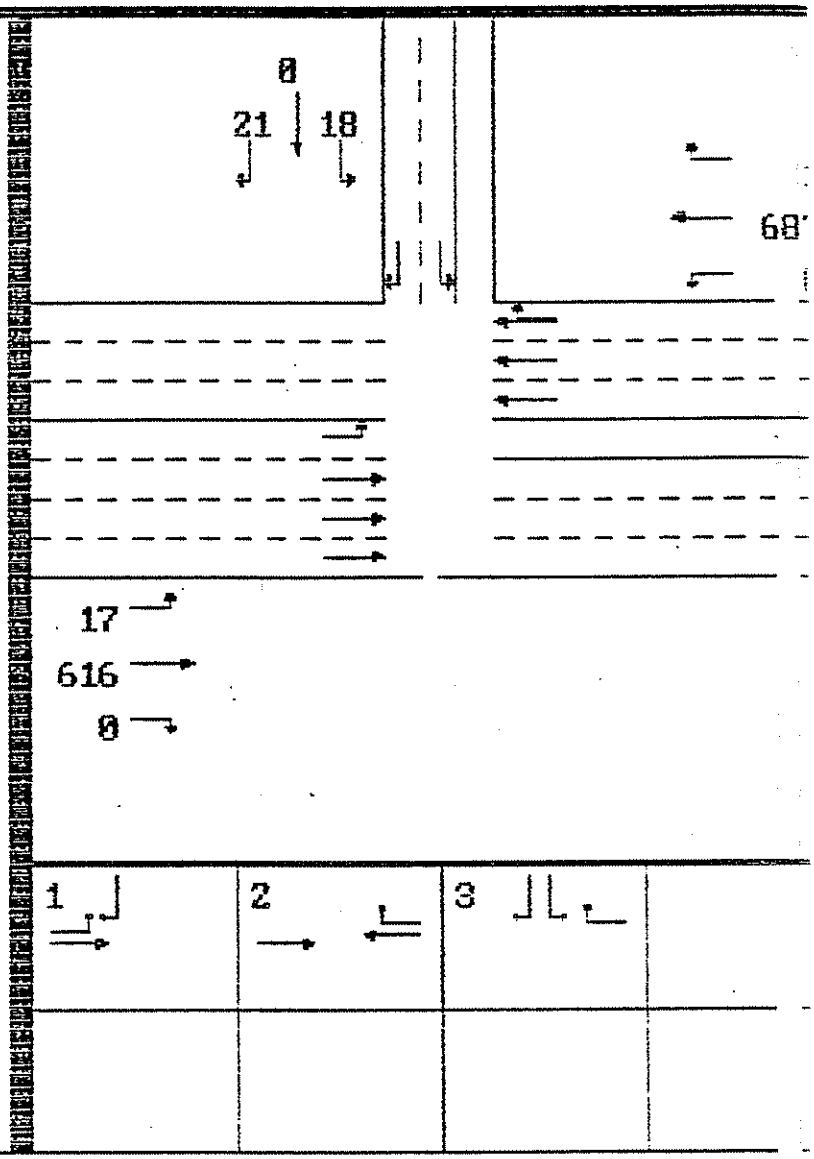
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.08	.15	L	.01	30.9	D	EB	1.7	A
	T	.17	.82	T	.14	1.0	A			
WB	TR	.25	.65	TR	.16	3.9	A	WB	3.9	A
SB	L	.09	.13	L	.01	32.2	D	SB	25.2	D
	R	.06	.27	R	.02	19.1	C			

INTERSECT DELAY = 3.4 SEC/VEH xc = .21 LOS = A Sum.v/s/CR = .19

HCM Summary Results for Case: TELAA2 OTAY LAKES R/LANE AVE

AM PK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.01	.08	30.9	D
	T	.14	.17	1.0	A
	All			1.7	A
WB	*TR	.16	.25	3.9	A
	All			3.9	A
SB	L	.01	.09	32.2	D
	*R	.02	.06	19.1	C
	All			25.2	D
Intersect:		.19	.21	3.4	A



HCM/Cinema /1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: TELAP2 SUMMARY REPORT
****
INTERSECTION: OTAY LAKES R/LANE AVE TIME: PM PK
ANALYST: JHK & ASSOCIATES DATE: 1-6-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	23	864	0	0	50	4	3
WB	0	673	23	0	50	3	3
NB	0	0	0	0	50	0	1
SB	26	0	21	0	50	2	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	T	12	T	12	T	12
WB	T	12	T	12	TR	12		
NB								
SB	L	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB									
SB	R		LR						
GREEN	13	69	16	0	0	0	0	0	0
YELLOW	3	3	3	0	0	0	0	0	
RED	1	1	1	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.12	.13	L	.02	32.3	D	EB	2.2	A
	T	.25	.79	T	.20	1.4	A			
WB	TR	.25	.64	TR	.16	4.1	A	WB	4.1	A
SB	L	.11	.15	L	.02	30.4	D	SB	25.2	D
	R	.05	.28	R	.02	18.6	C			

INTERSECTION DELAY = 3.6 SEC/VEH v/c = .27 LOS = 4 Sum(v/s)CR = .21

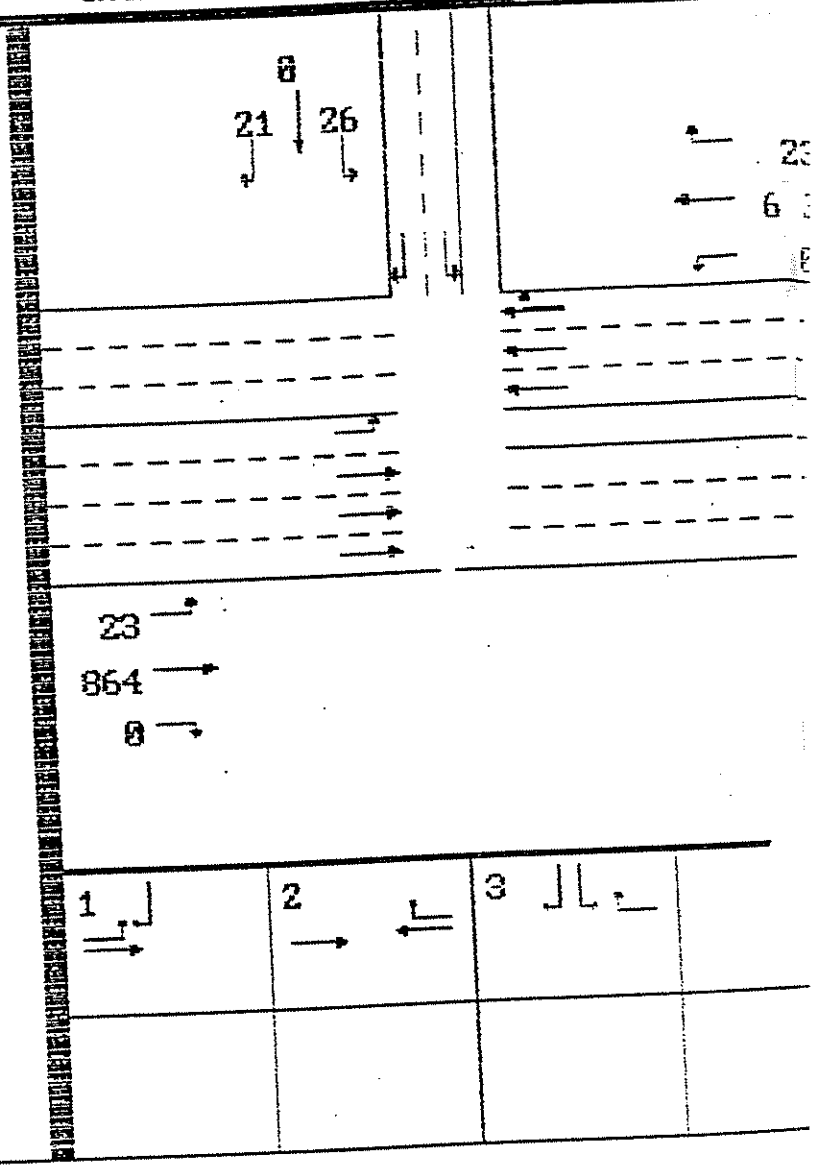
HCM Summary Results for Case: TELAP2

OTAY LAKES R/LANE AVE

INTERIM WITH PROPOSED PROJECT

PM PK

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.02	.12	32.3	D
	*T	.20	.25	1.4	A
	All			2.2	A
WB	TR	.16	.25	4.1	A
	All			4.1	A
SB	*L	.02	.11	30.4	D
	R	.02	.05	18.6	C
	All			25.2	D
Intersect:		.21	.23	3.6	A



HCM/Cinema /1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLHUA2 SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/HUNTE PKWY TIME: AM PEAK
ANALYST: KK DATE: 02-19-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	103	530	0	50	3	3
WB	13	122	0	0	50	4	3
NB	586	0	12	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12	T	12
NB	L	12	L	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	TR								
WB	LT								
NB		LR							
SB									
GREEN	50	52	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

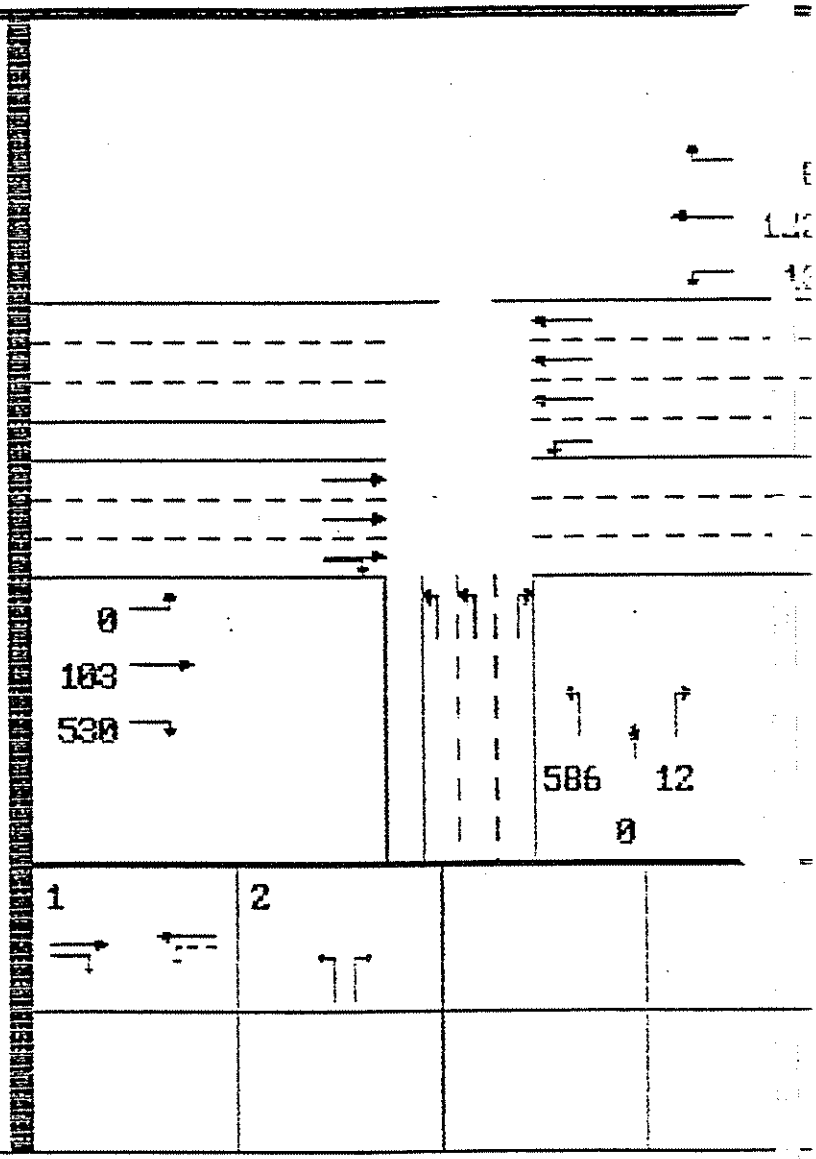
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.36	.46	TR	.17	9.0	B	EB	9.0	B
WB	L	.04	.46	L	.02	12.3	B	WB	8.1	B
	T	.06	.46	T	.03	7.7	B			
NB	L	.43	.48	L	.21	14.3	B	NB	14.2	B
	R	.02	.48	R	.01	9.6	B			

INTERSECT DELAY = [illegible] SEC/VEH X = .40 LOS = B SUM(V*X)/CR = .37

HCM Summary Results for Case: OLHUA2 OTAY LAKES R/HUNTE PKWY

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*TR	.17	.36	9.0	B
	All			9.0	B
WB	L	.02	.04	12.3	B
	T	.03	.06	7.7	B
	All			8.1	B
NB	*L	.21	.43	14.3	B
	R	.01	.02	9.6	B
	All			14.2	B
Intersect:		.37	.40	11.1	B



HCM/Cinema v1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLHUP2 SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/HUNTE PKWY TIME: PM PEAK
ANALYST: KK DATE: 02-19-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	156	737	0	50	3	3
WB	14	125	0	0	50	4	3
NB	658	0	14	0	50	3	0
SB	0	0	0	0	50	0	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	TR	12		
WB	L	12	T	12	T	12	T	12
NB	L	12	L	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	TR								
WB	LT								
NB		LR							
SB									
GREEN	50	52	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

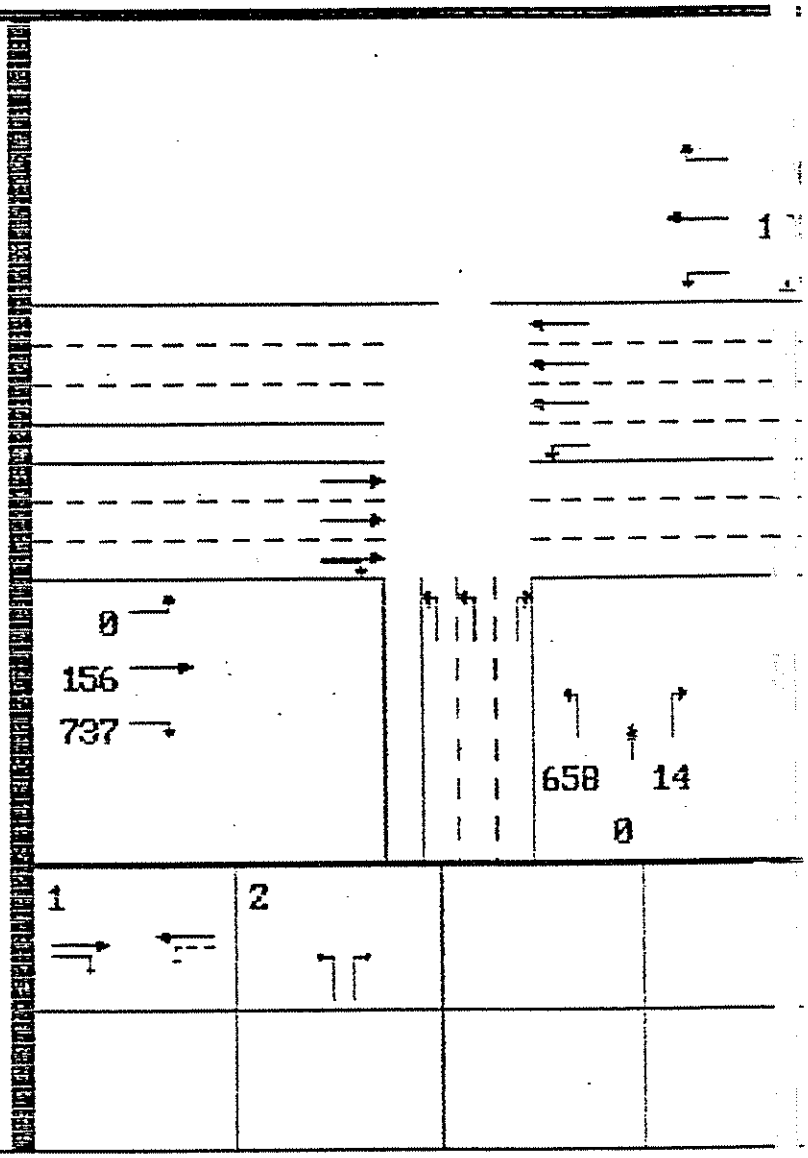
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	TR	.50	.46	TR	.23	9.8	B	EB	9.8	B
WB	L	.08	.46	L	.04	12.5	B	WB	8.1	B
	T	.06	.46	T	.03	7.7	B			
NB	L	.49	.48	L	.23	14.9	B	NB	14.7	B
	R	.02	.48	R	.01	9.6	B			

INTERSECT: DELAY = 11.6 SEC/VEH Xc = .49 LOS = B Sum(v/s)CR = .47

HCM Summary Results for Case: OLHUP2 OTAY LAKES R/HUNTE PKWY

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*TR	.23	.50	9.8	B
	All			9.8	B
WB	L	.04	.08	12.5	B
	T	.03	.06	7.7	B
	All			8.1	B
NB	*L	.23	.49	14.9	B
	R	.01	.02	9.6	B
	All			14.7	B
Intersect:		.47	.49	11.6	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ORSBA2 SUMMARY REPORT

****

INTERSECTION: ORANGE STREE/I-805 SB RAM TIME: AM PEAK HOUR
ANALYST: ME DATE: 03-13-92
COMMENT: INTERIM W/ PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	826	196	0	50	4	3
WB	136	432	0	0	50	5	3
NB	0	0	0	0	50	0	0
SB	251	0	530	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12		
WB	L	12	L	12	T	12	T	12	T	12
NB										
SB	LT	12	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR							
WB	LT	T							
NB									
SB			LTR						
GREEN	28	22	48	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

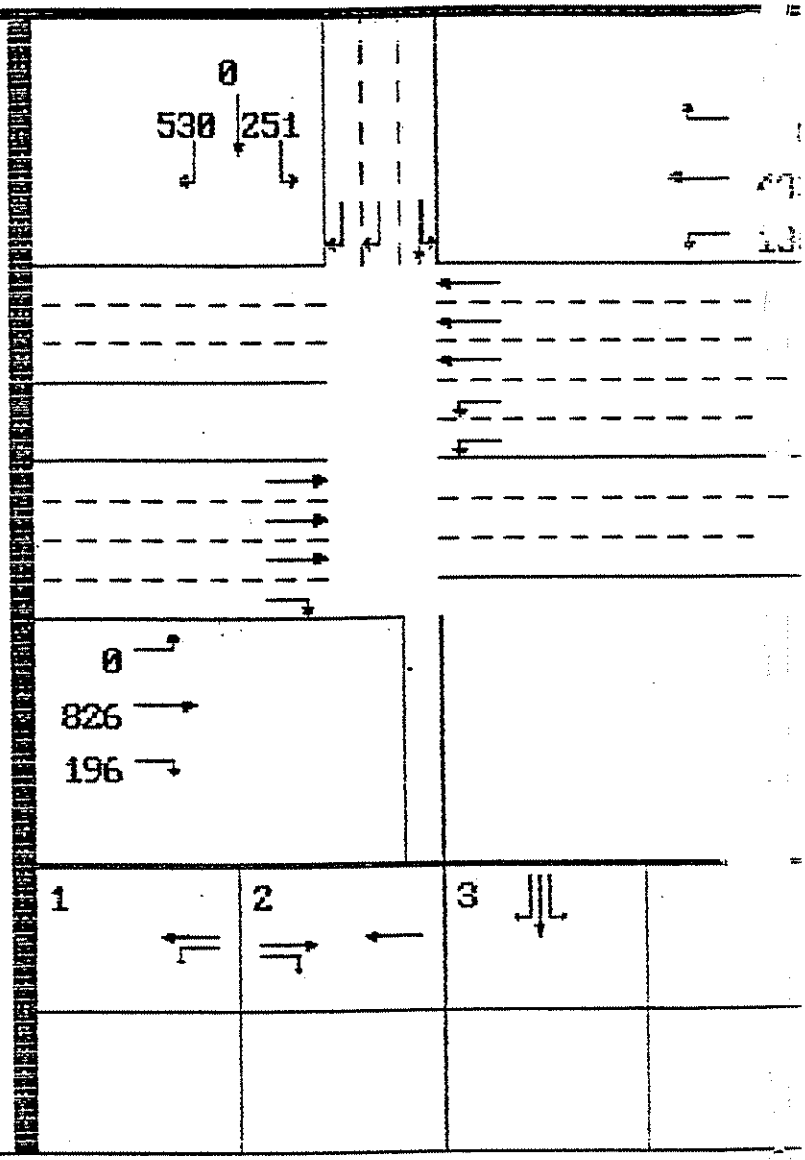
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.90	.21	T	.19	30.9	D	EB	29.8	D
	R	.69	.21	R	.14	24.7	C			
WB	L	.18	.26	L	.05	23.8	C	WB	11.0	B
	T	.20	.50	T	.10	7.2	B			
SB	LT	.37	.45	LT	.16	13.2	B	SB	14.1	B
	R	.52	.45	R	.23	14.5	B			

INTERSECT: DELAY = 20.2 SEC/VEH Xc = .51 LOS = C Sum(v/s)CR = .47

HCM Summary Results for Case: ORS8A2 ORANGE STREE/I-885 SB RAM

AM PEAK HOUR INTERIM W/ PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.19	.90	30.9	D
	R	.14	.69	24.7	C
	All			29.8	D
WB	*L	.05	.10	23.9	C
	T	.10	.20	7.2	B
	All			11.0	B
SB	LT	.16	.37	13.2	B
	*R	.23	.52	14.5	B
	All			14.1	B
Intersect:		.47	.51	20.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ORS8P2 SUMMARY REPORT

****

INTERSECTION: ORANGE STREE/I-805 SB RAM TIME: PM PEAK HOUR
ANALYST: ME DATE: 03-13-92
COMMENT: INTERIM W/PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	918	200	0	50	4	3
WB	766	457	0	0	50	5	3
NB	0	0	0	0	50	0	0
SB	419	0	1072	0	50	3	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12	R	12		
WB	L	12	L	12	T	12	T	12	T	12
NB										
SB	LT	12	R	12	R	12				

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.3	4
WB	0	2	N	0	0	.90	Y	14.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB		TR							
WB	LT	T							
NB									
SB			LTR						
GREEN	28	22	48	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

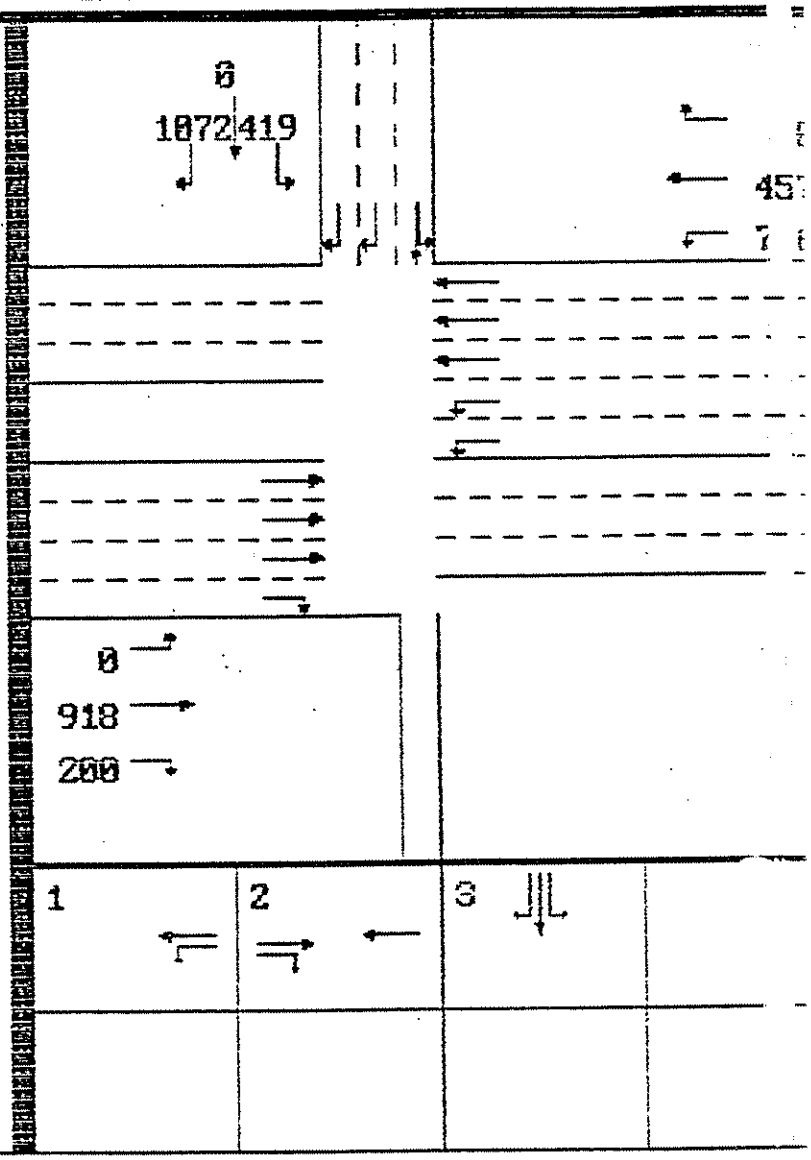
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.98	.21	T	.20	37.9	D	EB	35.7	D
	R	.68	.21	R	.14	24.4	C			
WB	L	1.01	.26	L	.27	55.6	E	WB	37.0	D
	T	.20	.50	T	.10	7.2	B			
SB	LT	.60	.45	LT	.27	15.7	C	SB	34.3	D
	R	1.02	.45	R	.46	41.2	E			

INTERSECT: DELAY = 35.6 SEC/VEH Xc = 1.01 LOS = D Summ.v/s:CR = .92

HCM Summary Results for Case: ORS8P2 ORANGE STREE/I-805 SB RAI

PM PEAK HOUR INTERIM W/PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.28	.98	37.9	D
	R	.14	.68	24.4	C
	All			35.7	D
WB	*L	.27	1.01	55.6	E
	T	.10	.20	7.2	B
	All			37.0	D
SB	LT	.27	.60	15.7	C
	*R	.46	1.02	41.2	E
	All			34.3	D
Intersect:		.92	1.01	35.6	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ORN8A2
****
INTERSECTION: ORANGE AVE /I-805 NB RAM TIME: AM PEAK
ANALYST: KK DATE: 02-14-92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	659	418	0	0	50	4	2
WB	0	456	558	0	50	3	2
NB	112	0	406	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12		
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB			LR						
SB									
GREEN	38	30	30	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

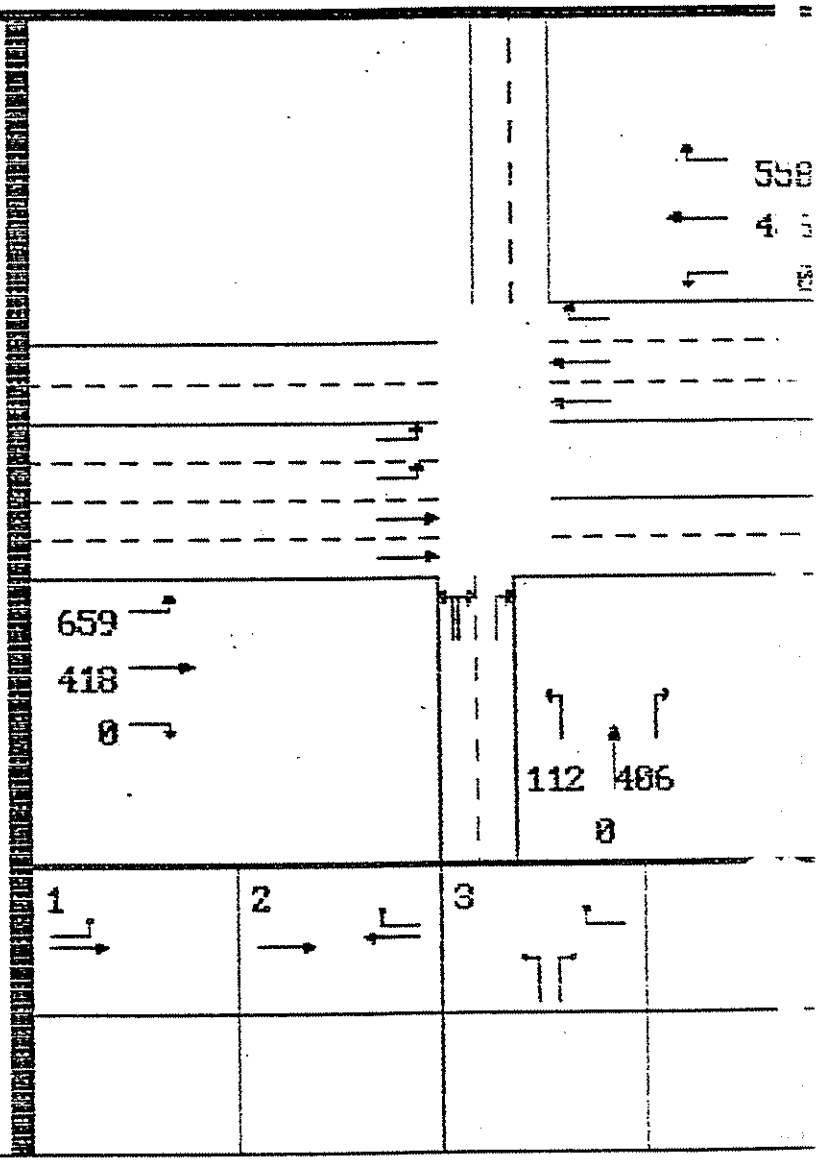
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.66	.35	L	.23	23.7	C	EB	15.9	C
	T	.21	.66	T	.14	3.4	A			
WB	T	.53	.28	T	.15	16.0	C	WB	13.4	B
	R	.73	.56	R	.41	11.1	B			
NB	LR	.63	.28	LR	.18	23.9	C	NB	24.5	C
	R	.68	.28	R	.19	25.1	D			

INTERSECT DELAY = 15.6 SEC/VEH Xc = .91 LOS = C SUM V/S ICR = .23

HCM Summary Results for Case: ORN8A2 ORANGE AVE /I-805 NB RAM

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.23	.66	23.7	C
	T	.14	.21	3.4	A
	All			15.9	C
WB	T	.15	.53	16.8	C
	*R	.41	.73	11.1	B
	All			13.4	B
NB	LR	.18	.63	23.9	C
	*R	.19	.68	25.1	D
	All			24.5	C
Intersect:		.83	.91	16.6	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ORN8P2

****

INTERSECTION: ORANGE AVE /I-805 NB RAM TIME: PM PEAK
DATE: 02-14-92
ANALYST: KK
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	673	664	0	0	50	4	2
WB	0	1042	320	0	50	3	2
NB	186	0	692	0	50	2	2
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12
WB	T	12	T	12	R	12		
NB	LR	12	R	12				
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	28.8	3
SB	0	2	N	0	0	.90	Y	28.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR	R						
NB			LR						
SB									
GREEN	26	37	35	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

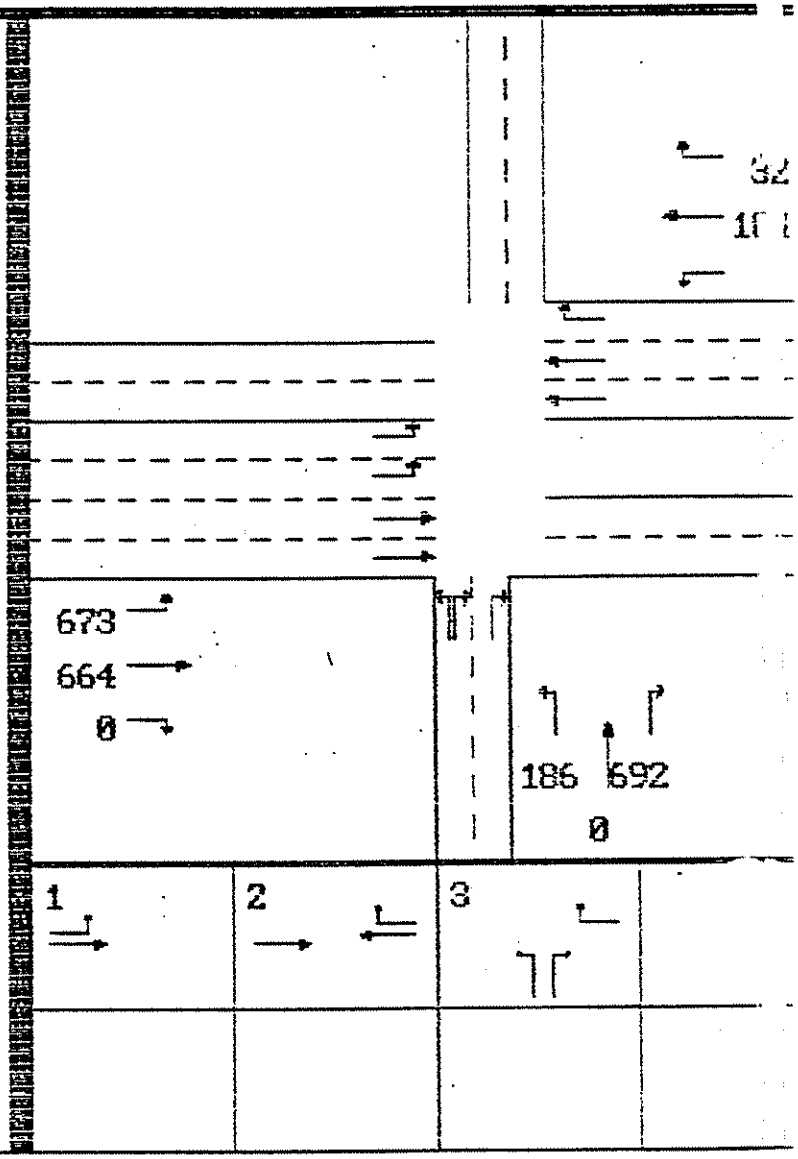
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.98	.25	L	.24	50.5	E	EB	27.8	D
	T	.35	.62	T	.34	4.9	A			
WB	T	.99	.35	T	.34	34.6	D	WB	27.6	D
	R	.35	.67	R	.23	3.7	A			
NB	LR	.93	.33	LR	.31	37.8	D	NB	41.5	E
	R	.98	.33	R	.32	45.3	E			

INTERSECT DELAY = 31.0 SEC/VEH XC = .98 LOS = D SUM(V/S)CR = .90

HCM Summary Results for Case: ORN8P2 ORANGE AVE /I-885 NB RA

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.24	.98	50.5	E
	T	.22	.35	4.9	A
	All			27.8	D
WB	*T	.34	.99	34.6	D
	R	.23	.35	3.7	A
	All			27.6	D
NB	LR	.31	.93	37.8	D
	*R	.32	.98	45.3	E
	All			41.5	E
Intersect:		.90	.98	31.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ORMCA2 SUMMARY REPORT

****

INTERSECTION: ORANGE /MEDICAL CENT TIME: AM PEAK
ANALYST: JHK DATE: 1/9/92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	307	188	2	0	50	4	3
WB	4	95	21	0	50	4	3
NB	1	183	3	0	50	3	2
SB	44	144	439	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	T	12	R	12
NB	L	12	T	12	TR	12		
SB	L	12	T	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR	R					
NB				L	TR				
SB	R	R		L	TR				
GREEN	10	20	25	10	25	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

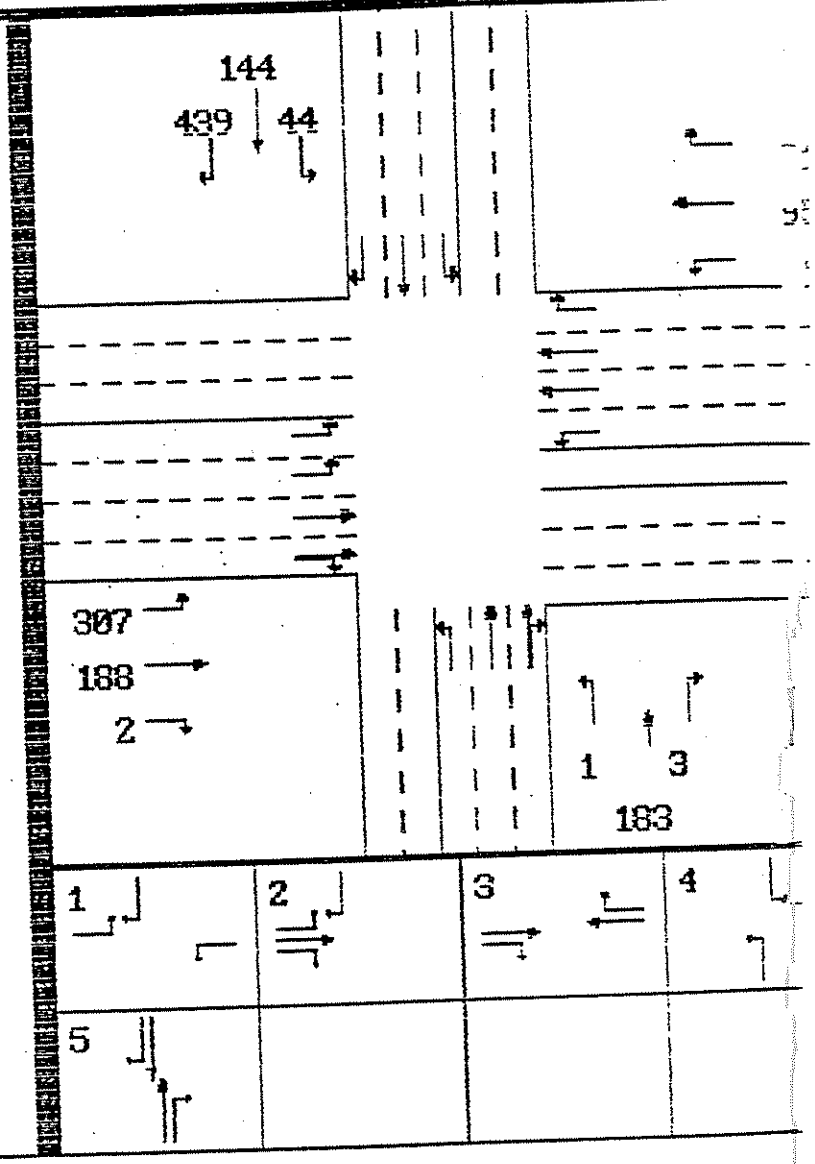
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.34	.32	L	.11	21.9	C	EB	16.7	C
	TR	.14	.45	TR	.06	8.2	B			
WB	L	.02	.10	L	.00	33.9	D	WB	15.5	C
	T	.13	.24	T	.03	15.6	C			
	R	.05	.34	R	.02	11.6	B			
NB	L	.01	.10	L	.00	33.9	D	NB	22.1	C
	TR	.26	.24	TR	.06	22.1	C			
SB	L	.29	.10	L	.03	35.1	D	SB	15.5	C
	T	.38	.24	T	.09	23.0	C			
	R	.58	.35	R	.32	11.0	B			

INTERSECT DELAY = 16.8 SEC/VEH Xc = .53 LOS = C Sum(v/s)CR = .49

HCM Summary Results for Case: ORMCA2 ORANGE /MEDICAL CENT

AM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.11	.34	21.9	C
	TR	.06	.14	8.2	B
	All			16.7	C
WB	L	.00	.02	33.9	D
	*T	.03	.13	15.6	C
	R	.02	.05	11.6	B
	All			15.5	C
NB	L	.00	.01	33.9	D
	TR	.06	.26	22.1	C
	All			22.1	C
SB	*L	.03	.29	35.1	D
	T	.09	.38	23.0	C
	*R	.32	.58	11.0	B
	All			15.5	C
Intersect:		.49	.55	16.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ORMCP2

****

INTERSECTION: ORANGE /MEDICAL CENT TIME: PM PEAK
ANALYST: \HK DATE: 1/9/92
COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	722	88	1	0	50	4	3
WB	8	210	48	0	50	4	3
NB	0	296	6	0	50	3	2
SB	29	313	865	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	TR	12
WB	L	12	T	12	T	12	R	12
NB	L	12	T	12	TR	12		
SB	L	12	T	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	4
WB	0	2	N	0	0	.90	Y	17.5	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR						
WB	L		TR	R					
NB				L	TR				
SB	R	R		L	TR				
GREEN	9	24	20	6	31	0	0	0	0
YELLOW	3	3	3	3	3	0	0	0	
RED	1	1	1	1	1	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

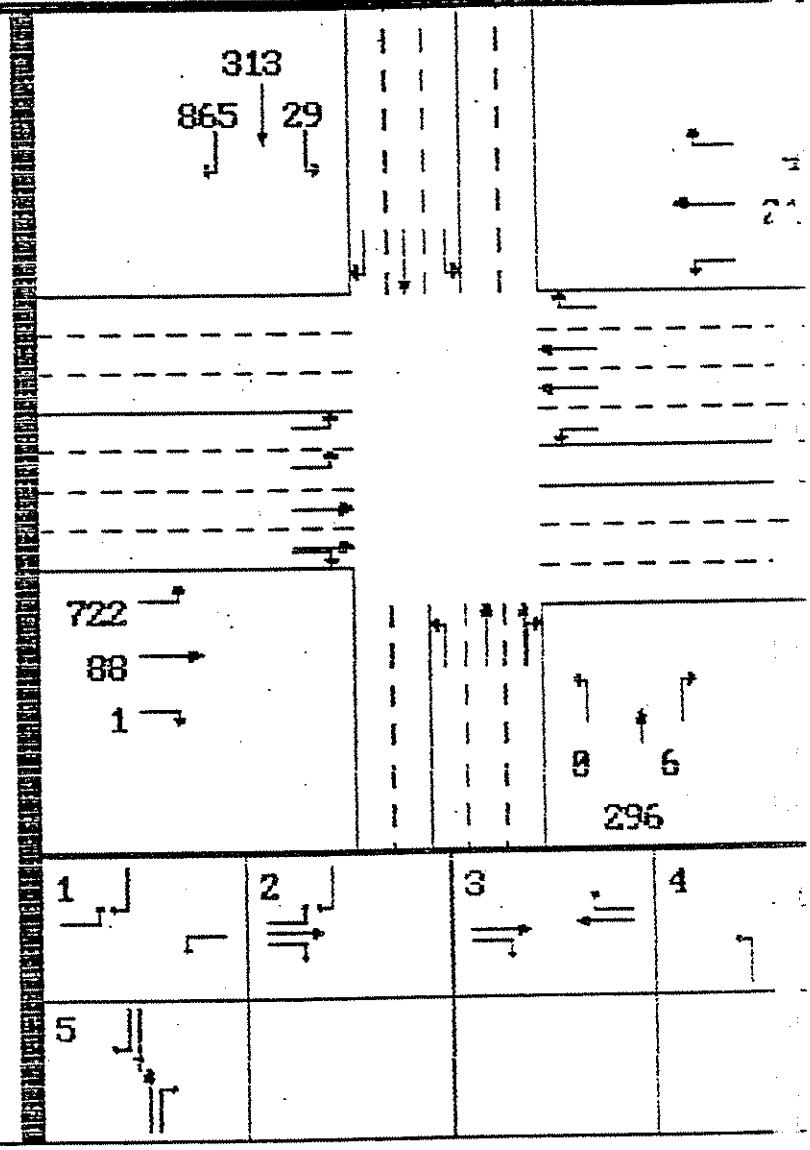
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.74	.35	L	.26	26.0	D	EB	24.0	C
	TR	.07	.45	TR	.03	8.2	B			
WB	L	.06	.09	L	.01	34.7	D	WB	18.2	C
	T	.36	.19	T	.07	18.3	C			
	R	.14	.25	R	.03	14.9	B			
NB	L	.00	.06	L	.00	.0	A	NB	19.9	C
	TR	.34	.29	TR	.10	19.9	C			
SB	L	.30	.06	L	.02	37.8	D	SB	29.5	D
	T	.67	.29	T	.20	24.2	C			
	R	1.00	.64	R	.63	31.2	D			

INTERSECT: DELAY = 25.4 SEC/VEH xc = 1.10 LOS = D Sum(v/s)CR = .98

HCM Summary Results for Case: ORMCP2 ORANGE - /MEDICAL CEN

PM PEAK INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.26	.74	26.0	D
	TR	.03	.07	8.2	B
	All			24.0	C
WB	L	.01	.06	34.7	D
	*T	.07	.36	18.3	C
	R	.03	.14	14.9	B
	All			18.2	C
NB	L	.00	.00	.0	A
	TR	.10	.34	19.9	C
	All			19.9	C
SB	*L	.02	.30	37.8	D
	T	.20	.67	24.2	C
	*R	.63	1.00	31.2	D
	All			29.5	D
Intersect:		.98	1.10	25.4	D



APPENDIX G

SIGNALIZED INTERSECTIONS CAPACITY ANALYSIS WORKSHEETS

INTERIM (PRE-SR 125) PROPOSED PROJECT CONDITION

PROJECT SITE ACCESS ALTERNATIVE ANALYSES

HCM/Cinema V1.26 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELAA1
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
DATE: 02-19-92
ANALYST: ME AREA TYPE: NON-CBD
COMMENT: INTERIM WITH PROPOSED PROJECT

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	1185	377	477	0	50	6	2
WB	131	162	152	0	50	5	3
NB	717	502	134	0	50	4	2
SB	106	184	429	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R					
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	36	10	5	13	14	8	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

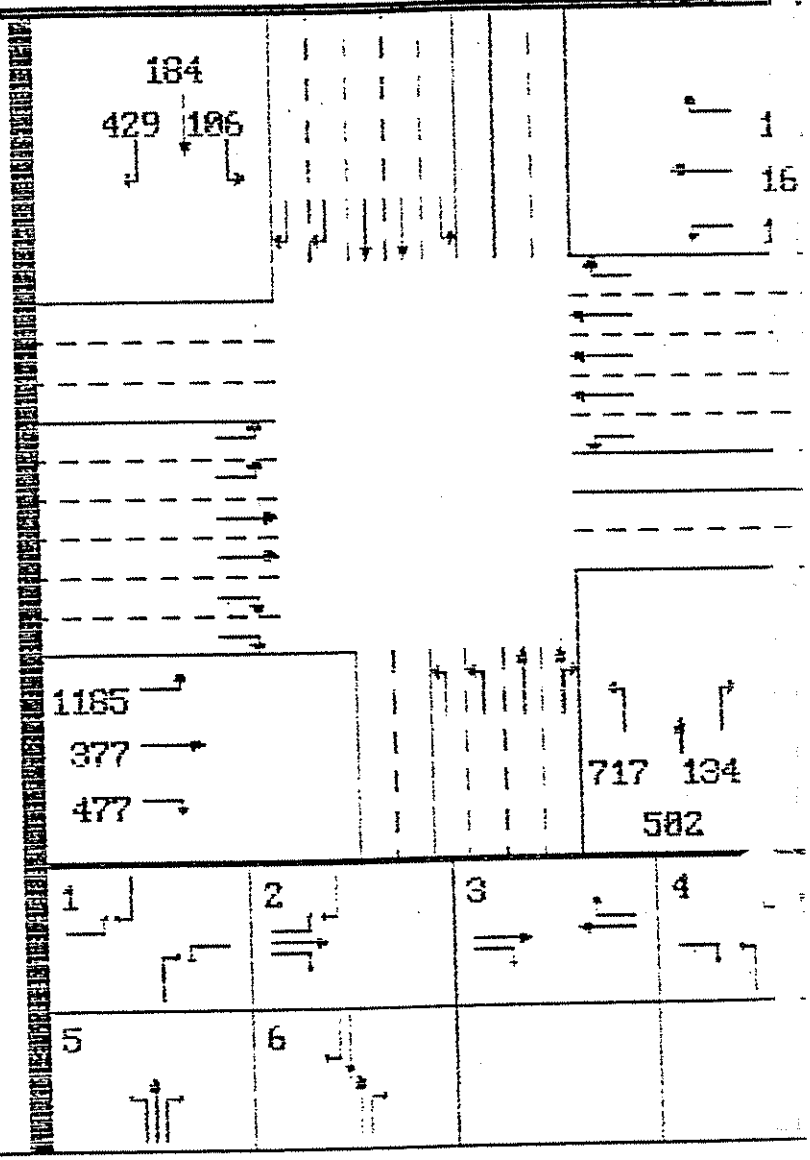
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.91	.46	L	.42	26.9	D	EB	24.6	C
	T	.68	.18	T	.12	24.1	C			
	R	.67	.31	R	.21	19.0	C			
WB	L	.26	.34	L	.09	20.2	C	WB	25.6	D
	T	.66	.05	T	.04	30.6	D			
	R	.61	.18	R	.11	24.4	C			
NB	L	.88	.29	L	.26	34.9	D	NB	32.3	D
	TR	.88	.25	TR	.22	29.3	D			
SB	L	.55	.13	L	.07	36.5	D	SB	17.1	C
	T	.73	.08	T	.06	31.0	D			
	R	.34	.53	R	.19	6.6	B			

INTERSECTION DELAY = 15.8 SEC/VEH v/c = .87 LOS = D Sum(v/s)/CR = .77

HCM Summary Results for Case: OLELAA1 OTAY LAKES R/EASTLAKE PAR

AM PEAK HOUR INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.42	.91	26.9	D
	T	.12	.68	24.1	C
	R	.21	.67	19.8	C
	All			24.6	C
WB	L	.09	.26	28.2	C
	*T	.04	.68	30.6	D
	R	.11	.61	24.4	C
	All			25.6	D
NB	*L	.26	.88	34.9	D
	TR	.22	.88	29.3	D
	All			32.3	D
SB	L	.07	.55	36.5	D
	*T	.06	.73	31.0	D
	R	.19	.34	6.6	B
	All			17.1	C
Intersect:		.77	.87	25.8	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: OLELPA1

****

INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR

ANALYST: ME DATE: 02-19-92

COMMENT: INTERIM WITH PROPOSED PROJECT AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	546	202	896	0	50	6	2
WB	168	471	222	0	50	5	3
NB	596	238	164	0	50	4	2
SB	181	518	1274	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R 12
WB	L	12	T	12	T	12	T	12	R	12	
NB	L	12	L	12	T	12	TR	12			
SB	L	12	T	12	T	12	R	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	35.5	4
SB	0	2	N	0	0	.90	Y	35.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	L	LTR	TR	R					
WB	L		TR	R					
NB				L	LTR	TR			
SB	R	R		L		TR			
GREEN	16	12	12	17	4	25	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

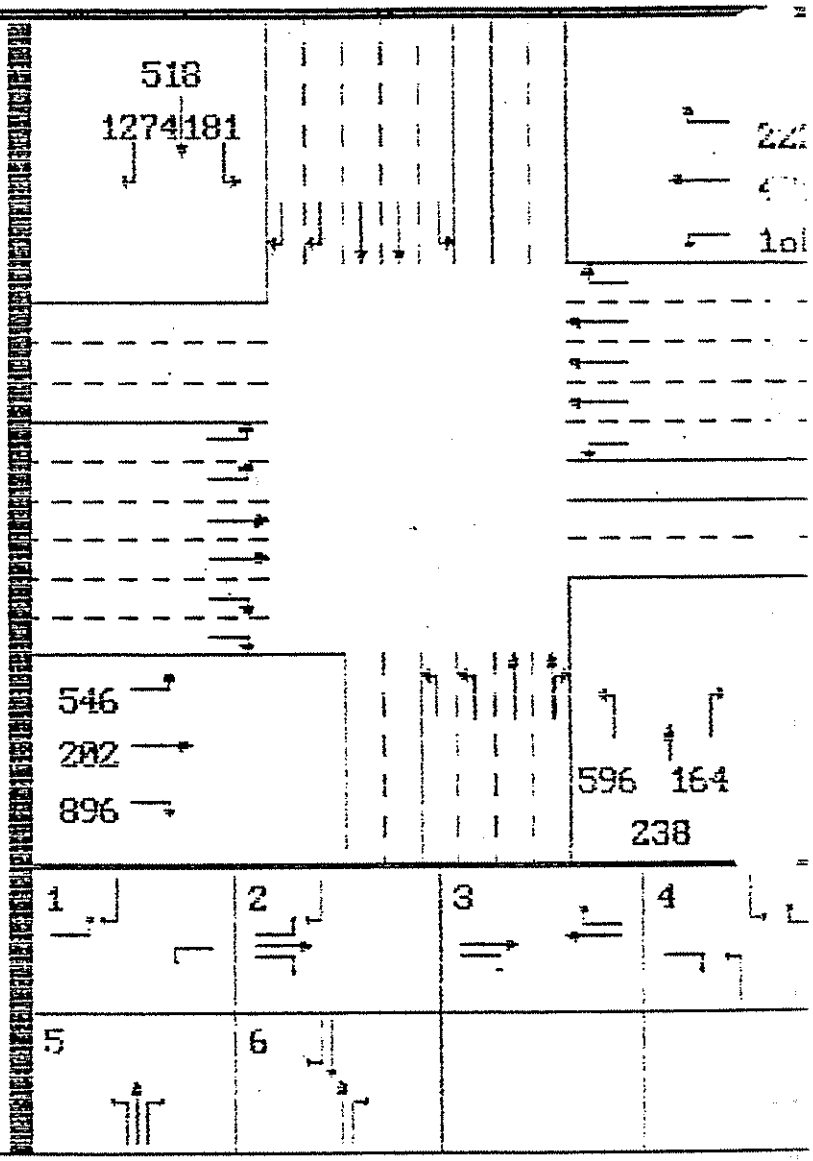
APP	LANE GRP.	v/c	c/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.65	.30	L	.19	26.5	D	EB	23.7	C
	T	.25	.26	T	.07	15.1	C			
	R	.92	.43	R	.39	24.0	C			
WB	L	.71	.15	L	.11	39.6	D	WB	33.1	D
	T	.91	.12	T	.11	38.1	D			
	R	.58	.28	R	.16	16.9	C			
NB	L	.90	.24	L	.21	40.3	E	NB	29.9	D
	TR	.45	.31	TR	.14	14.5	B			
SB	L	.73	.16	L	.12	39.4	D	SB	33.3	D
	T	.72	.24	T	.17	22.3	C			
	R	1.04	.54	R	.36	37.0	D			

INTERSECTION DELAY = 29.8 SEC/VEH Xc = .77 LOS = D SUM V/C OR =

HCM Summary Results for Case: OLELPA1 OTAY LAKES R/EASTLAKE PAR

PM PEAK HOUR INTERIM WITH PROPOSED PROJECT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.19	.65	26.5	D
	T	.07	.25	15.1	C
	R	.39	.92	24.8	C
	All			23.7	C
WB	L	.11	.71	39.6	D
	*T	.11	.91	38.1	D
	R	.16	.58	16.9	C
	All			33.1	D
NB	*L	.21	.90	40.3	E
	TR	.14	.45	14.5	B
	All			29.9	D
SB	L	.12	.73	39.4	D
	*T	.17	.72	22.3	C
	R	.56	1.84	37.8	D
	All			33.3	D
Intersect:		.68	.77	29.8	D



HCM/Cinema v1.1B LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELAA2
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
DATE: 02-19-92
ANALYST: ME AREA TYPE: NON-CBD
COMMENT: ALT II - RT'S IN & RT'S OUT AT MID-

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	1185	377	286	0	50	6	2
WB	131	162	152	0	50	5	3
NB	647	482	134	0	50	4	2
SB	106	184	416	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	L	LTR	TR	R					
	WB	L		TR	R					
	NB	R			L	LTR	TR			
	SB	R	R		L		TR			
GREEN		36	10	5	13	14	8	0	0	0
YELLOW		4	4	4	4	4	4	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

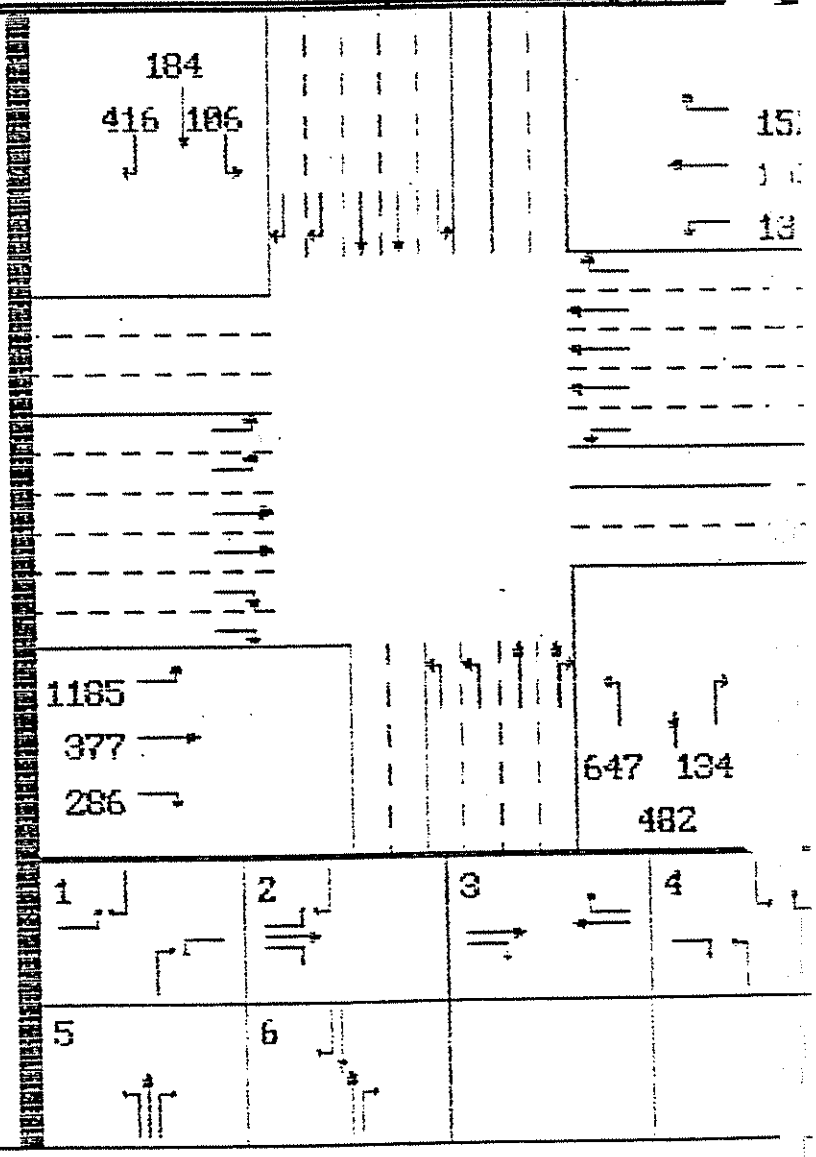
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.91	.46	L	.42	26.9	D	EB	24.4	C
	T	.66	.18	T	.12	24.1	C			
	R	.40	.31	R	.12	14.3	B			
WB	L	.26	.34	L	.09	20.2	C	WB	25.6	D
	T	.66	.05	T	.04	30.6	D			
	R	.61	.18	R	.11	24.4	C			
NB	L	.79	.29	L	.23	30.5	D	NB	29.3	D
	TR	.85	.25	TR	.21	28.0	D			
SB	L	.55	.13	L	.07	36.5	D	SB	17.3	C
	T	.72	.08	T	.06	31.0	D			
	R	.33	.35	R	.18	6.6	B			

54 LOS = C

HCM Summary Results for Case: OLELAA2 OTAY LAKES R/EASTLAKE PAR

AM PEAK HOUR ALT II - RT'S IN & RT'S OUT AT MID

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.42	.91	26.9	D
	T	.12	.68	24.1	C
	R	.12	.40	14.3	B
	All			24.4	C
WB	L	.09	.26	28.2	C
	*T	.04	.68	30.6	D
	R	.11	.61	24.4	C
	All			25.6	D
NB	*L	.23	.79	30.5	D
	TR	.21	.85	28.8	D
	All			29.3	D
SB	L	.07	.55	36.5	D
	*T	.06	.73	31.9	D
	R	.18	.33	6.6	B
	All			17.3	C
Intersect:		.75	.84	24.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELPA2
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
DATE: 02-19-92
ANALYST: ME
COMMENT: ALT II - RT'S IN & RT'S OUT AT MID- AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	638	202	515	0	50	6	2
WB	168	503	190	0	50	5	3
NB	559	186	164	0	50	4	2
SB	181	518	1049	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	35.5	4
SB	0	2	N	0	0	.90	Y	35.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	L	LTR	TR	R					
	WB	L		TR	R					
	NB	R			L	LTR	TR			
	SB	R	R		L		TR			
GREEN		16	12	12	17	4	25	0	0	0
YELLOW		4	4	4	4	4	4	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

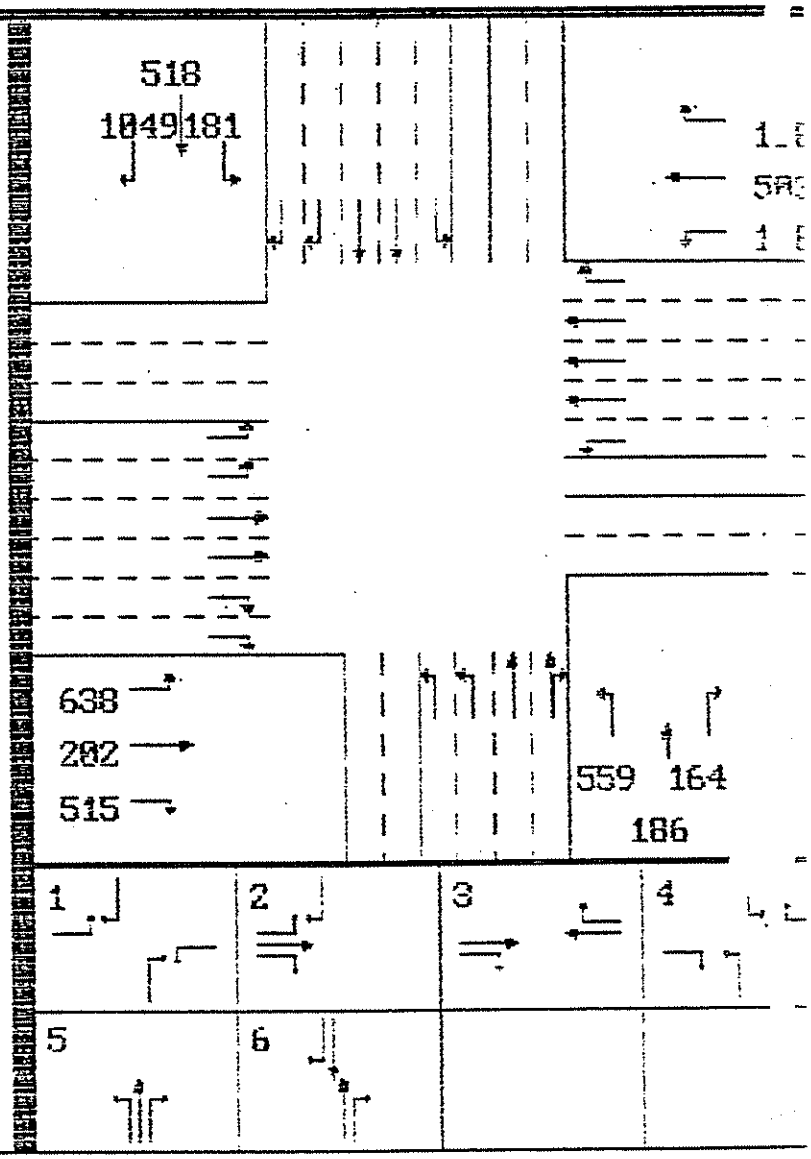
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.76	.30	L	.23	28.9	D	EB	20.1	C
	T	.25	.26	T	.07	15.1	C			
	R	.53	.43	R	.22	11.2	B			
WB	L	.71	.15	L	.11	39.6	D	WB	38.3	D
	T	.97	.12	T	.12	45.6	E			
	R	.49	.28	R	.14	16.0	C			
NB	L	.84	.24	L	.20	36.3	D	NB	27.8	D
	TR	.40	.31	TR	.12	14.2	B			
SB	L	.73	.16	L	.12	39.4	D	SB	20.1	C
	T	.72	.24	T	.17	22.3	C			
	R	.65	.34	R	.46	15.8	C			

[illegible] = .30 LOS = C [illegible] = .71

HCM Summary Results for Case: OLELPA2 OTAY LAKES R/EASTLAKE PAR

PM PEAK HOUR ALT II - RT'S IN & RT'S OUT AT MID-

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.23	.76	28.9	D
	T	.07	.25	15.1	C
	R	.22	.53	11.2	B
	All			20.1	C
WB	L	.11	.71	39.6	D
	*T	.12	.97	45.6	E
	R	.14	.49	16.0	C
	All			38.3	D
NB	*L	.20	.84	36.3	D
	TR	.12	.40	14.2	B
	All			27.8	D
SB	L	.12	.73	39.4	D
	*T	.17	.72	22.3	C
	R	.46	.85	15.8	C
	All			20.1	C
Intersect:		.71	.80	24.8	C



HCM/Cinema V1.2G LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELAA3
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
DATE: 02-19-92
ANALYST: ME AREA TYPE: NON-CBD
COMMENT: ALT III - LT'S IN & RT'S OUT AT MID

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	1119	417	286	0	50	6	2
WB	105	188	152	0	50	5	3
NB	733	486	94	0	50	4	2
SB	105	170	389	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R 12
WB	L	12	T	12	T	12	T	12	R	12	
NB	L	12	L	12	T	12	TR	12			
SB	L	12	T	12	T	12	R	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R					
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	36	10	5	13	14	8	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

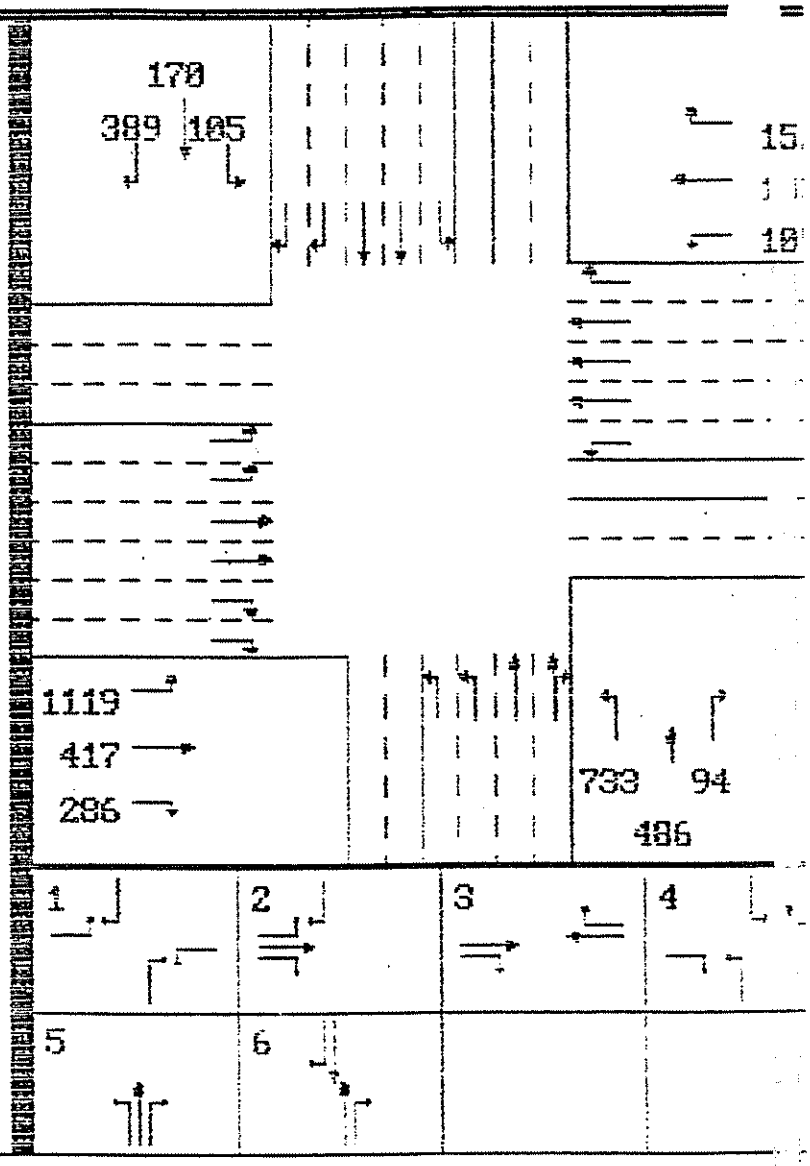
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.86	.46	L	.40	23.7	C	EB	22.6	C
	T	.75	.18	T	.14	25.4	D			
	R	.40	.31	R	.12	14.3	B			
WB	L	.21	.34	L	.07	19.8	C	WB	27.7	D
	T	.79	.05	T	.04	34.2	D			
	R	.61	.18	R	.11	24.4	C			
NB	L	.90	.29	L	.26	36.3	D	NB	30.7	D
	TR	.79	.25	TR	.19	23.5	C			
SB	L	.54	.13	L	.07	36.4	D	SB	17.0	C
	T	.68	.08	T	.06	29.5	D			
	R	.31	.55	R	.17	6.5	B			

INTERSECT. DELAY = 24.7 SEC/VEH Xc = .85 LOS = C Sum(v/s)CP = [illegible]

HCM Summary Results for Case: OLELAA3 OTAY LAKES R/EASTLAKE PAR

AM PEAK HOUR ALT III - LT'S IN & RT'S OUT AT MI

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.40	.86	23.7	C
	T	.14	.75	25.4	D
	R	.12	.40	14.3	B
	All			22.6	C
WB	L	.07	.21	19.8	C
	*T	.04	.79	34.2	D
	R	.11	.61	24.4	C
	All			27.7	D
NB	*L	.26	.90	36.3	D
	TR	.19	.79	23.5	C
	All			30.7	D
SB	L	.07	.54	36.4	D
	*T	.06	.68	29.5	D
	R	.17	.31	6.5	B
	All			17.0	C
Intersect:		.76	.85	24.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELPA3
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
DATE: 02-19-92
ANALYST: ME
COMMENT: ALT III - LT'S IN & RT'S OUT AT MID AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	254	235	515	0	50	6	2
WB	134	505	189	0	50	5	3
NB	636	198	131	0	50	4	2
SB	158	468	982	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	35.5	4
SB	0	2	N	0	0	.90	Y	35.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1

PHASE:		1	2	3	4	5	6	7	8	PED UNL
	EB	L	LTR	TR	R					
	WB	L		TR	R					
	NB	R			L	LTR	TR			
	SB	R	R		L		TR			
GREEN		16	12	12	17	4	25	0	0	0
YELLOW		4	4	4	4	4	4	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

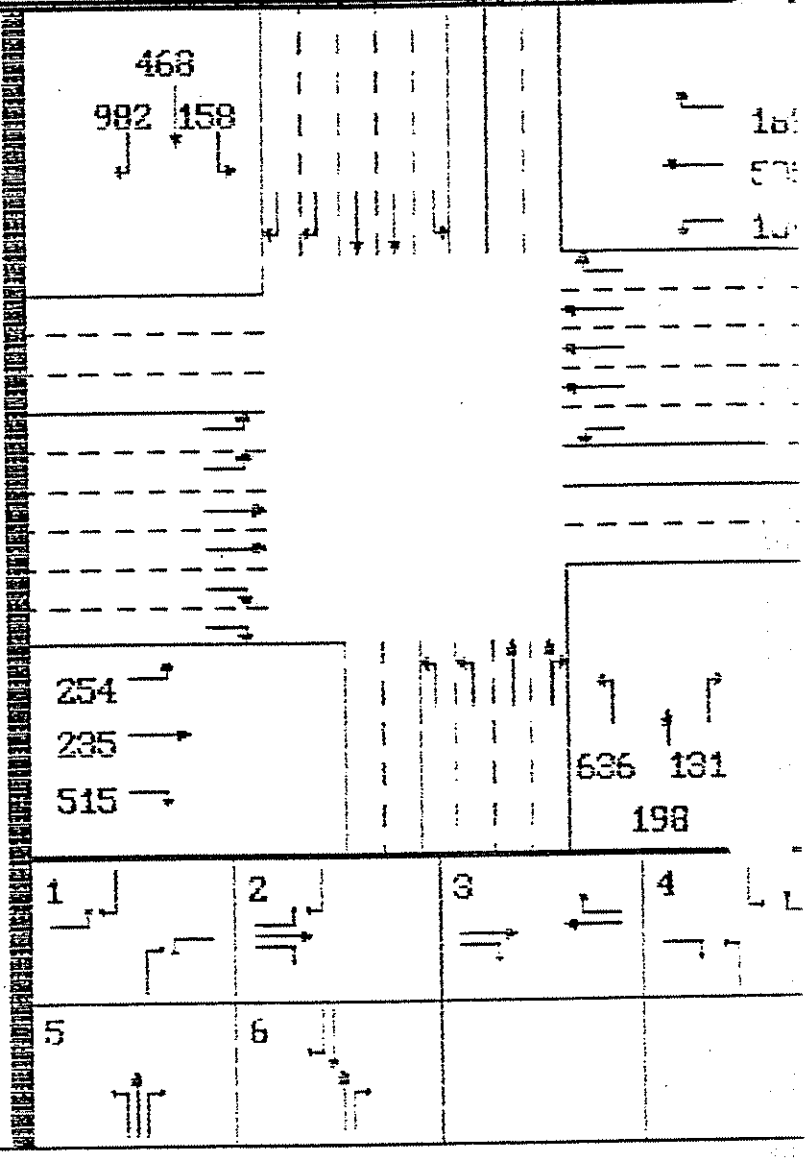
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	V/C	G/C	LANE GRP.	V/S	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.30	.30	L	.09	22.6	C	EB	15.0	C
	T	.29	.26	T	.08	15.3	C			
	R	.53	.43	R	.22	11.2	B			
WB	L	.57	.15	L	.09	34.9	D	WB	37.9	D
	T	.95	.12	T	.12	46.1	E			
	R	.49	.28	R	.14	16.0	C			
NB	L	.96	.24	L	.23	48.0	E	NB	36.5	D
	TR	.37	.31	TR	.11	14.0	B			
SB	L	.64	.15	L	.10	35.9	D	SB	17.5	C
	T	.65	.24	T	.15	21.3	C			
	R	.80	.54	R	.43	12.8	B			

HCM Summary Results for Case: OLELPA3 OTAY LAKES R/EASTLAKE PAR

PM PEAK HOUR ALT III - LT'S IN & RT'S OUT AT MID

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.09	.30	22.6	C
	T	.08	.29	15.3	C
	R	.22	.53	11.2	B
	All			15.0	C
WB	L	.09	.57	34.9	D
	*T	.12	.98	46.1	E
	R	.14	.49	16.0	C
	All			37.9	D
NB	*L	.23	.96	48.0	E
	TR	.11	.37	14.0	B
	All			36.5	D
SB	L	.10	.64	35.9	D
	*T	.15	.65	21.3	C
	R	.43	.80	12.0	B
	All			17.5	C
Intersect:		.59	.66	24.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELAA4
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
DATE: 02-19-92
ANALYST: ME
COMMENT: ALT IV - W/ SIGNAL & FULL ACCESS AT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	1098	420	185	0	50	6	2
WB	99	194	152	0	50	5	3
NB	445	403	94	0	50	4	2
SB	104	128	375	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	PED. BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R					
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	36	10	5	13	14	8	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

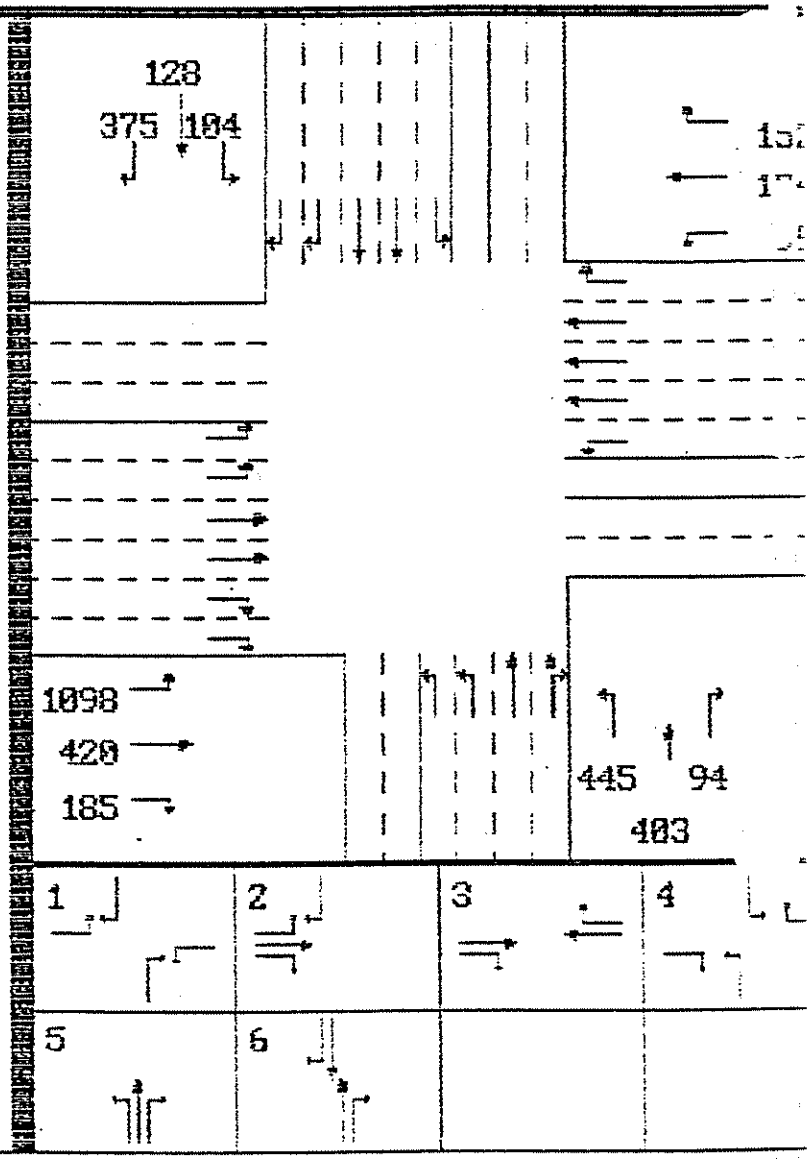
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.84	.46	L	.39	22.9	C	EB	22.6	C
	T	.76	.18	T	.14	25.5	D			
	R	.26	.31	R	.08	13.5	B			
WB	L	.19	.34	L	.06	19.7	C	WB	30.2	D
	T	.82	.05	T	.04	39.1	D			
	R	.61	.18	R	.11	24.4	C			
NB	L	.54	.29	L	.16	25.5	D	NB	23.3	C
	TR	.68	.25	TR	.17	21.4	C			
SB	L	.54	.13	L	.07	36.3	D	SB	15.0	B
	T	.51	.08	T	.04	23.6	C			
	R	.30	.55	R	.16	6.4	B			

INTERSECT: DELAY = 22.4 SEC/VEH Xc = .75 LOS = C Sum. s/CP = .67

HCM Summary Results for Case: OLELAA4 OTAY LAKES R/EASTLAKE PAR

AM PEAK HOUR ALT IV - W/ SIGNAL & FULL ACCESS A1

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.39	.84	22.9	C
	T	.14	.76	25.5	D
	R	.08	.26	13.5	B
	All			22.6	C
WB	L	.06	.19	19.7	C
	*T	.04	.82	39.1	D
	R	.11	.61	24.4	C
	All			30.2	D
NB	L	.16	.54	25.5	D
	*TR	.17	.68	21.4	C
	All			23.3	C
SB	*L	.07	.54	36.3	D
	T	.04	.51	23.6	C
	R	.16	.30	6.4	B
	All			15.0	B
Intersect:		.67	.75	22.4	C



HCM/Cinema v1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELPA4
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
DATE: 02-19-92
ANALYST: ME
COMMENT: ALT IV - W/ SIGNAL & FULL ACCESS AT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	209	292	394	0	50	6	2
WB	118	521	184	0	50	5	3
NB	374	88	98	0	50	4	2
SB	131	368	937	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	R	12	R	12
WB	L	12	T	12	T	12	T	12	R	12		
NB	L	12	L	12	T	12	TR	12				
SB	L	12	T	12	T	12	R	12	R	12		

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	PED. BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	29.5	4
WB	0	2	N	0	0	.90	Y	29.5	4
NB	0	2	N	0	0	.90	Y	35.5	4
SB	0	2	N	0	0	.90	Y	35.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R					
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	16	12	12	17	4	25	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

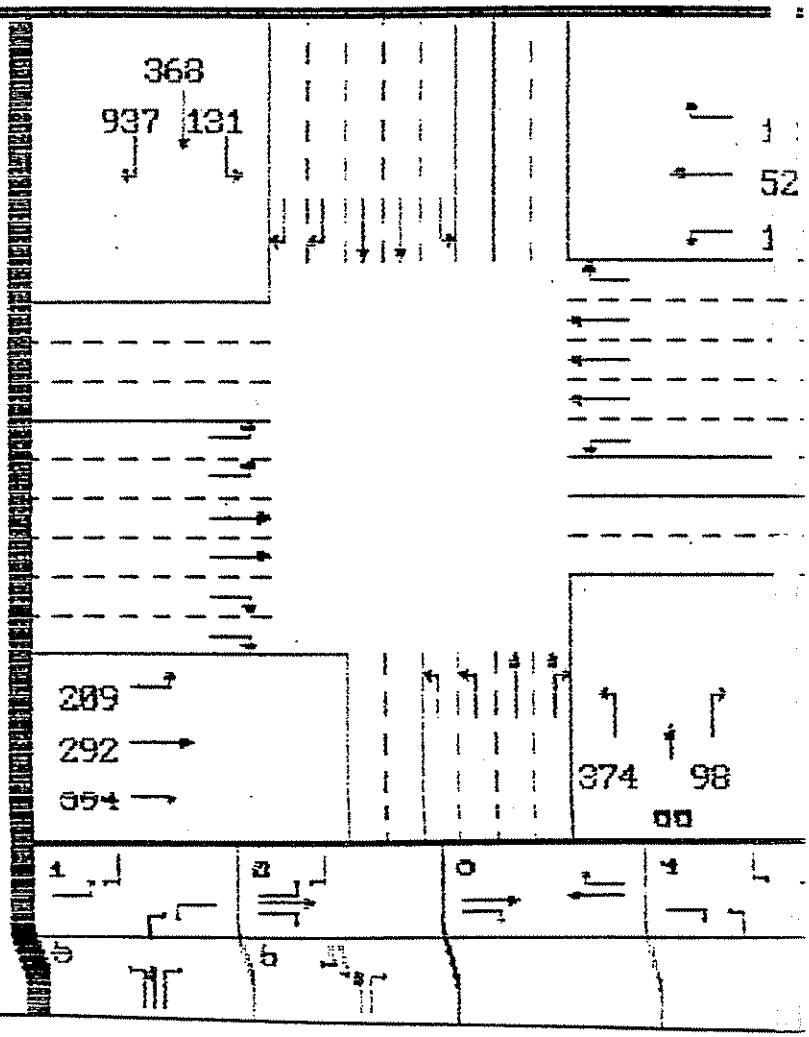
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.25	.30	L	.07	22.2	C	EB	14.8	B
	T	.36	.26	T	.10	15.6	C			
	R	.40	.43	R	.17	10.3	B			
WB	L	.50	.15	L	.08	33.7	D	WB	41.8	E
	T	1.01	.12	T	.12	51.8	E			
	R	.48	.23	R	.13	15.9	C			
NB	L	.56	.24	L	.13	28.8	D	NB	23.7	C
	TR	.21	.31	TR	.07	13.3	B			
SB	L	.53	.16	L	.09	33.5	D	SB	15.3	C
	T	.51	.24	T	.12	17.5	C			
	R	.76	.34	R	.41	12.0	B			

[illegible] = 12.[illegible] SEC VEH [illegible] = .50 LOS = C [illegible] = .45

HCM Summary Results for Case: OLELPA4 OTAY LAKES R/EASTLAKE PA

PM PEAK HOUR ALT IV - W/ SIGNAL & FULL ACCESS ..

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.07	.25	22.2	C
	T	.10	.36	15.6	C
	R	.17	.40	10.3	B
	All			14.8	B
WB	L	.08	.50	33.7	D
	*T	.12	1.01	51.8	E
	R	.13	.48	15.9	C
	All			41.8	E
NB	*L	.13	.56	28.8	D
	TR	.07	.21	13.3	B
	All			23.7	C
SB	L	.09	.83	33.8	D
	*T	.12	.51	17.5	C
	R	.41	.76	12.9	B
Intersect:		.45	.50	22.4	C



HCM/Cinema V1.23 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ELMBAA4

****

INTERSECTION: OLAY LAKES R/MID-BLOCK AC TIME: AM PEAK
DATE: 02-19-92
ANALYST: ME
COMMENT: ALT IV - W/SIGNAL AT MID-BLOCK ACCE AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	87	1737	102	0	50	6	4
WB	32	967	15	0	50	6	4
NB	287	5	40	0	50	2	1
SB	13	10	54	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	T	12	TR	12
NB	L	12	TR	12								
SB	LT	12	R	12								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	19.8	4
WB	0	2	N	0	0	.90	Y	19.8	4
NB	0	2	N	0	0	.90	Y	40.8	3
SB	0	2	N	0	0	.90	Y	40.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR							
WB		TR	LTR						
NB				LTR					
SB	R				LTR				
GREEN	31	13	12	25	9	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

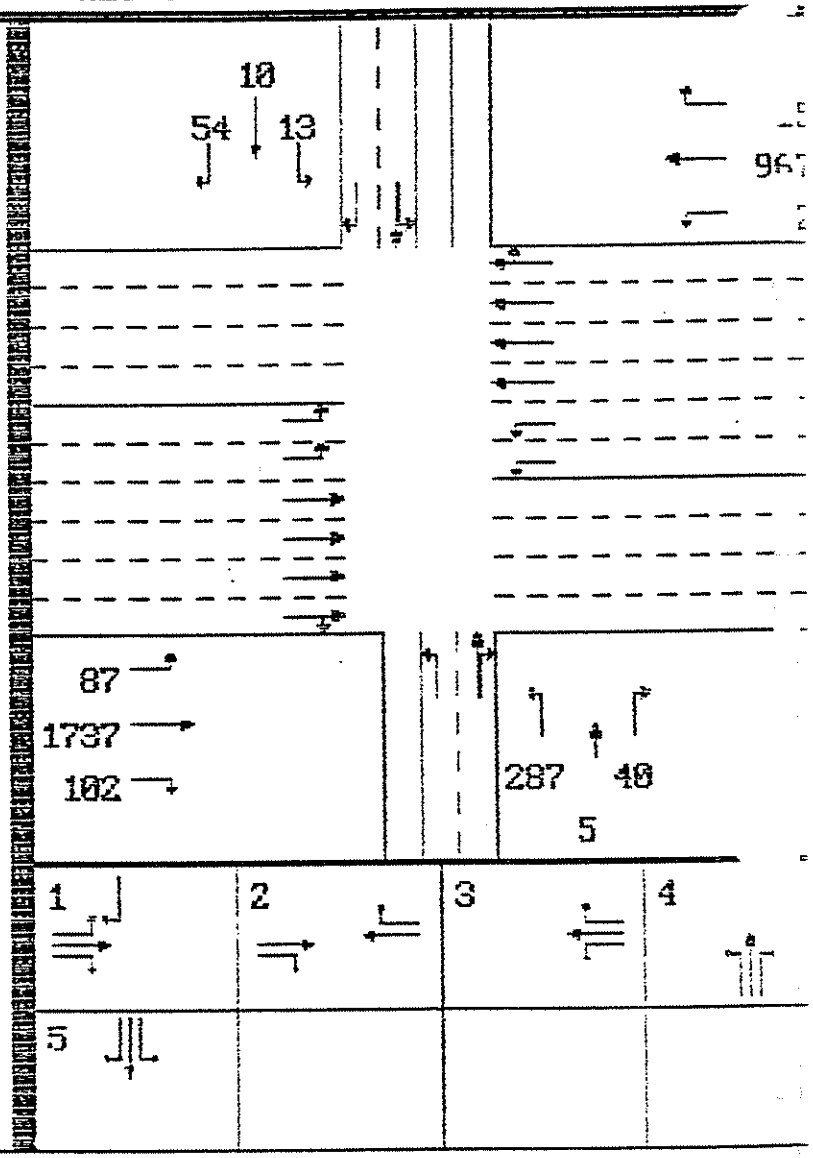
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.11	.29	L	.03	21.7	C	EB	14.1	B
	TR	.71	.45	TR	.32	13.8	B			
WB	L	.10	.12	L	.01	32.9	D	WB	19.0	C
	TR	.62	.27	TR	.17	19.2	C			
NB	L	.80	.24	L	.19	37.5	D	NB	35.3	D
	TR	.14	.24	TR	.03	21.4	C			
SB	LT	.16	.09	LT	.01	29.8	D	SB	18.6	C
	R	.13	.38	R	.04	14.1	B			

HCM Summary Results for Case: ELMBAA4 OTAY LAKES R/MID-BLOCK AC

AM PEAK ALT IV - W/SIGNAL AT MID-BLOCK ACCE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.03	.11	21.7	C
	*TR	.32	.71	13.8	B
	All			14.1	B
WB	*L	.01	.10	32.9	D
	TR	.17	.62	19.2	C
	All			19.6	C
NB	*L	.19	.80	37.5	D
	TR	.03	.14	21.4	C
	All			35.3	D
SB	LT	.01	.16	29.8	D
	*R	.04	.10	14.1	B
	All			18.8	C
Intersect:		.56	.63	17.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMBPA4 SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/MID-BLOCK AC TIME: PM PEAK
ANALYST: ME DATE: 02-19-92
COMMENT: ALT IV - W/SIGNAL AT MID-BLOCK ACCE AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	337	820	303	0	50	6	4
WB	50	1698	84	0	50	6	4
NB	268	22	66	0	50	2	1
SB	84	24	337	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	T	12	TR	12
NB	L	12	TR	12								
SB	LT	12	R	12								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	19.8	4
WB	0	2	N	0	0	.90	Y	19.8	4
NB	0	2	N	0	0	.90	Y	40.8	3
SB	0	2	N	0	0	.90	Y	40.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR							
WB		TR	LTR						
NB				LTR					
SB	R				LTR				
GREEN	15	15	22	23	15	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

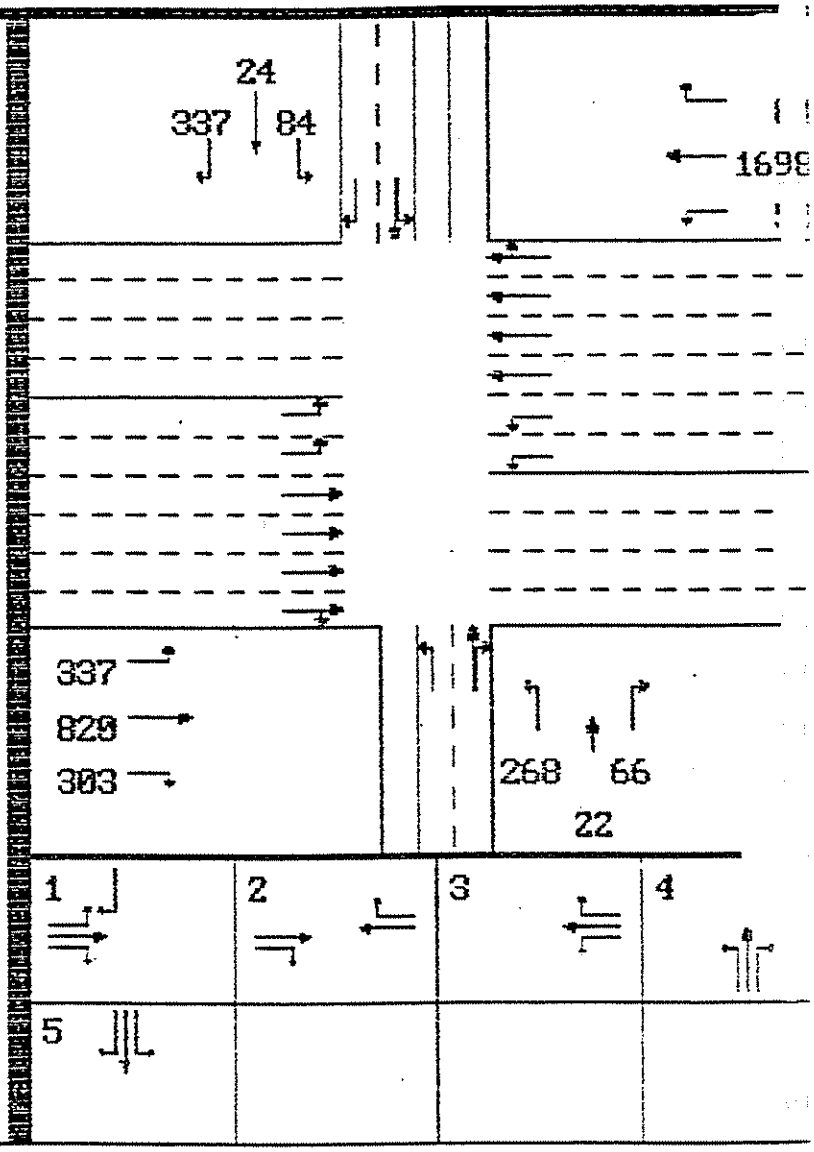
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.82	.15	L	.12	42.4	E	EB	23.1	C
	TR	.63	.32	TR	.20	17.6	C			
WB	L	.09	.21	L	.02	26.6	D	WB	19.2	C
	TR	.81	.38	TR	.31	19.0	C			
NB	L	.81	.22	L	.18	39.6	D	NB	35.6	D
	TR	.28	.22	TR	.06	23.2	C			
SB	LT	.48	.15	LT	.07	28.9	D	SB	31.4	D
	R	.83	.29	R	.25	32.2	D			

INTERSECTION DELAY = 27.2 SECOVER Xc = .95 LOS = C Sum v/s IR = .85

HCM Summary Results for Case: ELMBPA4 OTAY LAKES R/MID-BLOCK AC

PM PEAK ALT IV - W/SIGNAL AT MID-BLOCK ACCE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.12	.82	42.4	E
	TR	.20	.63	17.6	C
	All			23.1	C
WB	L	.02	.09	26.6	D
	*TR	.31	.81	19.0	C
	All			19.2	C
NB	*L	.18	.81	39.6	D
	TR	.06	.28	23.2	C
	All			35.6	D
SB	LT	.07	.48	28.9	D
	*R	.25	.85	32.2	D
	All			31.4	D
Intersect:		.85	.95	23.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEAA1 SUMMARY REPORT
****
INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT I - NO ACCESS AT MID-BLOCK ON T AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	134	0	50	2	1
WB	87	42	18	0	50	2	1
NB	605	531	473	0	50	3	2
SB	173	408	113	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	10	15	19	25	21	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

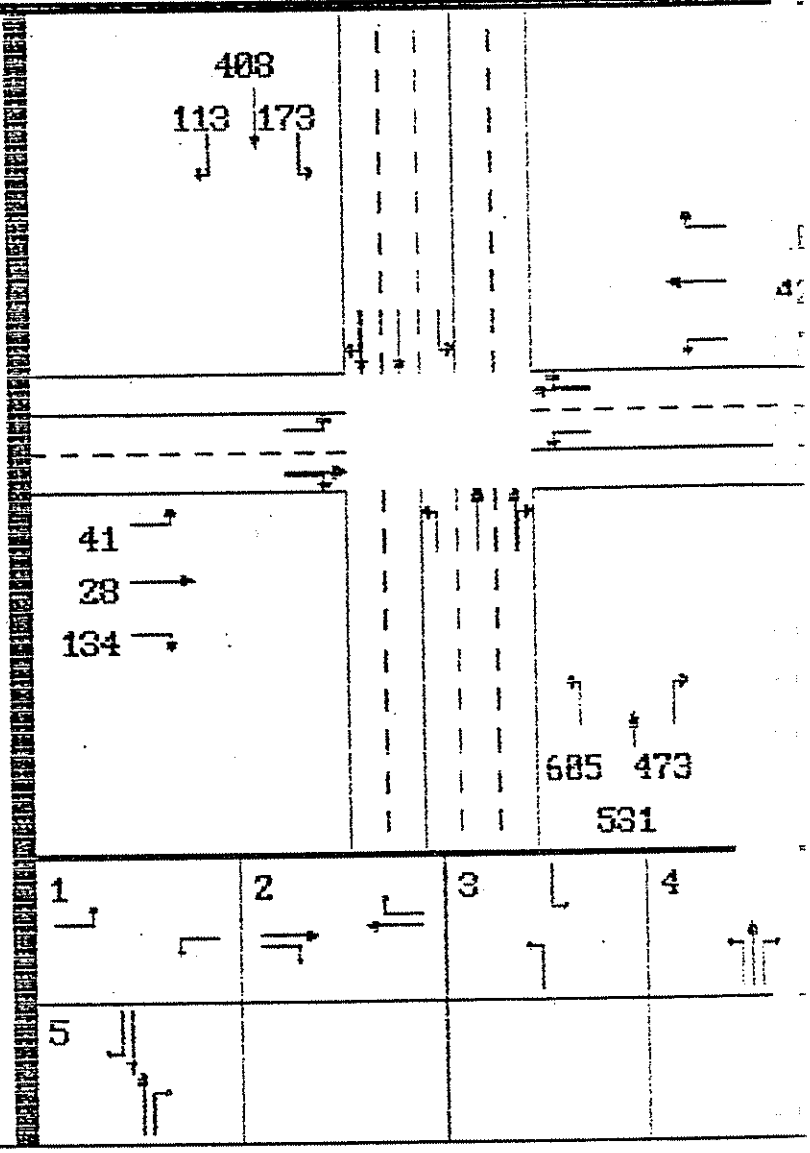
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.10	L	.03	35.0	D	EB	38.4	D
	TR	.79	.15	TR	.12	39.2	D			
WB	L	.57	.10	L	.06	39.3	D	WB	34.3	D
	TR	.27	.15	TR	.04	27.1	D			
NB	L	.89	.45	L	.40	30.5	D	NB	20.2	C
	TR	.76	.46	TR	.35	14.4	B			
SB	L	.62	.18	L	.11	34.3	D	SB	32.9	D
	TR	.88	.20	TR	.18	32.4	D			

INTERSECT: DELAY = 25.7 SEC/VEH Xc = .84 LOS = D Sum(v/s)CR = .75

HCM Summary Results for Case: ELFEAA1 FENTON STREE/EASTLAKE PAR

AM PEAK HOUR ALT I - NO ACCESS AT MID-BLOCK ON T

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.03	.27	35.0	D
	*TR	.12	.79	39.2	D
	All			38.4	D
WB	*L	.06	.57	39.3	D
	TR	.04	.27	27.1	D
	All			34.3	D
NB	*L	.40	.89	30.5	D
	TR	.35	.76	14.4	B
	All			20.2	C
SB	L	.11	.62	34.3	D
	*TR	.18	.88	32.4	D
	All			32.9	D
Intersect:		.75	.84	25.7	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEPA1 SUMMARY REPORT
****
INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT 1 - NO ACCESS AT MID-BLOCK ON T AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	135	128	423	0	50	2	1
WB	538	71	123	0	50	2	1
NB	632	213	134	0	50	3	2
SB	32	605	75	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	17.5	3
WB	0	2	N	0	0	.90	Y	17.5	3
NB	0	2	N	0	0	.90	Y	11.5	4
SB	0	2	N	0	0	.90	Y	11.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	25	30	6	11	18	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

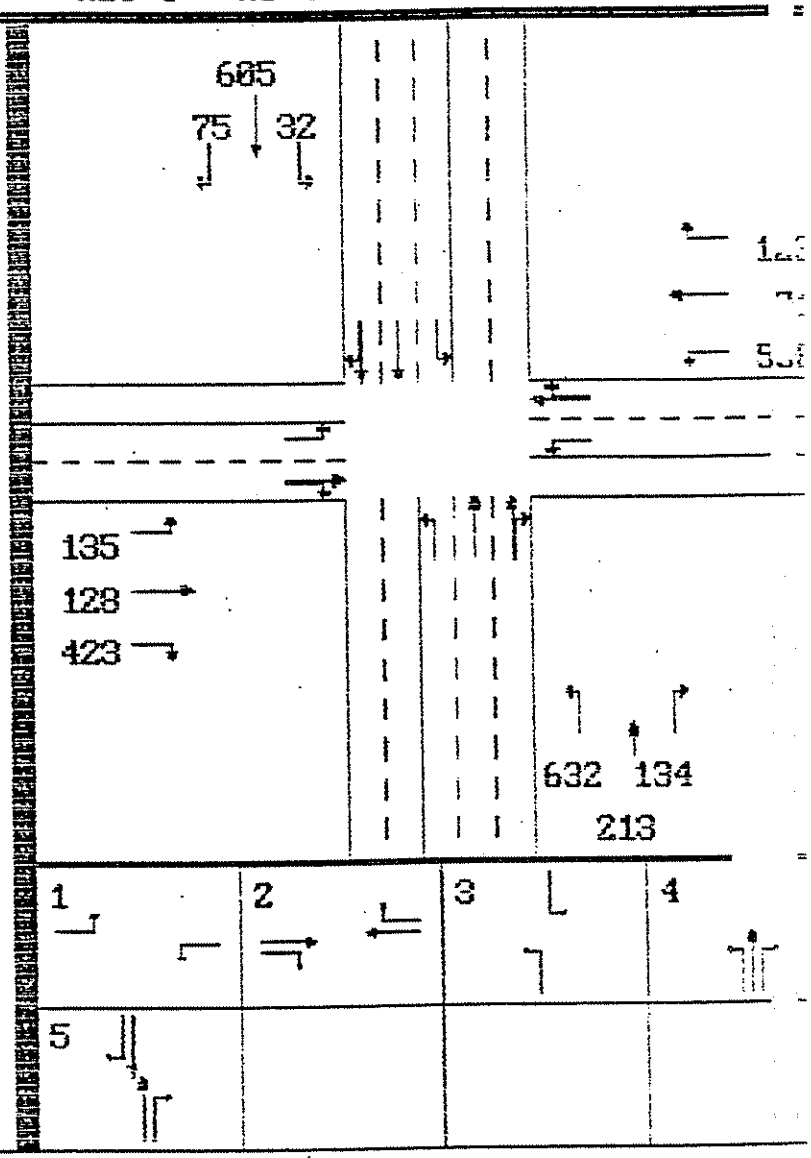
APP	LANE GRP.	v/c	c/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.38	.24	L	.09	27.0	D	EB	-	F
	TR	1.36	.28	TR	.39	-	F			
WB	L	1.50	.24	L	.35	-	F	WB	-	F
	TR	.47	.28	TR	.13	21.7	C			
NB	L	2.07	.20	L	.41	-	F	NB	-	F
	TR	.39	.31	TR	.12	14.1	B			
SB	L	.33	.06	L	.02	38.1	D	SB	-	F
	TR	1.31	.17	TR	.23	-	F			

INTERSECTION DELAY = - SEC/VEH [illegible] = 1.35 LOS = F Sum [illegible] = 1.38

HCM Summary Results for Case: ELFEPA1 FENTON STREE/EASTLAKE PAR

PM PEAK HOUR ALT I - NO ACCESS AT MID-BLOCK ON T

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.09	.38	27.8	D
	*TR	.39	1.38	-	F
	All			-	F
WB	*L	.35	1.58	-	F
	TR	.13	.47	21.7	C
	All			-	F
NB	*L	.41	2.87	-	F
	TR	.12	.39	14.1	B
	All			-	F
SB	L	.02	.33	38.1	D
	*TR	.23	1.31	-	F
	All			-	F
Intersect:		1.38	1.55	-	F



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEAA2 SUMMARY REPORT
****
INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT II - RT'S IN & RT'S OUT AT MID- AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	134	0	50	2	1
WB	87	42	18	0	50	2	1
NB	585	531	473	0	50	3	2
SB	173	408	113	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	10	15	19	25	21	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

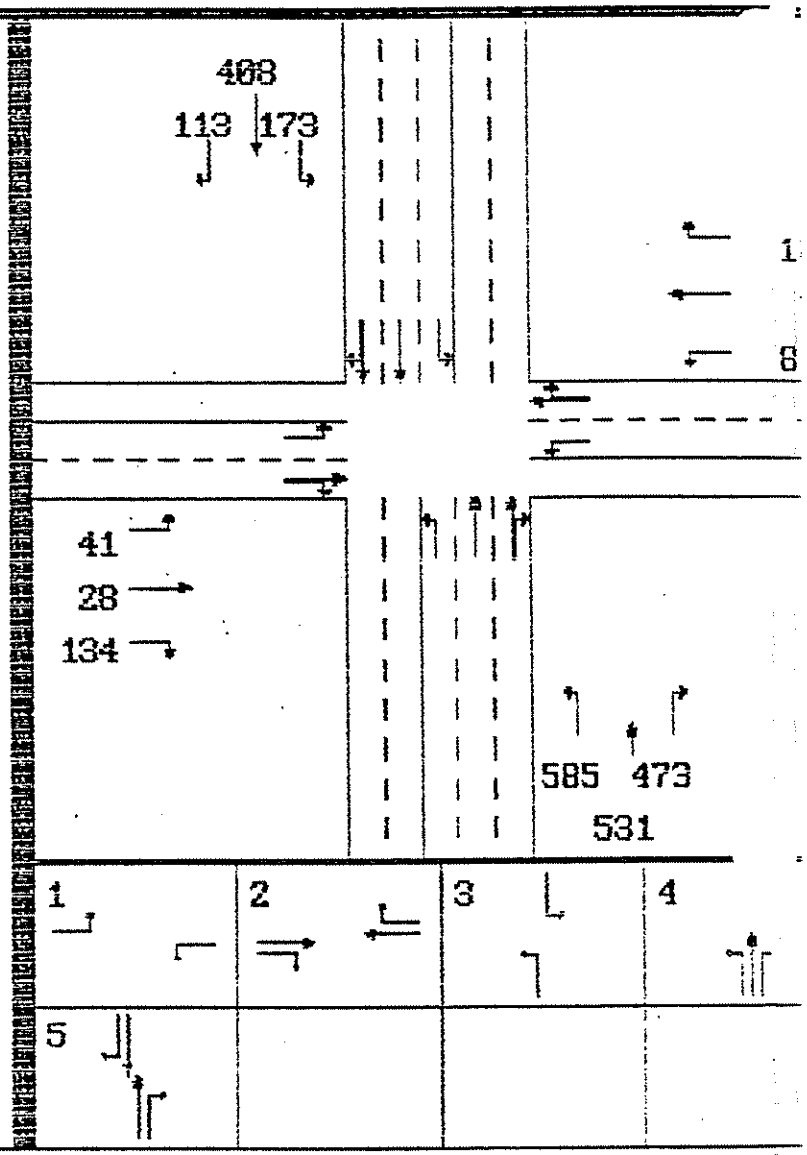
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.10	L	.03	35.0	D	EB	38.4	D
	TR	.79	.15	TR	.12	39.2	D			
WB	L	.57	.10	L	.06	39.3	D	WB	34.3	D
	TR	.27	.15	TR	.04	27.1	D			
NB	L	.86	.45	L	.38	28.0	D	NB	19.2	C
	TR	.76	.46	TR	.35	14.4	B			
SB	L	.62	.18	L	.11	34.3	D	SB	32.9	D
	TR	.88	.20	TR	.18	32.4	D			

INTERSECT: DELAY = 25.1 SEC/VEH [illegible] = .82 LOS = D Summ[illegible] CR = [illegible]

HCM Summary Results for Case: ELFEAA2 FENTON STREE/EASTLAKE PAR

AM PEAK HOUR ALT II - RT'S IN & RT'S OUT AT MID-

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.03	.27	35.0	D
	*TR	.12	.79	39.2	D
	All			38.4	D
WB	*L	.06	.57	39.3	D
	TR	.04	.27	27.1	D
	All			34.3	D
NB	*L	.38	.86	28.0	D
	TR	.35	.76	14.4	B
	All			19.2	C
SB	L	.11	.62	34.3	D
	*TR	.18	.88	32.4	D
	All			32.9	D
Intersect:		.73	.82	25.1	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEPA2 SUMMARY REPORT

****

INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT II - RT'S IN & RT'S OUT AT MID- AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	135	128	423	0	50	2	1
WB	538	71	123	0	50	2	1
NB	548	213	134	0	50	3	2
SB	32	605	75	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	25	30	6	11	18	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

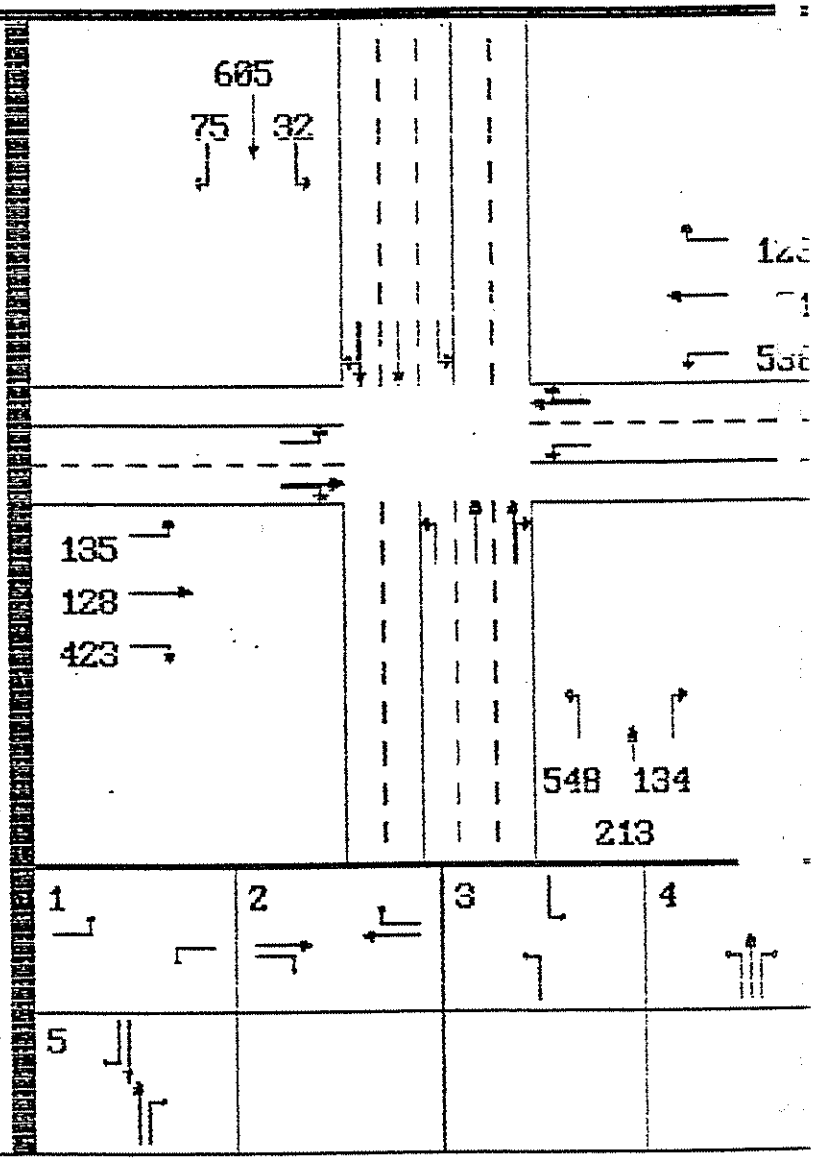
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.38	.24	L	.09	27.0	D	EB	-	F
	TR	1.38	.28	TR	.39	-	F			
WB	L	1.50	.24	L	.35	-	F	WB	-	F
	TR	.47	.28	TR	.13	21.7	C			
NB	L	1.80	.20	L	.36	-	F	NB	-	F
	TR	.39	.31	TR	.12	14.1	B			
SB	L	.33	.06	L	.02	38.1	D	SB	-	F
	TR	1.31	.17	TR	.23	-	F			

INTERSECT DELAY = - SEC/VEH X-C = 1.49 LOS = F Sum(v/s)CF = 1.33

HCM Summary Results for Case: ELFEPA2 FENTON STREE/EASTLAKE PAR

PM PEAK HOUR ALT II - RT'S IN & RT'S OUT AT MID-

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.09	.38	27.0	D
	*TR	.39	1.38	-	F
	All			-	F
WB	*L	.35	1.50	-	F
	TR	.13	.47	21.7	C
	All			-	F
NB	*L	.36	1.80	-	F
	TR	.12	.39	14.1	B
	All			-	F
SB	L	.02	.33	38.1	D
	*TR	.23	1.31	-	F
	All			-	F
Intersect:		1.33	1.49	-	F



HCM/Cinema v1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEAA3 SUMMARY REPORT
****
INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT III - LT'S IN & RT'S OUT AT MID AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	134	0	50	2	1
WB	87	42	18	0	50	2	1
NB	523	531	473	0	50	3	2
SB	173	408	113	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11[illegible]

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	10	15	19	25	21	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

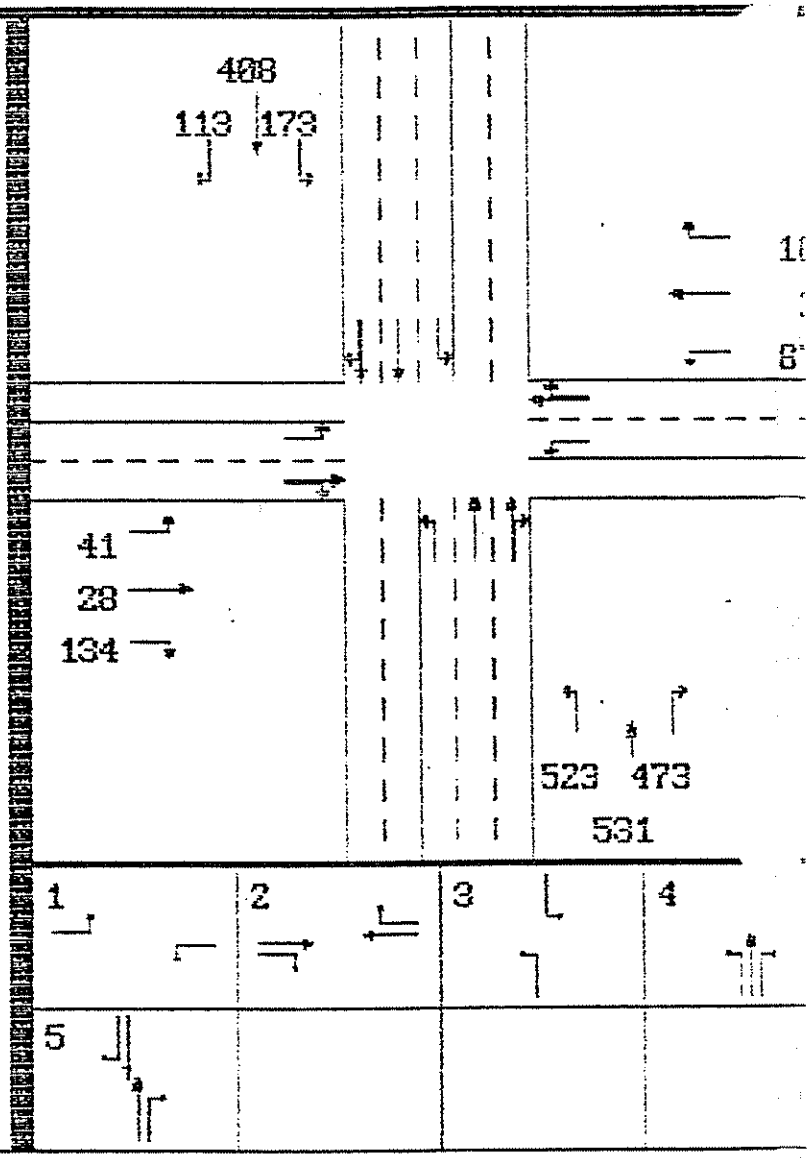
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.10	L	.03	35.0	D	EB	38.4	D
	TR	.79	.15	TR	.12	39.2	D			
WB	L	.57	.10	L	.06	39.3	D	WB	34.3	D
	TR	.27	.15	TR	.04	27.1	D			
NB	L	.77	.45	L	.34	23.0	C	NB	17.2	C
	TR	.76	.46	TR	.35	14.4	B			
SB	L	.62	.18	L	.11	34.3	D	SB	32.9	D
	TR	.88	.20	TR	.18	32.4	D			

INTERSECTION DELAY = [illegible] SEC/VEH v/c = .78 LOS = C Summary SCR = [illegible]

HCM Summary Results for Case: ELFEAA3 FENTON STREE/EASTLAKE PAR

AM PEAK HOUR ALT III - LT'S IN & RT'S OUT AT MID

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.03	.27	35.0	D
	*TR	.12	.79	39.2	D
	All			38.4	D
WB	*L	.06	.57	39.3	D
	TR	.04	.27	27.1	D
	All			34.3	D
NB	*L	.34	.77	23.0	C
	TR	.35	.76	14.4	B
	All			17.2	C
SB	L	.11	.62	34.3	D
	*TR	.18	.88	32.4	D
	All			32.9	D
Intersect:		.69	.78	24.1	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEPA3 SUMMARY REPORT

****

INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT III - LT'S IN & RT'S OUT AT MID AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	135	128	423	0	50	2	1
WB	538	71	123	0	50	2	1
NB	267	213	134	0	50	3	2
SB	32	605	75	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	25	30	5	11	18	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.38	.24	L	.09	27.0	D	EB	-	F
	TR	1.06	.26	TR	.39	-	F			
WB	L	1.50	.24	L	.35	-	F	WB	-	F
	TR	.47	.28	TR	.13	21.7	C			
NB	L	.88	.20	L	.18	47.6	E	NB	28.3	D
	TR	.39	.31	TR	.12	14.1	B			
SB	L	.33	.06	L	.02	38.1	D	SB	-	F
	TR	1.31	.17	TR	.23	-	F			

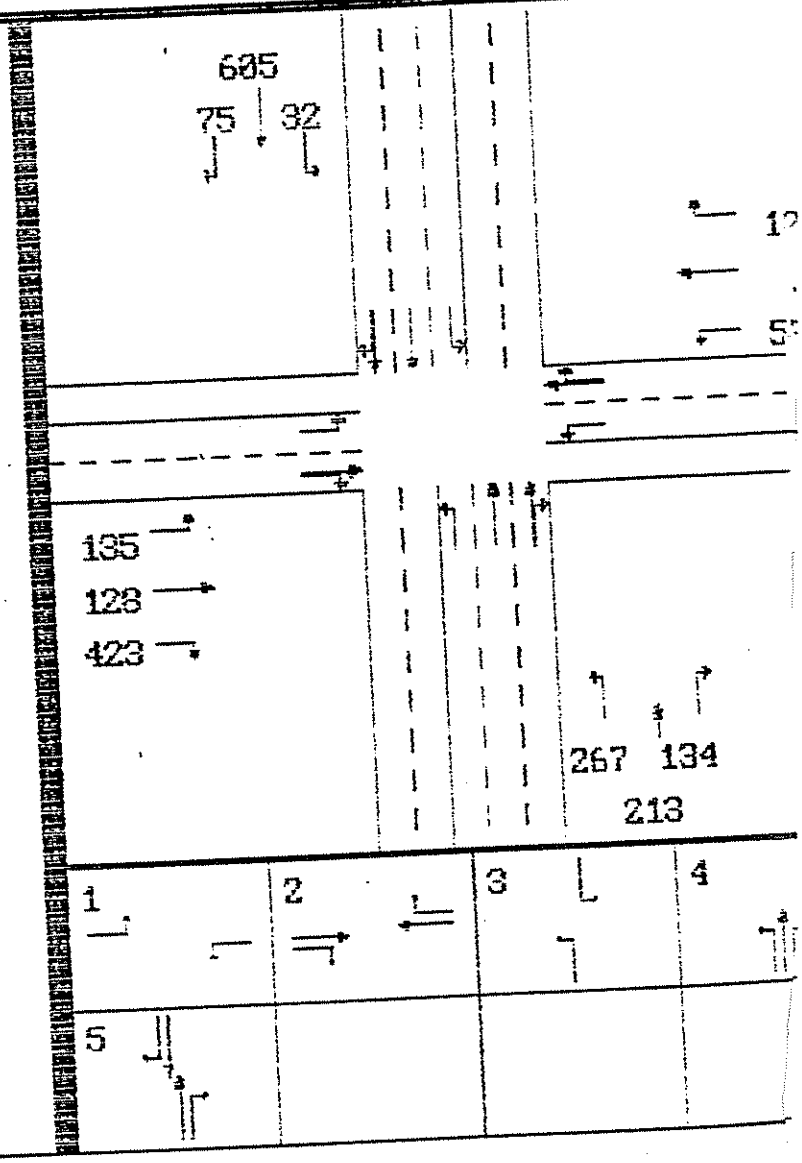
HCM Summary Results for Case: ELFEPA3

FENTON STREE/EASTLAKE PAR

PM PEAK HOUR

ALT III - LT'S IN & RT'S OUT AT M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.09	.38	27.0	D
	*TR	.39	1.38	-	F
	All			-	F
WB	*L	.35	1.50	-	F
	TR	.13	.47	21.7	C
	All			-	F
NB	*L	.18	.88	47.6	E
	TR	.12	.39	14.1	B
	All			28.3	D
SB	L	.02	.33	38.1	D
	*TR	.23	1.31	-	F
	All			-	F
Intersect:		1.14	1.28	-	F



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEAA4 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: NE DATE: 02-19-92
COMMENT: ALT IV - W/SIGNAL & FULL ACCESS AT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	109	0	50	2	1
WB	87	42	18	0	50	2	1
NB	419	531	473	0	50	3	2
SB	173	408	113	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
EB	L		TR							
WB	L		TR							
NB				L	LTR	TR				
SB				L		TR				
GREEN		10	15	19	25	21	0	0	0	0
YELLOW		4	4	4	4	4	0	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

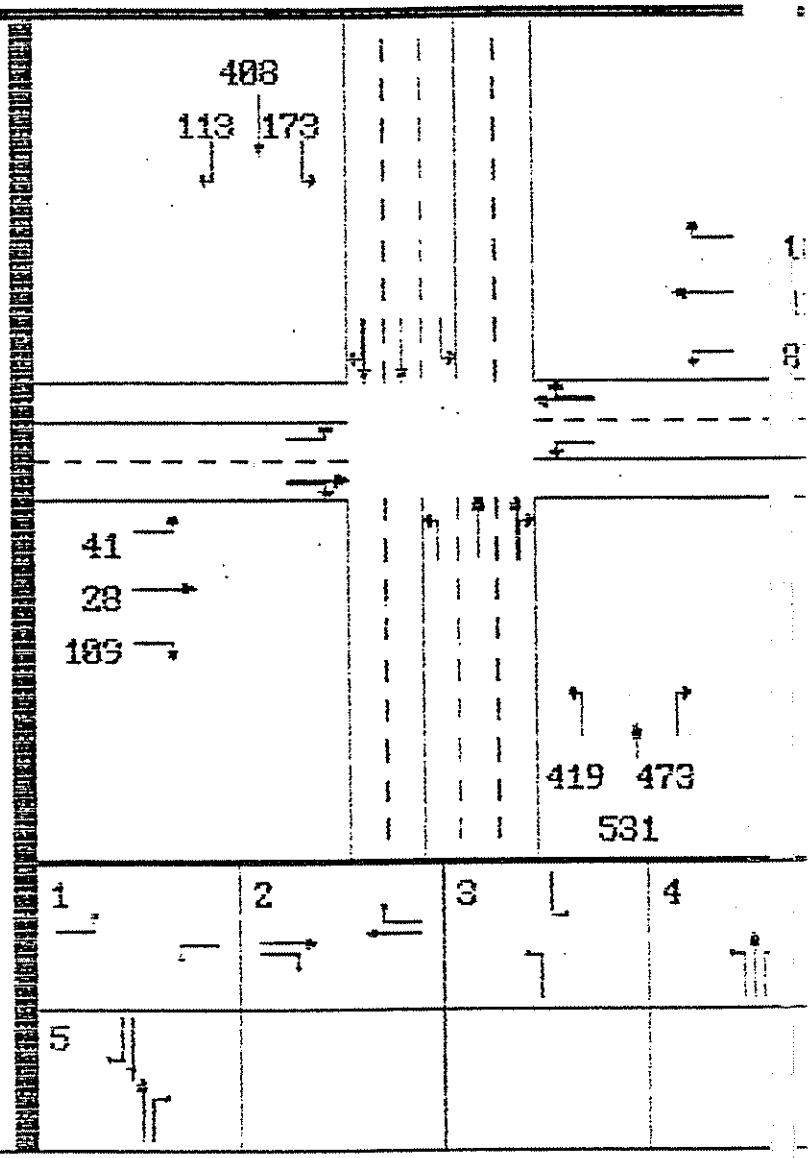
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.10	L	.03	35.0	D	EB	33.4	D
	TR	.67	.18	TR	.10	32.9	D			
WB	L	.57	.10	L	.06	39.3	D	WB	34.3	D
	TR	.27	.15	TR	.04	27.1	D			
NB	L	.62	.45	L	.28	18.8	C	NB	15.7	C
	TR	.76	.46	TR	.33	14.4	B			
SB	L	.22	.18	L	.11	34.3	D	SB	32.9	D
	TR	.88	.20	TR	.16	32.4	D			

HCM Summary Results for Case: ELFEAA4 FENTON STREE/EASTLAKE PAR

AM PEAK HOUR ALT IV - W/SIGNAL & FULL ACCESS AT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.03	.27	35.0	D
	*TR	.10	.67	32.9	D
	All			33.4	D
WB	*L	.06	.57	39.3	D
	TR	.04	.27	27.1	D
	All			34.3	D
NB	L	.28	.62	18.8	C
	*TR	.35	.76	14.4	B
	All			15.7	C
SB	*L	.11	.62	34.3	D
	TR	.18	.88	32.4	D
	All			32.9	D
Intersect:		.62	.70	22.9	C



HCM/Cinema V1.23 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFEPA4 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT IV - W/SIGNAL & FULL ACCESS AT AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	135	128	290	0	50	2	1
WB	538	71	123	0	50	2	1
NB	222	213	134	0	50	3	2
SB	32	605	75	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	TR	12		
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			L	LTR	TR				
SB			L		TR				
GREEN	25	30	6	11	16	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

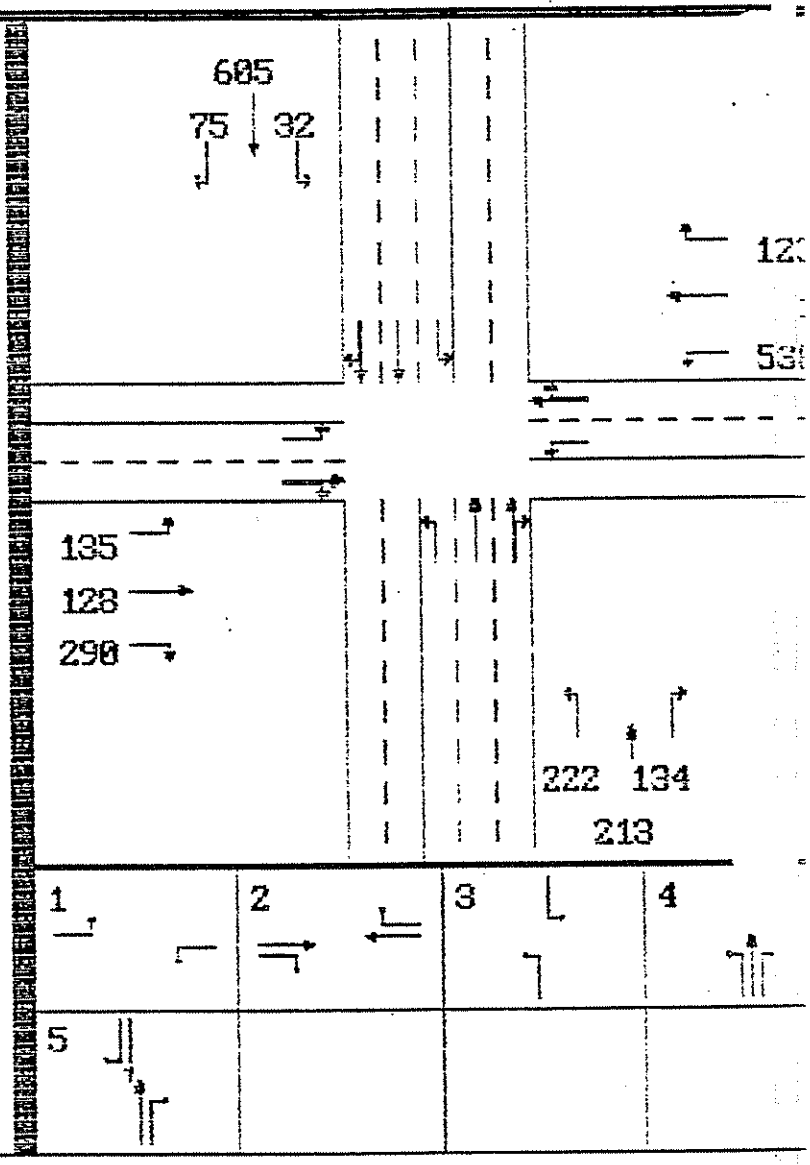
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.38	.24	L	.09	27.0	D	EB	32.5	E
	TR	1.03	.23	TR	.29	60.7	F			
WB	L	1.50	.24	L	.35	-	F	WB	-	F
	TR	.47	.28	TR	.13	21.7	C			
NB	L	.73	.20	L	.15	36.6	D	NB	22.6	C
	TR	.39	.31	TR	.12	14.1	B			
SB	L	.33	.06	L	.02	38.1	D	SB	-	F
	TR	1.31	.17	TR	.23	-	F			

HCM Summary Results for Case: ELFEPA4 FENTON STREE/EASTLAKE PAR

PM PEAK HOUR ALT IV - W/SIGNAL & FULL ACCESS AT

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.09	.38	27.0	D
	*TR	.29	1.03	60.7	F
	All			52.5	E
WB	*L	.35	1.50	-	F
	TR	.13	.47	21.7	C
	All			-	F
NB	*L	.15	.73	36.6	D
	TR	.12	.39	14.1	B
	All			22.6	C
SB	L	.02	.33	38.1	D
	*TR	.23	1.31	-	F
	All			-	F
Intersect:		1.02	1.14	-	F



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: FENMITA1 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT I - W/MITIAGATION AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	134	0	50	4	1
WB	87	42	18	0	50	4	1
NB	605	531	473	0	50	4	2
SB	173	408	113	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12
WB	L	12	L	12	T	12	R	12
NB	L	12	L	12	T	12	TR	12
SB	L	12	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	10	4	14	17	22	19	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

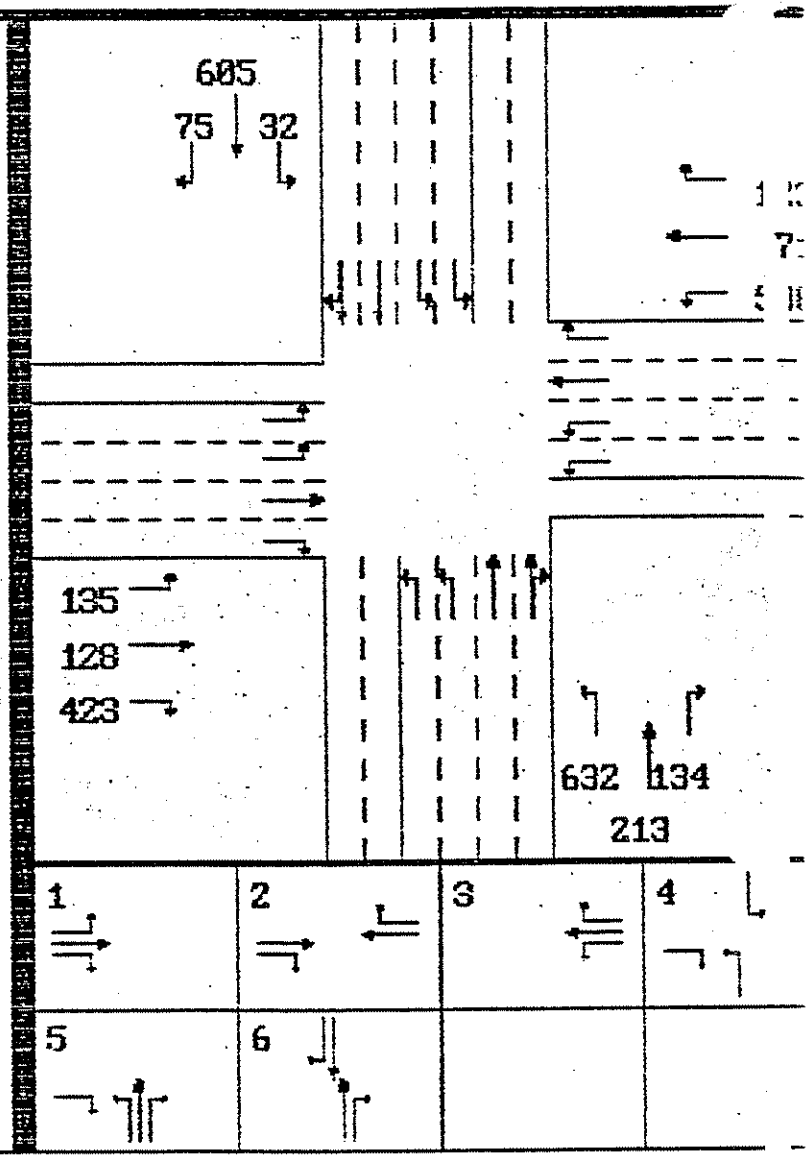
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.15	.10	L	.01	34.4	D	EB	15.3	C
	T	.10	.17	T	.02	24.8	C			
	R	.17	.57	R	.10	7.2	B			
WB	L	.23	.14	L	.03	32.2	D	WB	28.5	D
	T	.13	.21	T	.03	22.8	C			
	R	.06	.21	R	.01	22.5	C			
NB	L	.54	.40	L	.22	19.5	C	NB	19.8	C
	TR	.85	.42	TR	.35	19.9	C			
SB	L	.38	.16	L	.06	31.4	D	SB	40.1	E
	TR	.97	.18	TR	.18	43.0	E			

INTERSEC DELAY = 25.2 SEC/VEH Xc = .52 LOS = 0 Sum(v/s)CP = [illegible]

HCM Summary Results for Case: FENMITP1 FENTON STREE/EASTLAKE PAR

PM PEAK HOUR ALT I - W/GEOMETRIC MITIGATION

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.05	.27	29.5	D
	*T	.08	.34	22.7	C
	R	.31	.67	16.3	C
	All			20.2	C
WB	*L	.19	.92	44.6	E
	T	.04	.17	20.2	C
	R	.09	.34	21.4	C
	All			38.5	D
NB	*L	.22	.99	55.1	E
	TR	.12	.34	12.3	B
	All			39.9	D
SB	L	.01	.13	35.0	D
	*TR	.23	1.04	52.8	E
	All			52.0	E
Intersect:		.72	.81	38.2	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: FENMITA2 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT II - W/GEOMETRIC MITIGATION AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	134	0	50	4	1
WB	87	42	18	0	50	4	1
NB	585	531	473	0	50	4	2
SB	173	408	113	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12
WB	L	12	L	12	T	12	R	12
NB	L	12	L	12	T	12	TR	12
SB	L	12	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	10	4	14	17	22	19	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

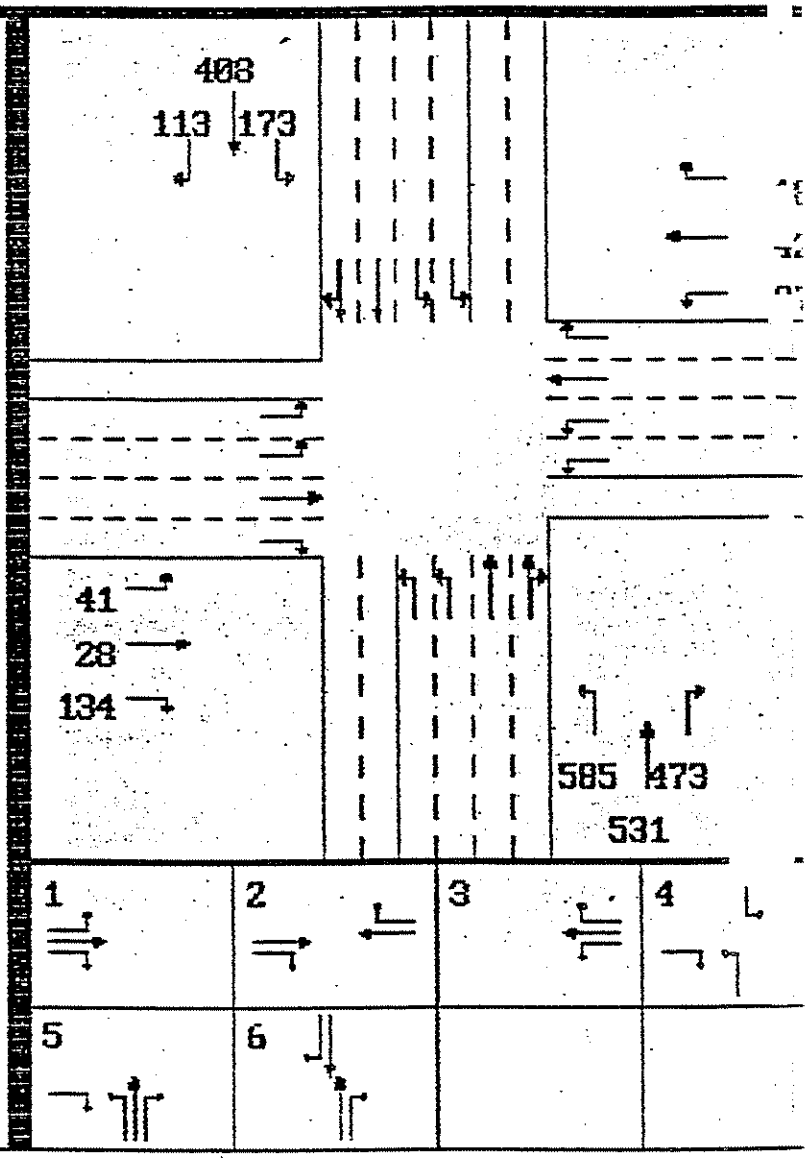
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.15	.10	L	.01	34.4	D	EB	15.3	C
	T	.10	.17	T	.02	24.8	C			
	R	.17	.57	R	.10	7.2	B			
WB	L	.23	.14	L	.03	32.2	D	WB	28.5	D
	T	.13	.21	T	.03	22.8	C			
	R	.06	.21	R	.01	22.5	C			
NB	L	.52	.40	L	.21	19.3	C	NB	19.7	C
	TR	.85	.42	TR	.35	19.9	C			
SB	L	.38	.16	L	.06	31.4	D	SB	40.1	E
	TR	.97	.18	TR	.18	43.0	E			

INTERSECT DELAY = 33.2 SEC/VEH XC = .52 LOS = D SUM(v/s)CR = .46

HCM Summary Results for Case: FENMITA2 FENTON STREE/EASTLAKE PAR

AM PEAK HOUR ALT II - W/GEOMETRIC MITIGATION

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.01	.15	34.4	D
	*T	.02	.10	24.8	C
	R	.10	.17	7.2	B
	All			15.3	C
WB	*L	.03	.23	32.2	D
	T	.03	.13	22.8	C
	R	.01	.06	22.5	C
	All			28.5	D
NB	L	.21	.52	19.3	C
	*TR	.35	.85	19.9	C
	All			19.7	C
SB	*L	.06	.38	31.4	D
	TR	.18	.97	43.0	E
	All			40.1	E
Intersect:		.46	.52	25.2	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: FENMITP2 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT II - W/GEOMETRIC MITIGATION AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	135	128	423	0	50	4	1
WB	538	71	123	0	50	4	1
NB	548	213	134	0	50	4	2
SB	32	605	75	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12
WB	L	12	L	12	T	12	R	12
NB	L	12	L	12	T	12	TR	12
SB	L	12	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	19	2	22	9	11	23	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

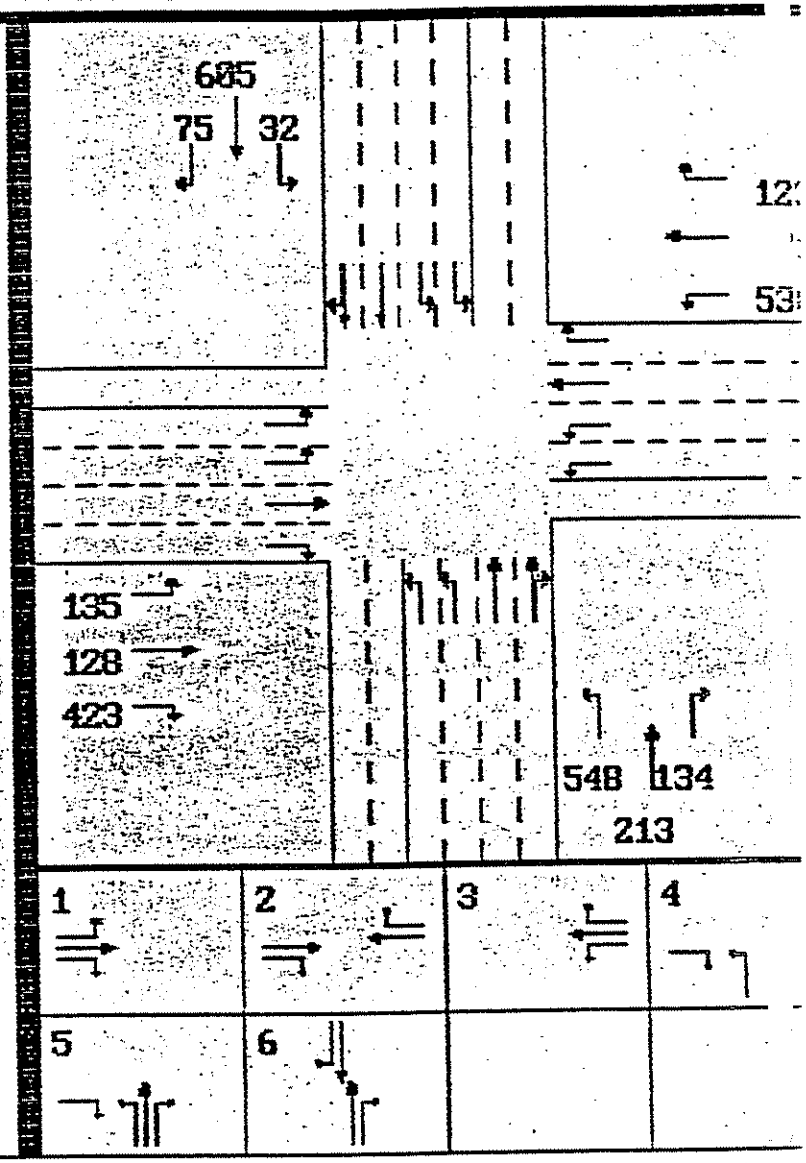
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.18	L	.05	29.5	D	EB	20.2	C
	T	.34	.24	T	.08	22.7	C			
	R	.67	.46	R	.31	16.3	C			
WB	L	.92	.21	L	.19	44.6	E	WB	38.5	D
	T	.17	.26	T	.04	20.2	C			
	R	.34	.26	R	.09	21.4	C			
NB	L	.86	.23	L	.19	37.9	D	NB	28.0	D
	TR	.34	.35	TR	.12	12.3	B			
SB	L	.13	.09	L	.01	35.0	D	SB	52.0	E
	TR	1.04	.22	TR	.23	52.8	E			

INTERSECT: DELAY = 34.5 SEC/VEH Xc = .78 LOS = D Sum(v/s)CR = .69

HCM Summary Results for Case: FENMITP2 FENTON STREE/EASTLAKE PAI

PM PEAK HOUR ALT II - W/GEOMETRIC MITIGATION

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.05	.27	29.5	D
	*T	.08	.34	22.7	C
	R	.31	.67	16.3	C
	All			28.2	C
WB	*L	.19	.92	44.6	E
	T	.04	.17	28.2	C
	R	.09	.34	21.4	C
	All			38.5	D
NB	*L	.19	.86	37.9	D
	TR	.12	.34	12.3	B
	All			28.8	D
SB	L	.01	.13	35.8	D
	*TR	.23	1.04	52.8	E
	All			52.8	E
Intersect:		.69	.78	34.5	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: FENMITA3 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT III - W/GEOMETRIC MITIGATION AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	134	0	50	4	1
WB	87	42	18	0	50	4	1
NB	523	531	473	0	50	4	2
SB	173	408	113	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12
WB	L	12	L	12	T	12	R	12
NB	L	12	L	12	T	12	TR	12
SB	L	12	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	10	4	14	17	22	19	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

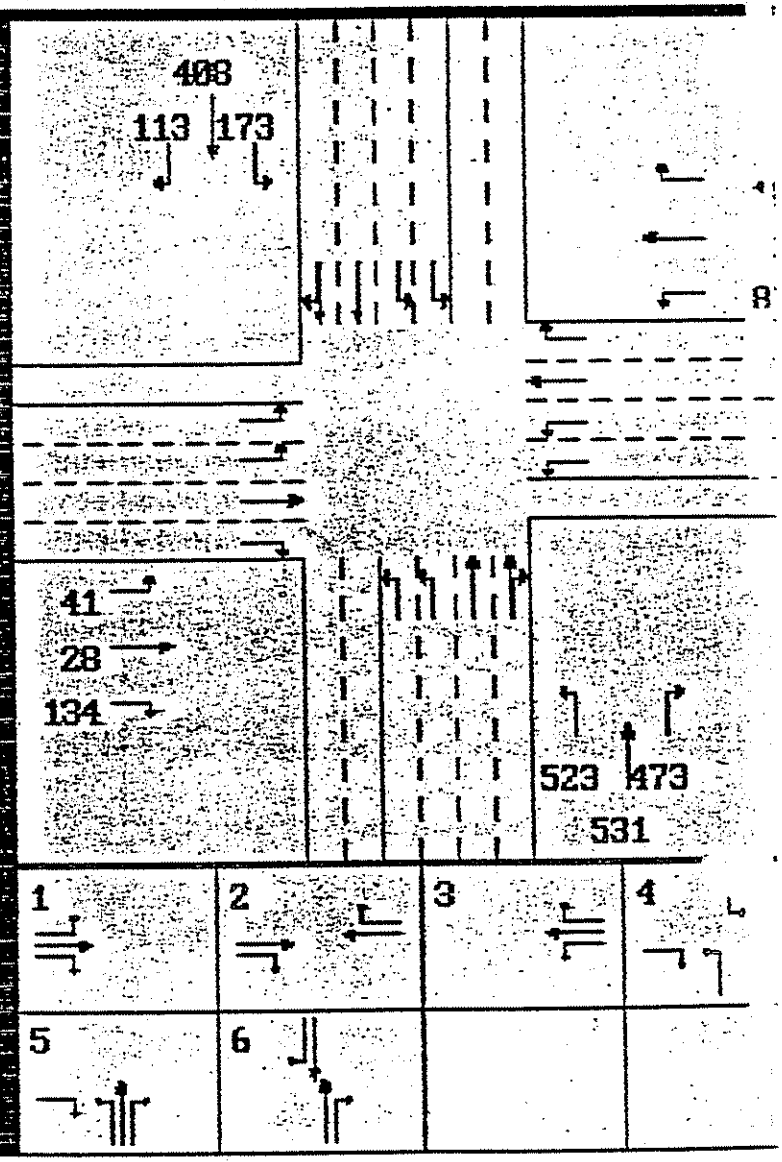
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.15	.10	L	.01	34.4	D	EB	15.3	C
	T	.10	.17	T	.02	24.8	C			
	R	.17	.57	R	.10	7.2	B			
WB	L	.23	.14	L	.03	32.2	D	WB	28.5	D
	T	.13	.21	T	.03	22.8	C			
	R	.06	.21	R	.01	22.5	C			
NB	L	.46	.40	L	.19	18.7	C	NB	19.5	C
	TR	.85	.42	TR	.35	19.9	C			
SB	L	.38	.16	L	.06	31.4	D	SB	40.1	E
	TR	.97	.18	TR	.18	43.0	E			

INTERSECT: DELAY = 25.3 SEC/VEH Xc = .52 LOS = D Sum(v/s)CR = .46

HCM Summary Results for Case: FEMMITA3 FENTON STREET/EASTLAKE PAR.

AM PEAK HOUR ALT III - W/GEOMETRIC MITIGATION

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.01	.15	34.4	D
	*T	.02	.10	24.8	C
	R	.10	.17	7.2	B
	All			15.3	C
WB	*L	.03	.23	32.2	D
	T	.03	.13	22.8	C
	R	.01	.06	22.5	C
	All			28.5	D
NB	L	.19	.46	18.7	C
	*TR	.35	.85	19.9	C
	All			19.5	C
SB	*L	.06	.38	31.4	D
	TR	.18	.97	43.0	E
	All			40.1	E
Intersect:		.46	.52	25.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: FENMITP3 SUMMARY REPORT
****
INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT III - W/GEOMETRIC MITIGATION AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	135	128	423	0	50	4	1
WB	538	71	123	0	50	4	1
NB	267	213	134	0	50	4	2
SB	32	605	75	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12
WB	L	12	L	12	T	12	R	12
NB	L	12	L	12	T	12	TR	12
SB	L	12	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	19	2	22	9	11	23	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

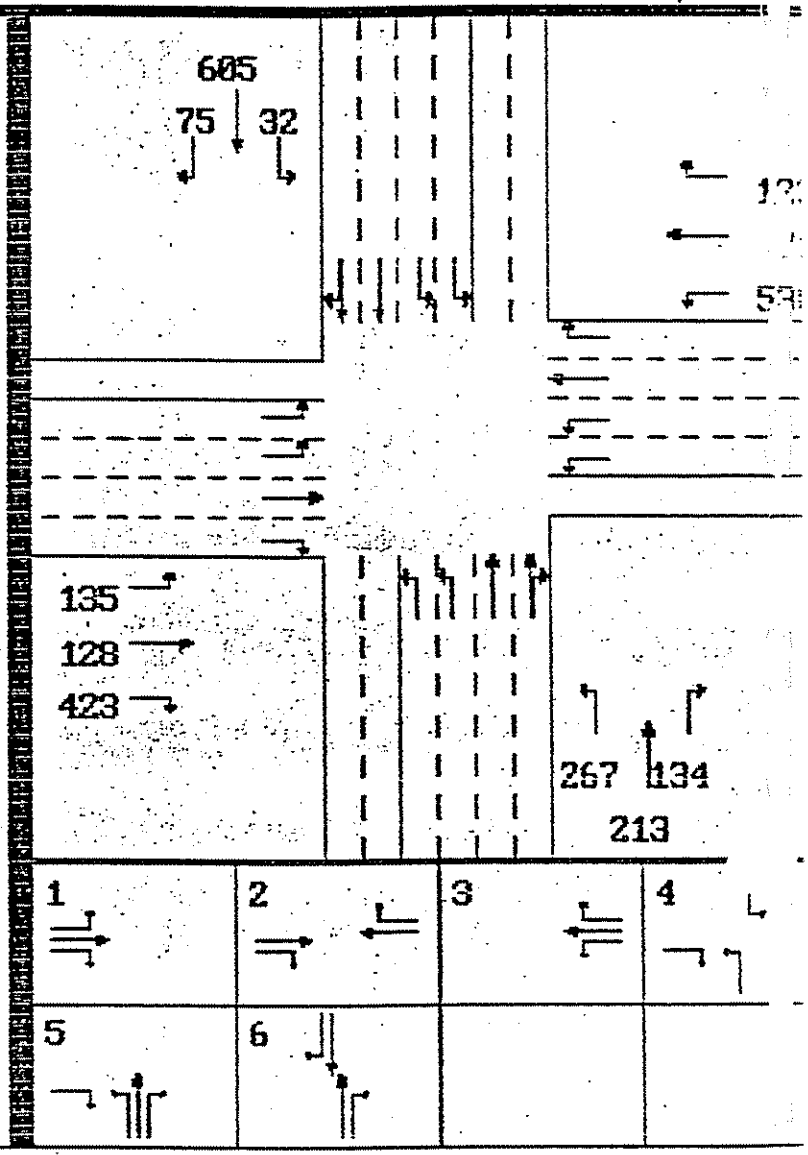
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.18	L	.05	29.5	D	EB	20.2	C
	T	.34	.24	T	.08	22.7	C			
	R	.67	.46	R	.31	16.3	C			
WB	L	.92	.21	L	.19	44.6	E	WB	38.5	D
	T	.17	.26	T	.04	20.2	C			
	R	.34	.26	R	.09	21.4	C			
NB	L	.42	.23	L	.10	27.8	D	NB	19.1	C
	TR	.34	.35	TR	.12	12.3	B			
SB	L	.13	.09	L	.01	35.0	D	SB	52.0	E
	TR	1.04	.22	TR	.23	52.8	E			

INTERSECT: DELAY = 33.2 SEC/VEH Xc = .67 LOS = D Sum(v/s)CR = .59

HCM Summary Results for Case: FEMMITP3 FENTON STREE/EASTLAKE PA
PM PEAK HOUR ALT III - W/GEOMETRIC MITIGATION

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.05	.27	29.5	D
	*T	.08	.34	22.7	C
	R	.31	.67	16.3	C
	All			20.2	C
WB	*L	.19	.92	44.6	E
	T	.04	.17	20.2	C
	R	.09	.34	21.4	C
	All			38.5	D
NB	*L	.10	.42	27.8	D
	TR	.12	.34	12.3	B
	All			19.1	C
SB	L	.01	.13	35.0	D
	*TR	.23	1.04	52.8	E
	All			52.8	E
Intersect:		.59	.67	33.2	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: FENMITA4 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT IV - W/GEOMETRIC MITIGATION AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	41	28	109	0	50	4	1
WB	87	42	18	0	50	4	1
NB	419	531	473	0	50	4	2
SB	173	408	113	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12
WB	L	12	L	12	T	12	R	12
NB	L	12	L	12	T	12	TR	12
SB	L	12	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	10	4	14	17	22	19	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

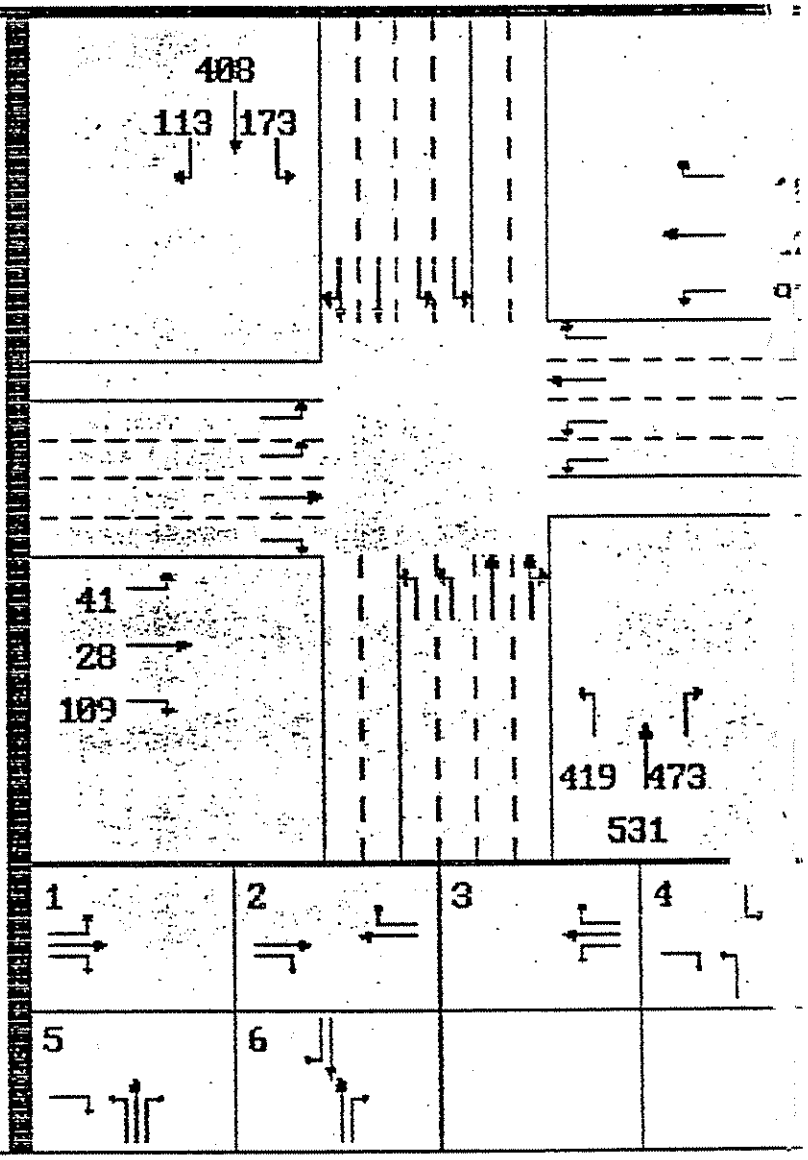
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.15	.10	L	.01	34.4	D	EB	16.4	C
	T	.10	.17	T	.02	24.8	C			
	R	.14	.57	R	.08	7.1	B			
WB	L	.23	.14	L	.03	32.2	D	WB	28.5	D
	T	.13	.21	T	.03	22.8	C			
	R	.06	.21	R	.01	22.5	C			
NB	L	.37	.40	L	.15	17.8	C	NB	19.3	C
	TR	.85	.42	TR	.35	19.9	C			
SB	L	.38	.16	L	.06	31.4	D	SB	40.1	E
	TR	.97	.18	TR	.18	43.0	E			

INTERSECT: DELAY = 25.5 SEC/VEH Xc = .82 LOS = D Sum(v/s)CR = .46

HCM Summary Results for Case: FENMITA4 FENTON STREE/EASTLAKE PAR

AM PEAK HOUR ALT IV - W/GEOMETRIC MITIGATION

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.01	.15	34.4	D
	*T	.02	.10	24.8	C
	R	.08	.14	7.1	B
	All			16.4	C
WB	*L	.03	.23	32.2	D
	T	.03	.13	22.8	C
	R	.01	.06	22.5	C
	All			28.5	D
NB	L	.15	.37	17.8	C
	*TR	.35	.85	19.9	C
	All			19.3	C
SB	*L	.06	.38	31.4	D
	TR	.18	.97	43.0	E
	All			40.1	E
Intersect:		.46	.52	25.5	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: FENMITP4 SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT IV - W/ GEOMETRIC MITIGATION AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	135	128	290	0	50	4	1
WB	538	71	123	0	50	4	1
NB	222	213	134	0	50	4	2
SB	32	605	75	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12
WB	L	12	L	12	T	12	R	12
NB	L	12	L	12	T	12	TR	12
SB	L	12	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR						
NB				L	LTR	TR			
SB				L		TR			
GREEN	19	2	22	9	11	23	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

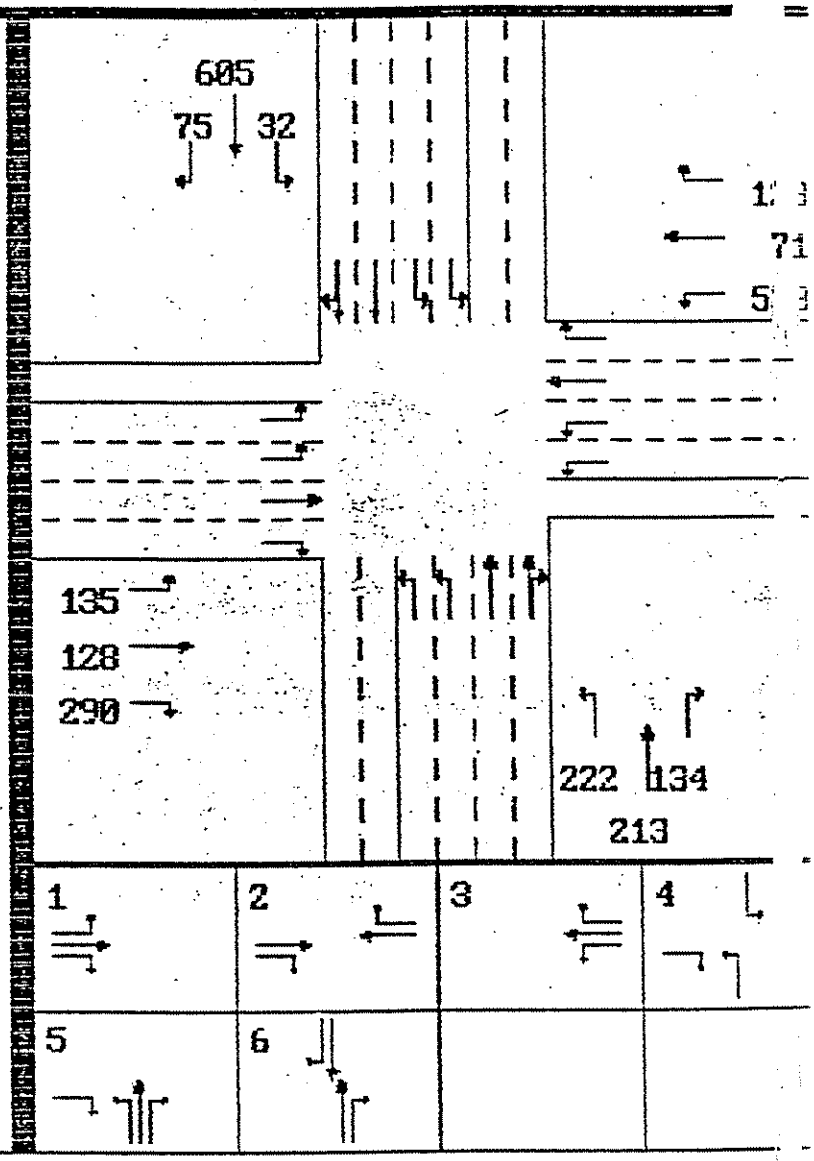
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.27	.18	L	.05	29.5	D	EB	19.5	C
	T	.34	.24	T	.08	22.7	C			
	R	.46	.46	R	.21	13.3	B			
WB	L	.92	.21	L	.19	44.6	E	WB	38.5	D
	T	.17	.26	T	.04	20.2	C			
	R	.34	.26	R	.09	21.4	C			
NB	L	.35	.23	L	.08	27.2	D	NB	18.1	C
	TR	.34	.35	TR	.12	12.3	B			
SB	L	.13	.09	L	.01	35.0	D	SB	52.0	E
	TR	1.04	.22	TR	.23	52.8	E			

INTERSECT: DELAY = 33.7 SEC/VEH XC = .65 LOS = D Sum(v/s)CR = .88

HCM Summary Results for Case: FEMMITP4 FENTON STREE/EASTLAKE PAR

PM PEAK HOUR ALT IV - W/ GEOMETRIC MITIGATION

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.05	.27	29.5	D
	*T	.08	.34	22.7	C
	R	.21	.46	13.3	B
	All			19.5	C
WB	*L	.19	.92	44.6	E
	T	.04	.17	20.2	C
	R	.09	.34	21.4	C
	All			38.5	D
NB	*L	.08	.35	27.2	D
	TR	.12	.34	12.3	B
	All			18.1	C
SB	L	.01	.13	35.8	D
	*TR	.23	1.04	52.8	E
	All			52.8	E
Intersect:		.58	.65	33.7	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIAA1 SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT I - NO ACCESS AT MID-BLOCK ON T AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	10	8	79	0	50	1	1
WB	62	18	15	0	50	2	1
NB	200	59	331	0	50	3	2
SB	121	494	33	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	16.8	3
SB	0	2	N	0	0	.90	Y	16.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	21	24	26	23	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

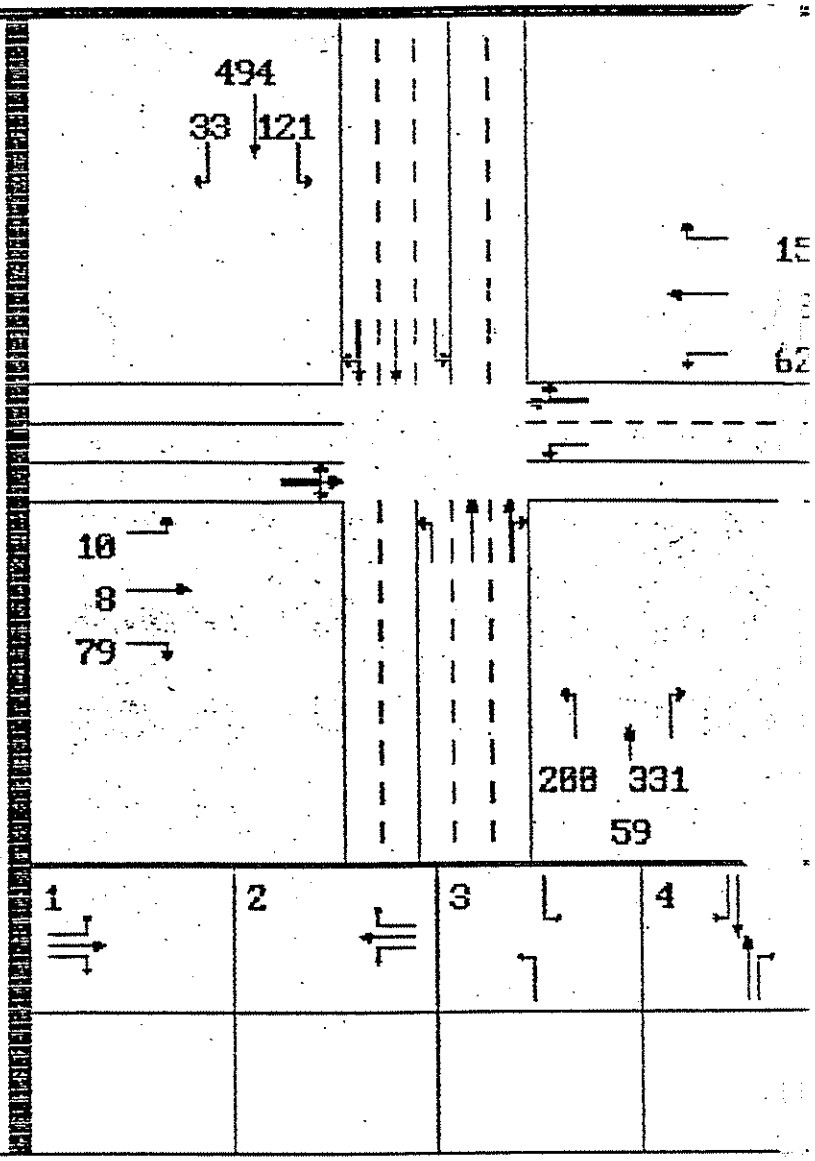
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.40	.20	LTR	.08	25.1	D	EB	25.1	D
WB	L	.18	.23	L	.04	26.0	D	WB	24.5	C
	TR	.10	.23	TR	.02	21.7	C			
NB	L	.53	.25	L	.13	28.4	D	NB	27.5	D
	TR	.67	.22	TR	.15	27.0	D			
SB	L	.32	.25	L	.08	26.0	D	SB	29.1	D
	TR	.80	.22	TR	.17	29.8	D			

[illegible] DELAY = 27.9 SEC/VEH [illegible] = .48 LOS = D Sum[illegible] = .4[illegible]

HCM Summary Results for Case: ELMIAA1 MILLER ROAD /EASTLAKE PAR

AM PEAK HOUR ALT I - NO ACCESS AT MID-BLOCK ON T

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.08	.40	25.1	D
	All			25.1	D
WB	*L	.04	.18	26.0	D
	TR	.02	.10	21.7	C
	All			24.5	C
NB	*L	.13	.53	28.4	D
	TR	.15	.67	27.8	D
	All			27.5	D
SB	L	.08	.32	26.0	D
	*TR	.17	.88	29.8	D
	All			29.1	D
Intersect:		.43	.48	27.9	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIPA1 SUMMARY RE
****
INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT I - NO ACCESS AT MID-BLOCK ON T AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	54	84	148	0	50	1	1
WB	457	43	106	0	50	2	1
NB	92	258	121	0	50	3	2
SB	25	122	15	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	27	33	18	16	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

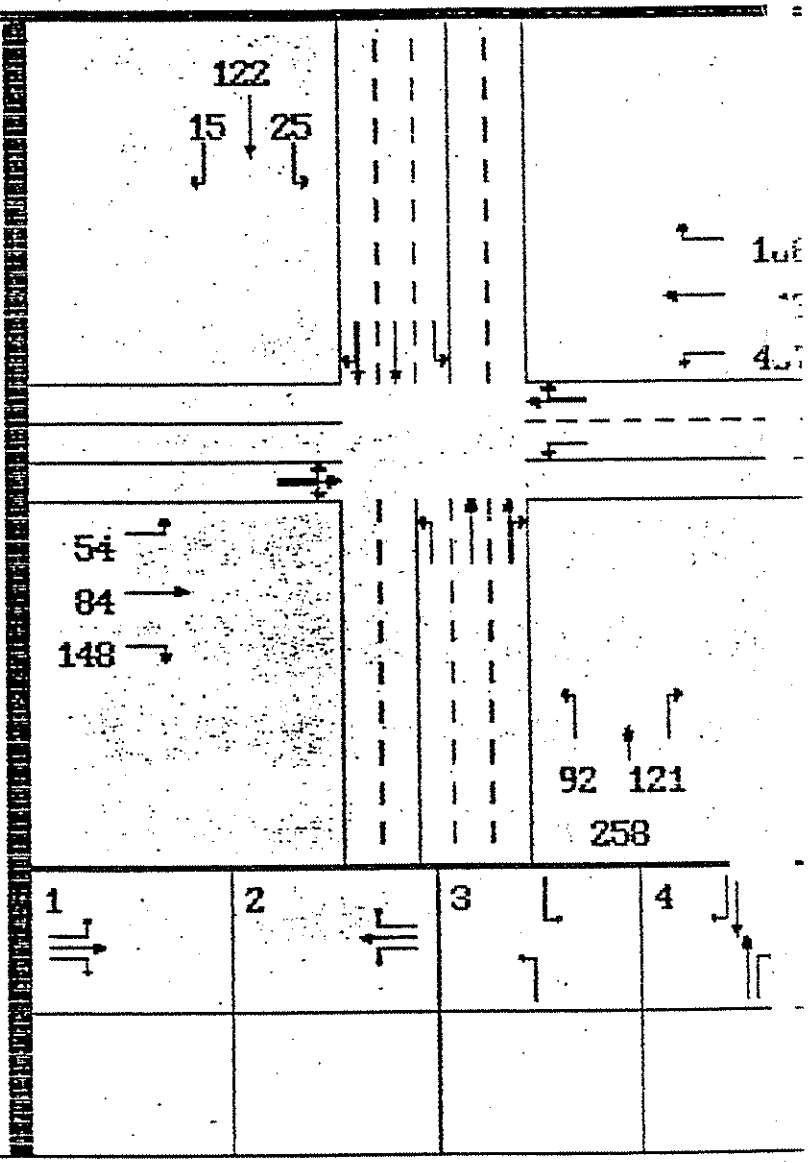
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.86	.25	LTR	.22	36.1	D	EB	36.1	D
WB	L	.97	.31	L	.30	52.4	E	WB	44.2	E
	TR	.34	.31	TR	.10	19.1	C			
NB	L	.35	.17	L	.06	30.8	D	NB	35.2	D
	TR	.84	.15	TR	.13	36.3	D			
SB	L	.10	.17	L	.02	29.1	D	SB	27.1	D
	TR	.30	.15	TR	.05	26.7	D			

INTERSECT: DELAY = 38.0 SEC/VEH Xc = .80 LOS = D Sum(v/s)CR = .71

HCM Summary Results for Case: ELMIPA1 MILLER ROAD /EASTLAKE PAR

PM PEAK HOUR ALT I - NO ACCESS AT MID-BLOCK ON T

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.22	.86	36.1	D
	All			36.1	D
WB	*L	.30	.97	52.4	E
	TR	.10	.34	19.1	C
	All			44.2	E
NB	*L	.06	.35	30.8	D
	*TR	.13	.84	36.3	D
	All			35.2	D
SB	L	.02	.10	29.1	D
	TR	.05	.30	26.7	D
	All			27.1	D
Intersect:		.71	.80	38.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIAA2 SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT II - RT'S IN & RT'S OUT AT MID- AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	10	8	79	0	50	1	1
WB	62	18	15	0	50	2	1
NB	200	59	331	0	50	3	2
SB	121	494	33	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	16.8	3
SB	0	2	N	0	0	.90	Y	16.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	21	24	26	23	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

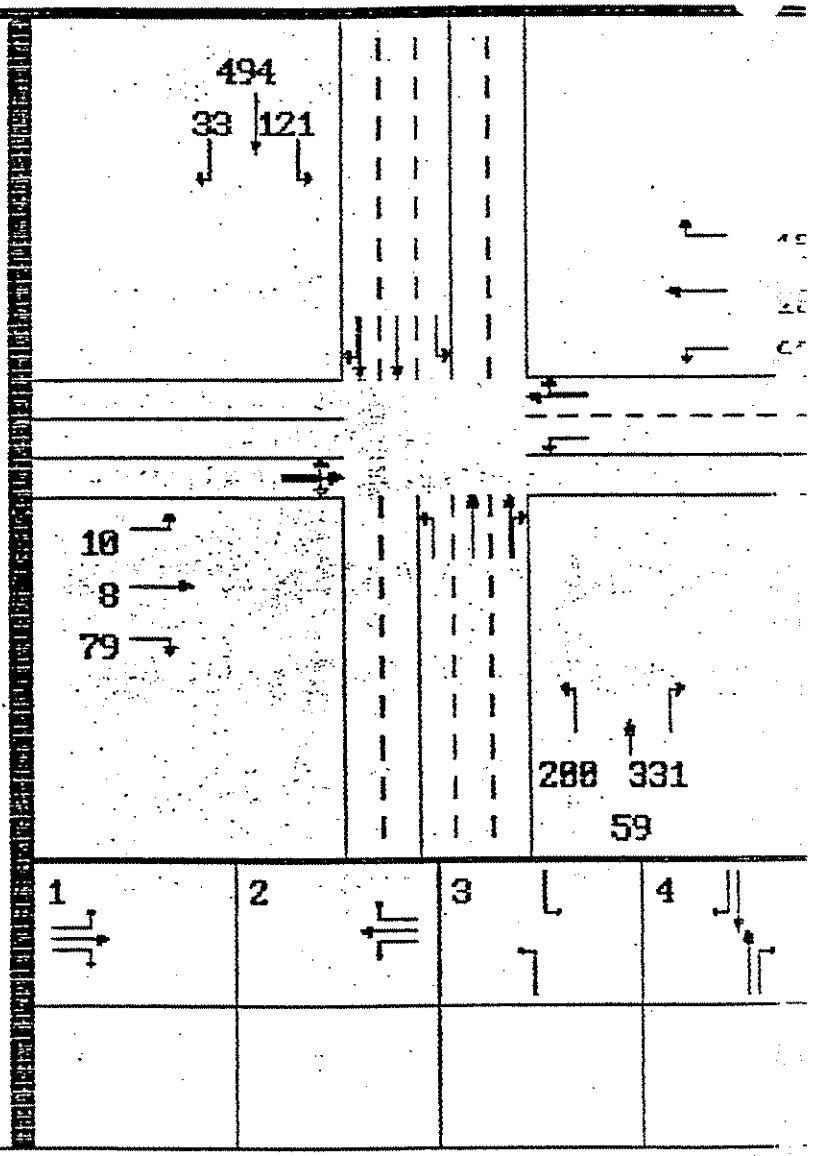
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.40	.20	LTR	.08	25.1	D	EB	25.1	D
WB	L	.18	.23	L	.04	26.0	D	WB	24.5	C
	TR	.10	.23	TR	.02	21.7	C			
NB	L	.53	.25	L	.13	28.4	D	NB	27.5	D
	TR	.67	.22	TR	.15	27.0	D			
SB	L	.32	.25	L	.08	26.0	D	SB	29.1	D
	TR	.80	.22	TR	.17	29.8	D			

[illegible] = [illegible] SEC/VEH [illegible] = .48 [illegible] = [illegible] Sum(v/s)CR = .43

HCM Summary Results for Case: ELMIAA2 MILLER ROAD /EASTLAKE PAR

AM PEAK HOUR ALT II - RT'S IN & RT'S OUT AT MI

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.08	.40	25.1	D
	All			25.1	D
WB	*L	.04	.18	26.8	D
	TR	.02	.10	21.7	C
	All			24.5	C
NB	*L	.13	.53	28.4	D
	TR	.15	.67	27.8	D
	All			27.5	D
SB	L	.08	.32	26.0	D
	*TR	.17	.80	29.8	D
	All			29.1	D
Intersect:		.43	.48	27.9	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIPA2 SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT II - RT'S IN & RT'S OUT AT MID- AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	54	84	148	0	50	1	1
WB	457	43	106	0	50	2	1
NB	92	258	121	0	50	3	2
SB	25	122	15	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	27	33	18	16	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

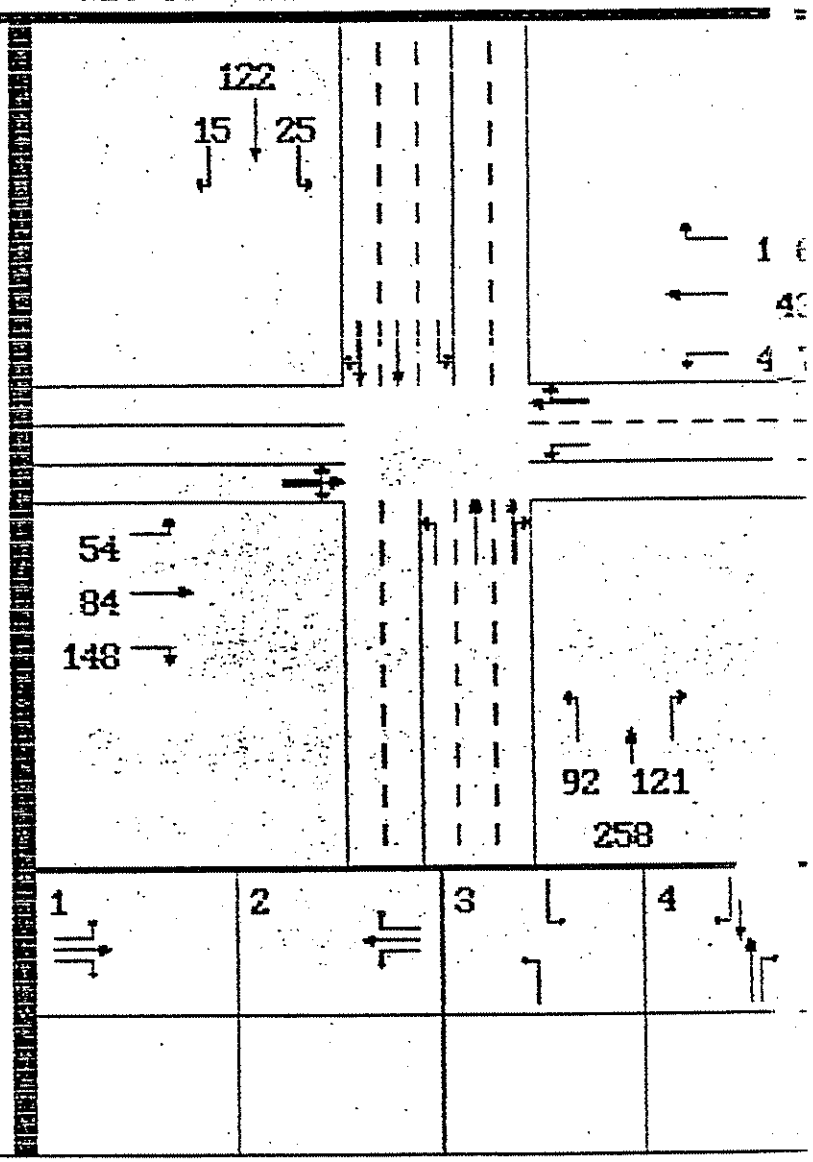
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.86	.25	LTR	.22	36.1	D	EB	36.1	D
WB	L	.97	.31	L	.30	52.4	E	WB	44.2	E
	TR	.34	.31	TR	.10	19.1	C			
NB	L	.35	.17	L	.06	30.8	D	NB	35.2	D
	TR	.84	.15	TR	.13	36.3	D			
SB	L	.10	.17	L	.02	29.1	D	SB	27.1	D
	TR	.30	.15	TR	.05	26.7	D			

INTERSECT: DELAY = 38.0 SEC/VEH Xc = .80 LOS = D Sum(v/s)CR = .71

HCM Summary Results for Case: ELMIPA2 MILLER ROAD /EASTLAKE PAR

PM PEAK HOUR ALT II - RT'S IN & RT'S OUT AT MID-

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.22	.86	36.1	D
	All			36.1	D
WB	*L	.30	.97	52.4	E
	TR	.10	.34	19.1	C
	All			44.2	E
NB	*L	.06	.35	38.8	D
	*TR	.13	.84	36.3	D
	All			35.2	D
SB	L	.02	.10	29.1	D
	TR	.05	.38	26.7	D
	All			27.1	D
Intersect:		.71	.88	38.8	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIAA3 SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT III - LT'S IN & RT'S OUT AT MID AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	10	8	79	0	50	1	1
WB	62	18	15	0	50	2	1
NB	200	59	331	0	50	3	2
SB	121	494	33	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	16.8	3
SB	0	2	N	0	0	.90	Y	16.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	21	24	26	23	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

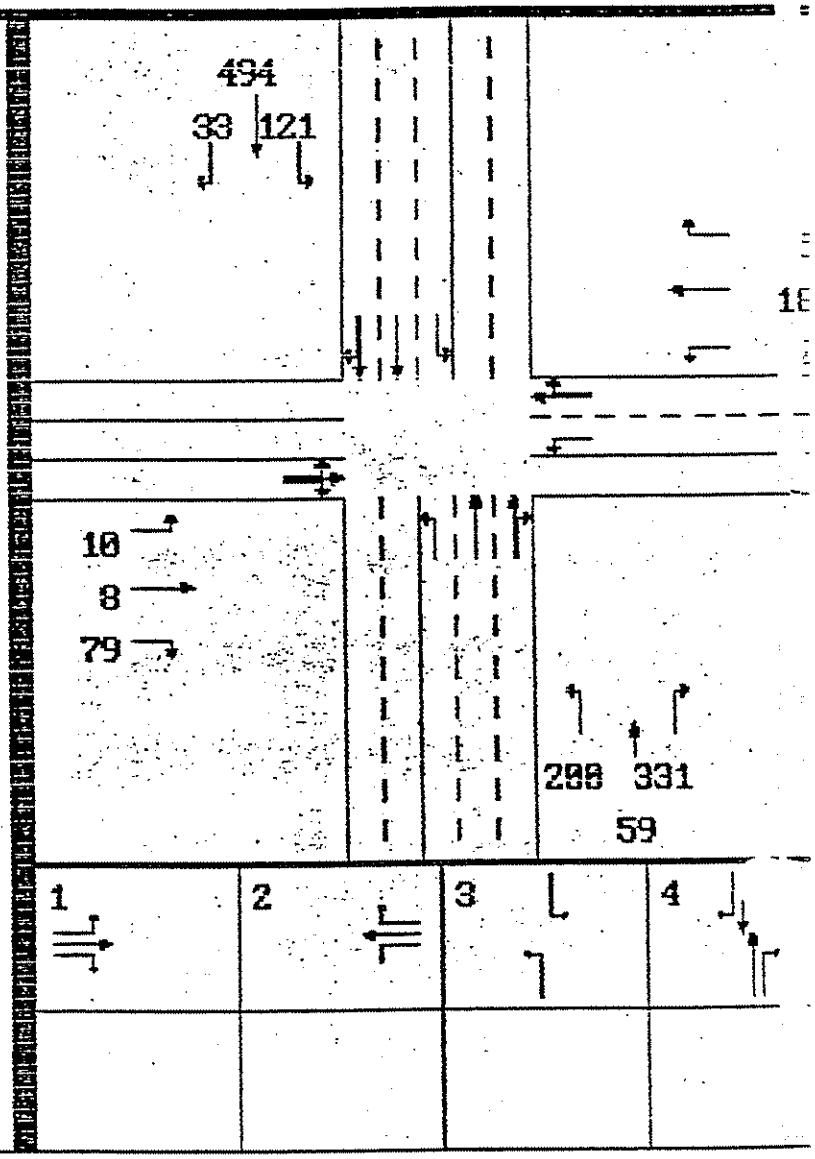
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.40	.20	LTR	.08	25.1	D	EB	25.1	D
WB	L	.18	.23	L	.04	26.0	D	WB	24.5	C
	TR	.10	.23	TR	.02	21.7	C			
NB	L	.53	.25	L	.13	28.4	D	NB	27.5	D
	TR	.67	.22	TR	.15	27.0	D			
SB	L	.32	.25	L	.08	26.0	D	SB	29.1	D
	TR	.80	.22	TR	.17	29.8	D			

INTERSECT: DELAY = 27.9 SEC/VEH Xc = .48 LOS = D Sum(v/s)CR = .43

HCM Summary Results for Case: ELMIAA3 MILLER ROAD /EASTLAKE PAR

AM PEAK HOUR ALT III - LT'S IN & RT'S OUT AT MID

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.08	.40	25.1	D
	All			25.1	D
WB	*L	.04	.10	26.0	D
	TR	.02	.10	21.7	C
	All			24.5	C
NB	*L	.13	.53	28.4	D
	TR	.15	.67	27.0	D
	All			27.5	D
SB	L	.08	.32	26.0	D
	*TR	.17	.80	29.8	D
	All			29.1	D
Intersect:		.43	.48	27.9	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIPA3 SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT III - LT'S IN & RT'S OUT AT MID AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	54	84	148	0	50	1	1
WB	457	43	106	0	50	2	1
NB	92	258	121	0	50	3	2
SB	25	122	15	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	27	33	18	16	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

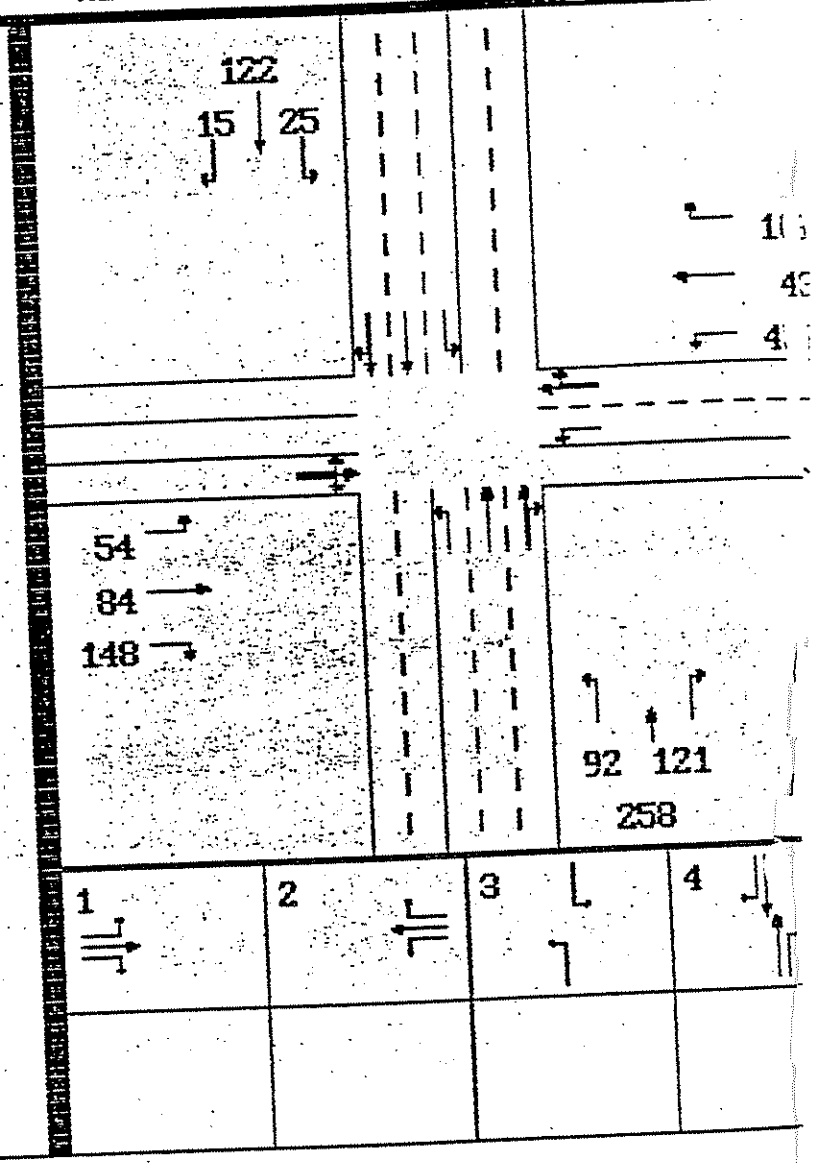
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.86	.25	LTR	.22	36.1	D	EB	36.1	D
WB	L	.97	.31	L	.30	52.4	E	WB	44.2	E
	TR	.34	.31	TR	.10	19.1	C			
NB	L	.35	.17	L	.06	30.8	D	NB	35.2	D
	TR	.84	.15	TR	.13	36.3	D			
SB	L	.10	.17	L	.02	29.1	D	SB	27.1	D
	TR	.30	.15	TR	.05	26.7	D			

INTERSECT: DELAY = 38.0 SEC/VEH Xc = .80 LOS = D Sum(v/s)CR = .71

HCM Summary Results for Case: ELMIPA3 MILLER ROAD /EASTLAKE PAR

PM PEAK HOUR ALT III - LT'S IN & RT'S OUT AT MID

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.22	.86	36.1	D
	All			36.1	D
WB	*L	.38	.97	52.4	E
	TR	.10	.34	19.1	C
	All			44.2	E
NB	*L	.06	.35	30.8	D
	*TR	.13	.84	36.3	D
	All			35.2	D
SB	L	.02	.10	29.1	D
	TR	.05	.30	26.7	D
	All			27.1	D
Intersect:		.71	.80	38.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIAA4 SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT IV - W/SIGNAL AT MID-BLK ACCESS AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	10	8	79	0	50	1	1
WB	62	18	15	0	50	2	1
NB	200	59	331	0	50	3	2
SB	121	494	33	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	16.8	3
SB	0	2	N	0	0	.90	Y	16.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	RED ONLY
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	21	24	26	23	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

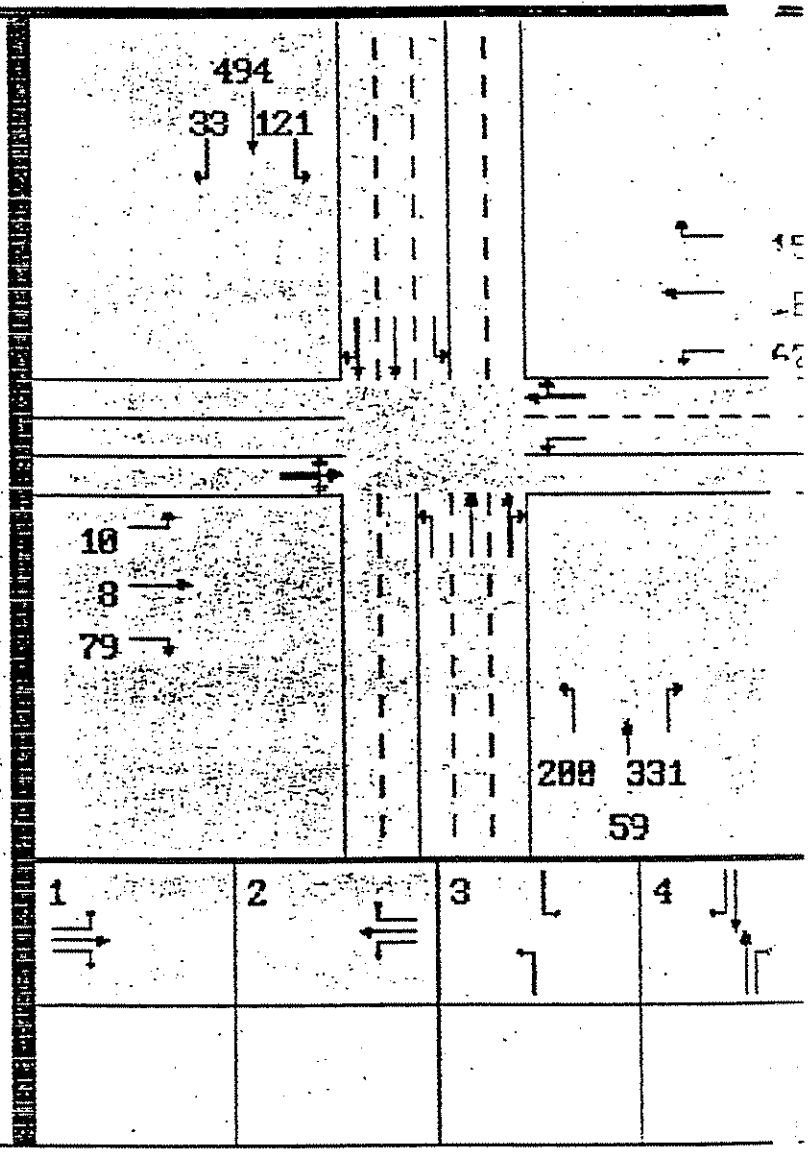
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.40	.20	LTR	.08	25.1	D	EB	25.1	D
WB	L	.18	.23	L	.04	26.0	D	WB	24.5	C
	TR	.10	.23	TR	.02	21.7	C			
NB	L	.53	.25	L	.13	28.4	D	NB	27.5	D
	TR	.67	.22	TR	.15	27.0	D			
SB	L	.32	.25	L	.08	26.0	D	SB	29.1	D
	TR	.80	.22	TR	.17	29.8	D			

INTERSECT: DELAY = 27.9 SEC/VEH Xc = .48 LOS = D Sum(v/s)CR = .43

HCM Summary Results for Case: ELMIAA4 MILLER ROAD /EASTLAKE PAR

AM PEAK HOUR ALT IV - W/SIGNAL AT MID-BLK ACCE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.08	.40	25.1	D
	All			25.1	D
WB	*L	.04	.18	26.0	D
	TR	.02	.10	21.7	C
	All			24.5	C
NB	*L	.13	.53	28.4	D
	TR	.15	.67	27.0	D
	All			27.5	D
SB	L	.08	.32	26.0	D
	*TR	.17	.80	29.8	D
	All			29.1	D
Intersect:		.43	.48	27.9	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMIPA4 SUMMARY REPORT

****

INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: ALT IV - W/SIGNAL AT MID-BLK ACCESS AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	54	84	148	0	50	1	1
WB	457	43	106	0	50	2	1
NB	92	258	121	0	50	3	2
SB	25	122	15	0	50	3	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	LTR	12				
WB	L	12	TR	12		
NB	L	12	T	12	TR	12
SB	L	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB		LTR							
NB			L	TR					
SB			L	TR					
GREEN	27	33	18	16	0	0	0	0	0
YELLOW	4	4	4	4	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

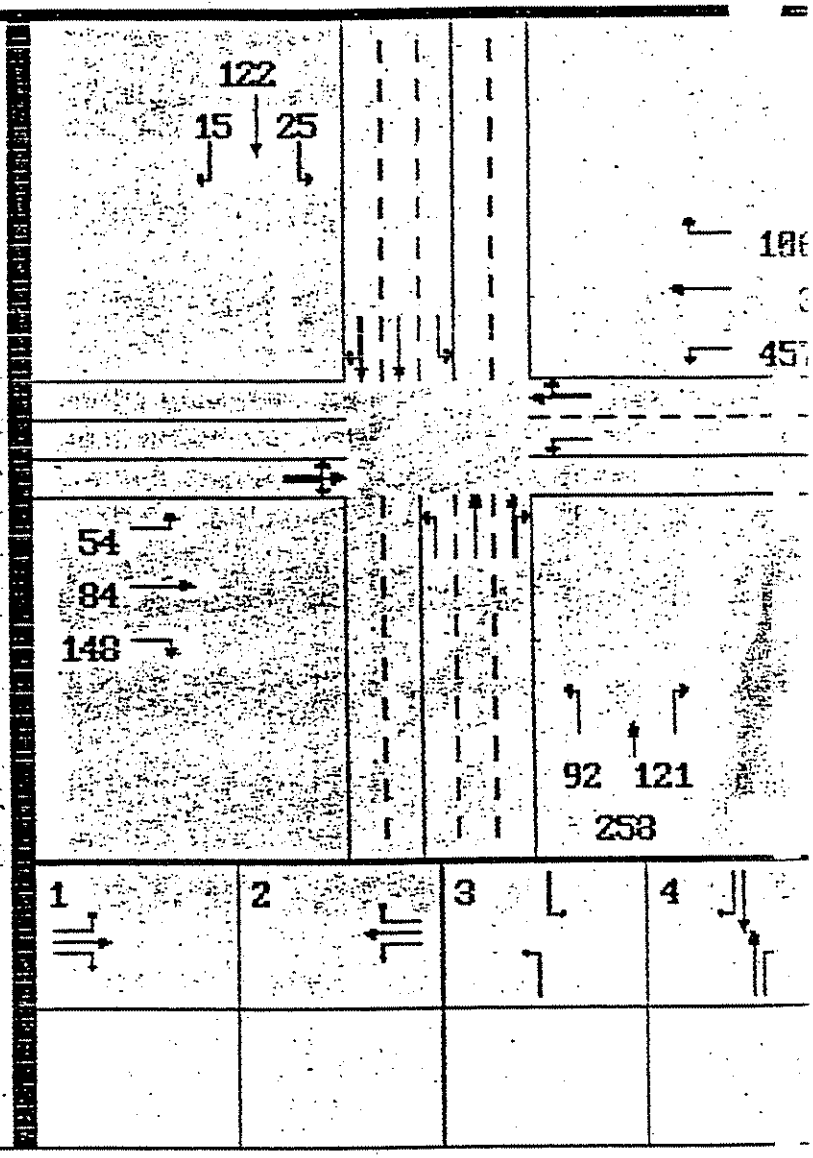
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	LTR	.86	.25	LTR	.22	36.1	D	EB	36.1	D
WB	L	.97	.31	L	.30	52.4	E	WB	44.2	E
	TR	.34	.31	TR	.10	19.1	C			
NB	L	.35	.17	L	.06	30.8	D	NB	35.2	D
	TR	.84	.15	TR	.13	36.3	D			
SB	L	.10	.17	L	.02	29.1	D	SB	27.1	D
	TR	.30	.15	TR	.05	26.7	D			

HCM Summary Results for Case: ELMIPA4 MILLER ROAD /EASTLAKE PAR

PM PEAK HOUR ALT IV - W/SIGNAL AT MID-BLK ACCES

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*LTR	.22	.86	36.1	D
	All			36.1	D
WB	*L	.30	.97	52.4	E
	TR	.10	.34	19.1	C
	All			44.2	E
NB	*L	.06	.35	30.8	D
	*TR	.13	.84	36.3	D
	All			35.2	D
SB	L	.02	.10	29.1	D
	TR	.05	.30	26.7	D
	All			27.1	D
Intersect:		.71	.80	30.0	D



APPENDIX H

SIGNALIZED INTERSECTIONS CAPACITY ANALYSIS WORKSHEETS

BUILDOUT WITH PROPOSED PROJECT CONDITION

PROJECT SITE ACCESS ALTERNATIVE ANALYSES

HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELSR3A SUMMARY REPORT

****

INTERSECTION: EASTLAKE PAR/SR 125 SOUTH TIME: AM PEAK HOUR
ANALYST: ME DATE: 03-04-92
COMMENT: BUILDOUT W/RAMP ACCESS INTO SITE AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	453	0	0	50	2	2
WB	0	200	0	0	50	2	2
NB	0	0	0	0	50	0	0
SB	739	0	35	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12		
WB	T	12	T	12		
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	3
WB	0	2	N	0	0	.90	Y	11.5	3
NB	0	2	N	0	0	.90	Y	19.8	3
SB	0	2	N	0	0	.90	Y	19.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		L R							
GREEN	45	57	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.35	.42	T	.15	14.2	B	EB	14.2	B
WB	T	.16	.42	T	.07	12.9	B	WB	12.9	B
SB	L	.50	.53	L	.26	12.9	B	SB	12.7	B
	R	.05	.53	R	.03	8.1	B			

INTERSECT: DELAY = 13.2 SEC/VEH Xc = .43 LOS = B Sum(v/s)CR = .41

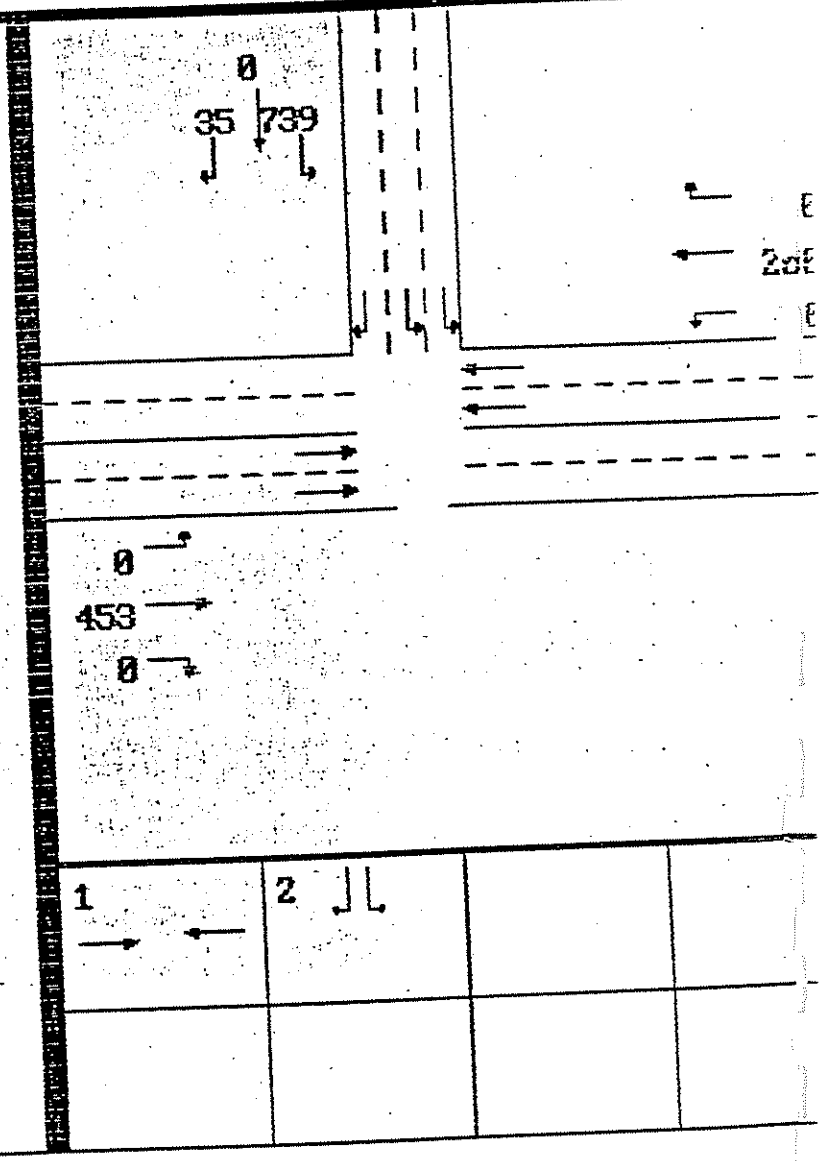
HCM Summary Results for Case: ELSR3A

EASTLAKE PAR/SR 125 SOUTH

AM PEAK HOUR

BUILDOUT W/RAMP ACCESS INTO SITE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.15	.35	14.2	B
	All			14.2	B
WB	T	.07	.16	12.9	B
	All			12.9	B
SB	*L	.26	.50	12.9	B
	R	.03	.05	8.1	B
	All			12.7	B
Intersect:		.41	.43	13.2	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELSR3P SUMMARY REPORT

****

INTERSECTION: EASTLAKE PAR/SR 125 SOUTH TIME: PM PEAK HOUR
DATE: 03-04-92
ANALYST: ME
COMMENT: BUILDOUT W/RAMP ACCESS INTO SITE AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	373	0	0	50	2	2
WB	0	523	0	0	50	2	2
NB	0	0	0	0	50	0	0
SB	587	0	31	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12		
WB	T	12	T	12		
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	3
WB	0	2	N	0	0	.90	Y	11.5	3
NB	0	2	N	0	0	.90	Y	19.8	3
SB	0	2	N	0	0	.90	Y	19.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		L RP							
GREEN	45	57	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.29	.42	T	.12	13.7	B	EB	13.7	B
WB	T	.41	.42	T	.17	14.6	B	WB	14.6	B
SB	L	.40	.53	L	.21	11.9	B	SB	11.7	B
	R	.04	.53	R	.02	8.1	B			

INTERSECT DELAY = 13.2 SEC/VEH Xc = .40 LOS = B Sum(v/s)CR = .38

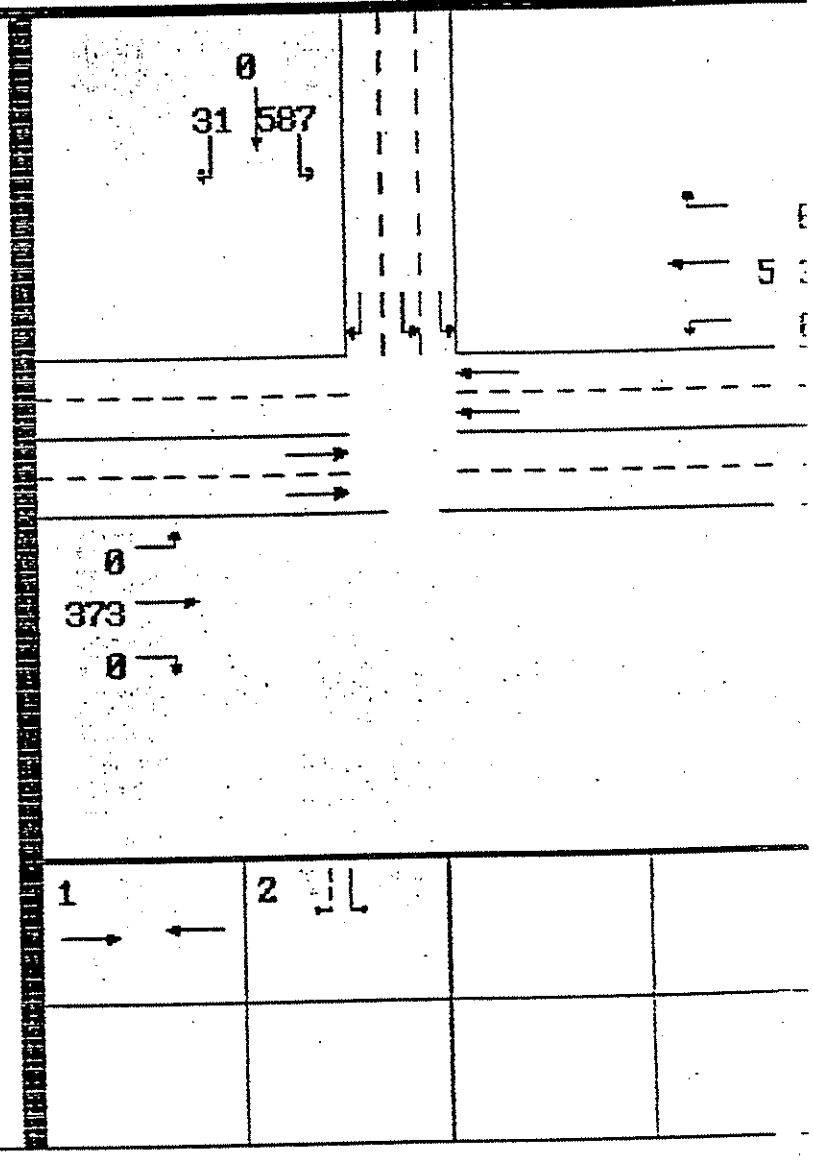
HCM Summary Results for Case: ELSR3P

EASTLAKE PAR/SR 125 SOUTH

PM PEAK HOUR

BUILDOUT W/RAMP ACCESS INTO SITE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.12	.29	13.7	B
	All			13.7	B
WB	*T	.17	.41	14.6	B
	All			14.6	B
SB	*L	.21	.40	11.9	B
	R	.02	.04	8.1	B
	All			11.7	B
Intersect:		.38	.40	13.2	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELSR4A SUMMARY REPORT

****

INTERSECTION: EASTLAKE PAR/SR 125 SOUTH TIME: AM PEAK HOUR
ANALYST: ME DATE: 03-04-92
COMMENT: W/SR 125 & E.L. RAMPS. & O.L. FULL AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	453	0	0	50	2	2
WB	0	200	0	0	50	2	2
NB	0	0	0	0	50	0	0
SB	739	0	35	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12		
WB	T	12	T	12		
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	3
WB	0	2	N	0	0	.90	Y	11.5	3
NB	0	2	N	0	0	.90	Y	19.8	3
SB	0	2	N	0	0	.90	Y	19.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		L R							
GREEN	45	57	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

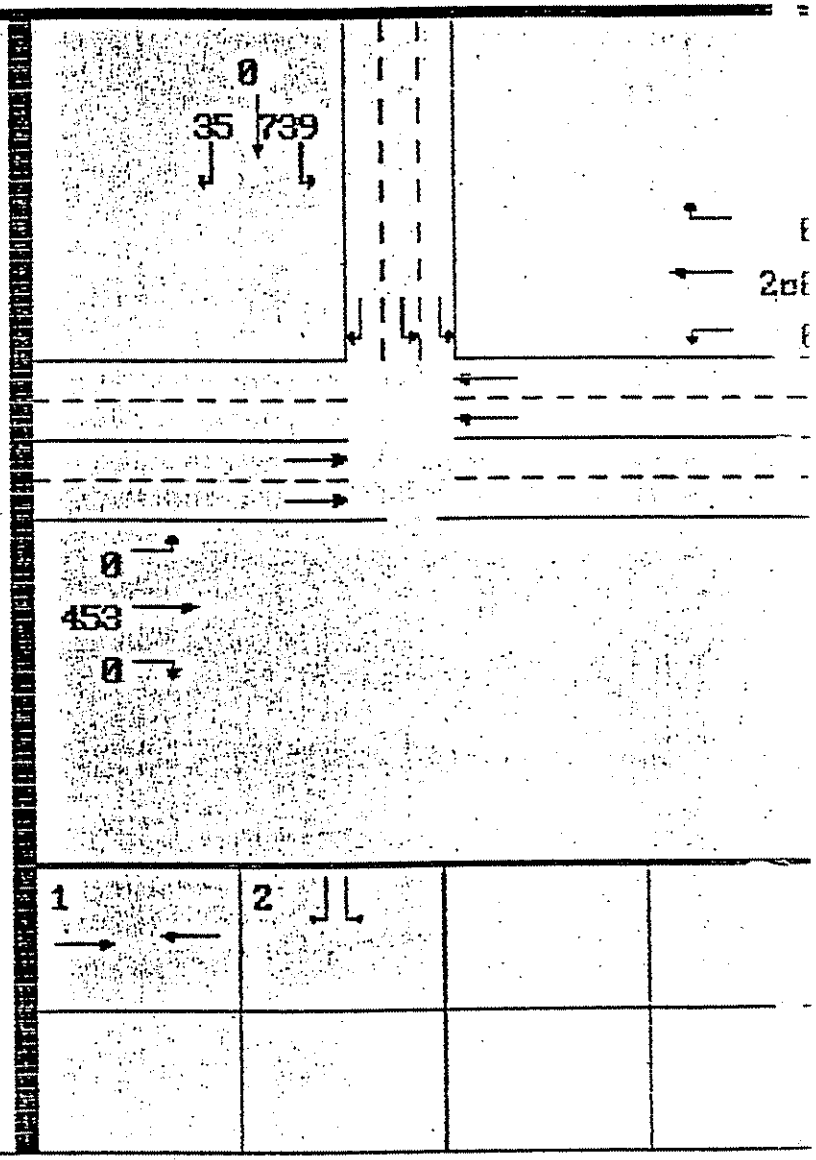
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.35	.42	T	.15	14.2	B	EB	14.2	B
WB	T	.16	.42	T	.07	12.9	B	WB	12.9	B
SB	L	.50	.53	L	.26	12.9	B	SB	12.7	B
	R	.05	.53	R	.03	8.1	B			

INTERSECT: DELAY = 13.2 SEC/VEH Xc = .43 LOS = B Sum(v/s)CR = .41

HCM Summary Results for Case: ELSR4A EASTLAKE PAR/SR 125 SOUTH
AM PEAK HOUR W/SR 125 & E.L. RAMPS, & O.L. FULL

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.15	.35	14.2	B
	All			14.2	B
WB	T	.87	.16	12.9	B
	All			12.9	B
SB	*L	.26	.50	12.9	B
	R	.03	.05	8.1	B
	All			12.7	B
Intersect:		.41	.43	13.2	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELSR4P SUMMARY REPORT

****

INTERSECTION: EASTLAKE PAR/SR 125 SOUTH TIME: PM PEAK HOUR
ANALYST: ME DATE: 03-04-92
COMMENT: W/SR 125 & E.L. RAMPS, & O.L. FULL AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	373	0	0	50	2	2
WB	0	523	0	0	50	2	2
NB	0	0	0	0	50	0	0
SB	587	0	31	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12		
WB	T	12	T	12		
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	3
WB	0	2	N	0	0	.90	Y	11.5	3
NB	0	2	N	0	0	.90	Y	19.8	3
SB	0	2	N	0	0	.90	Y	19.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		L R							
GREEN	45	57	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

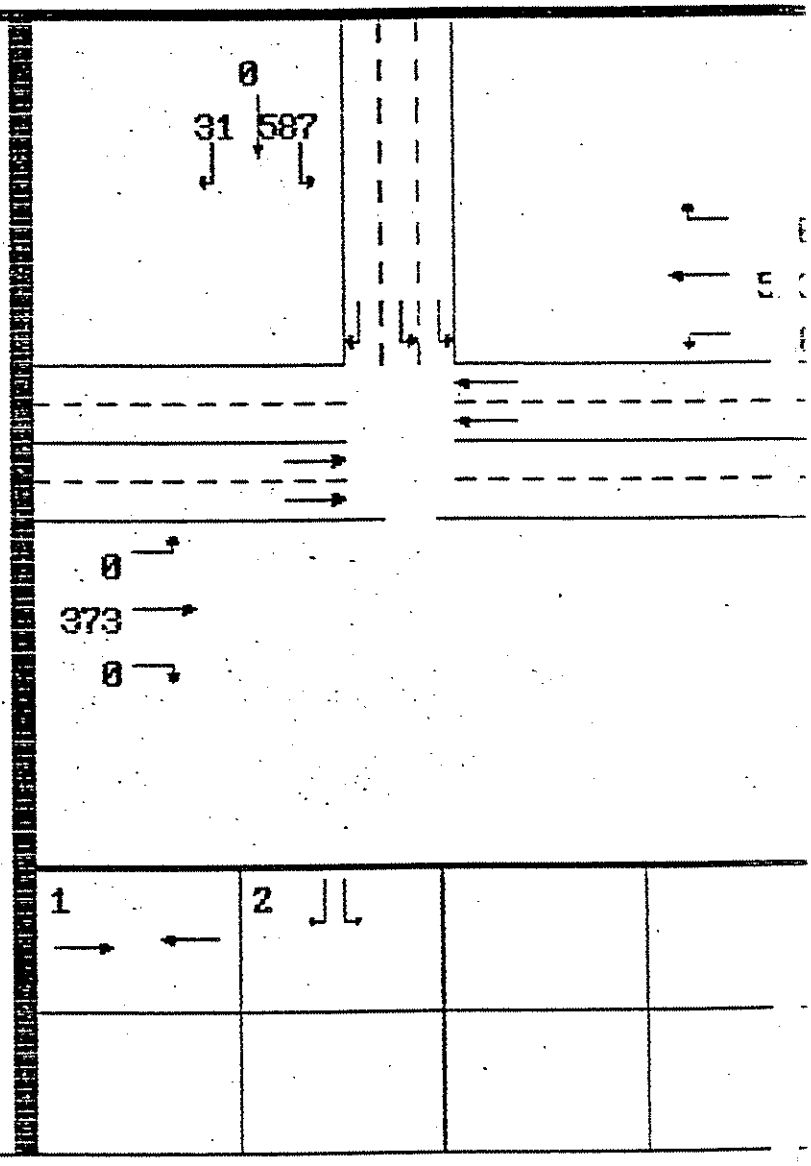
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.29	.42	T	.12	13.7	B	EB	13.7	B
WB	T	.41	.42	T	.17	14.6	B	WB	14.6	B
SB	L	.40	.53	L	.21	11.9	B	SB	11.7	B
	R	.04	.53	R	.02	8.1	B			

INTERSECT: DELAY = 13.2 SEC/VEH Xc = .40 LOS = B Sum(v/s)CR = .38

HCM Summary Results for Case: ELSR4P — EASTLAKE PAR/SR 125 SOUTH

PM PEAK HOUR — W/SR 125 & E.L. RAMPS, & O.L. FULL

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.12	.29	13.7	B
	All			13.7	B
WB	*T	.17	.41	14.6	B
	All			14.6	B
SB	*L	.21	.40	11.9	B
	R	.82	.84	8.1	B
	All			11.7	B
Intersect:		.38	.40	13.2	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ELMI1A
****
INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: GENERAL PLAN BUILDOUT SCENARIO AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	13	20	50	0	50	3	1
WB	59	5	15	0	50	3	1
NB	180	44	505	0	50	4	2
SB	129	416	45	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR	TR					
SB				TR	LTR				
GREEN	12	16	38	6	18	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.04	.12	L	.00	32.7	D
	TR	.32	.15	TR	.05	26.9	D
WB	L	.18	.12	L	.02	33.2	D
	TR	.09	.15	TR	.01	25.8	D
NB	L	.33	.35	L	.12	19.9	C
	T	.03	.45	T	.01	11.1	B
	R	.83	.45	R	.37	22.5	C
SB	L	.49	.17	L	.08	32.3	D
	T	.52	.26	T	.14	22.7	C
	R	.13	.26	R	.03	19.9	C

APPROACH:	DELAY	LOS
EB	27.8	D
WB	31.4	D
NB	21.1	C
SB	24.5	C

INTERSECT: DELAY = 23.4 SEC/VEH Xc = .36 LOS = C SUM(V/S)CR = .32

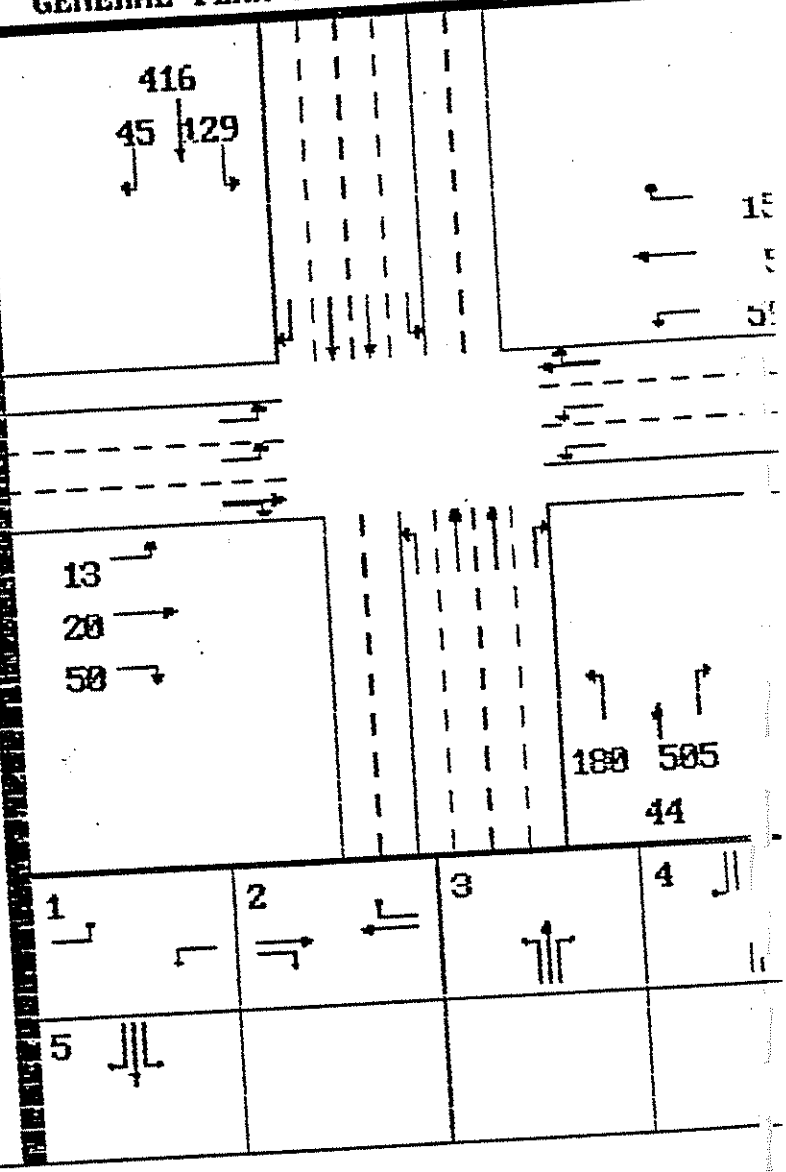
HCM Summary Results for Case: ELMI1A

MILLER ROAD /EASTLAKE PAR

GENERAL PLAN BUILDOUT SCENARIO

AM PEAK HOUR

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.00	.04	32.7	D
	*TR	.05	.32	26.9	D
	All			27.8	D
WB	*L	.02	.18	33.2	D
	TR	.01	.09	25.8	D
	All			31.4	D
NB	*L	.12	.33	19.9	C
	T	.01	.03	11.1	B
	R	.37	.03	22.5	C
	All			21.1	C
SB	L	.08	.49	32.3	D
	*T	.14	.52	22.7	C
	R	.03	.13	19.9	C
	All			24.5	C
Intersect:		.32	.36	23.4	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMI1P SUMMARY REPORT

****

INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: GENERAL PLAN BUILDOUT SCENARIO AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	33	12	152	0	50	3	1
WB	198	14	125	0	50	3	1
NB	108	386	122	0	50	4	2
SB	31	594	40	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	16.8	3
SB	0	2	N	0	0	.90	Y	16.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR	TR					
SB				TR	LTR				
GREEN	21	30	16	2	21	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.06	.20	L	.01	27.1	D	EB	22.2	C
	TR	.42	.28	TR	.12	21.1	C			
WB	L	.35	.20	L	.07	28.9	D	WB	25.6	D
	TR	.36	.28	TR	.10	20.6	C			
NB	L	.46	.15	L	.07	33.1	D	NB	27.2	D
	T	.60	.21	T	.13	26.3	D			
	R	.43	.21	R	.09	24.9	C			
SB	L	.10	.20	L	.02	27.3	D	SB	26.5	D
	T	.76	.25	T	.19	26.8	D			
	R	.11	.25	R	.03	20.3	C			

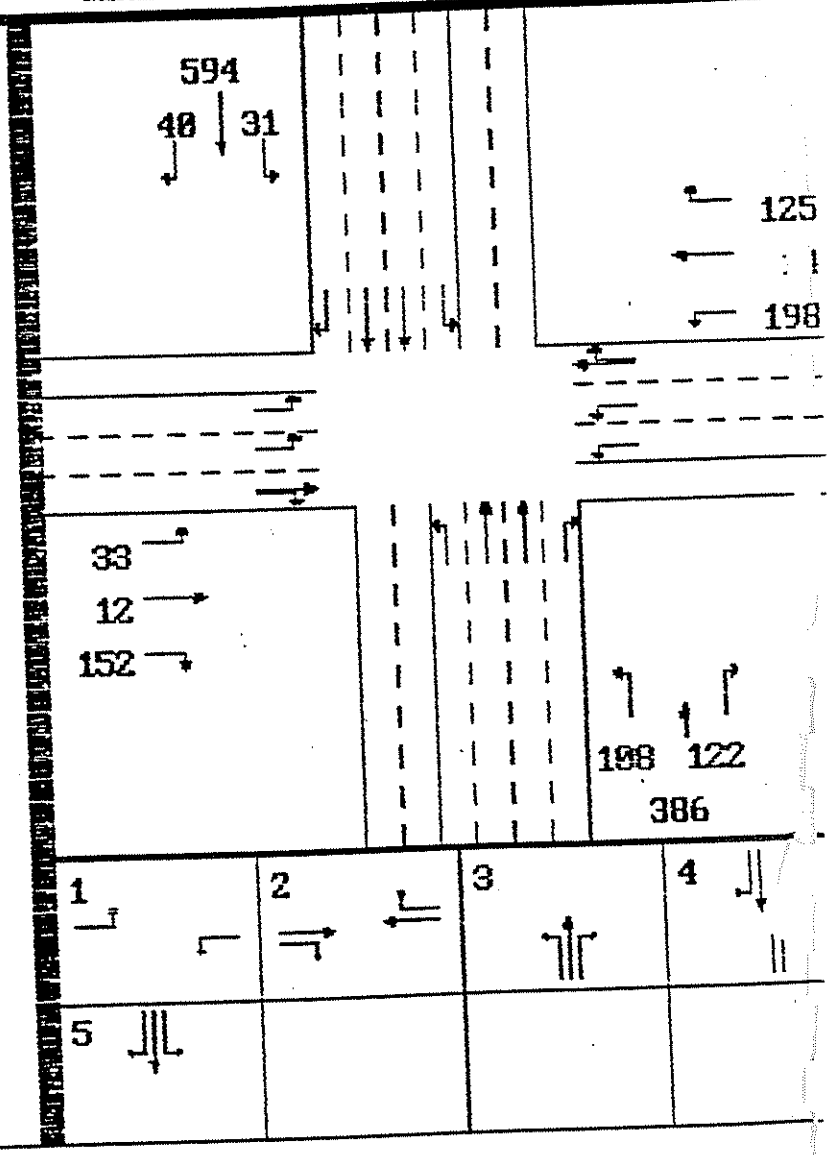
HCM Summary Results for Case: ELMI1P

MILLER ROAD /EASTLAKE PAR

PM PEAK HOUR

GENERAL PLAN BUILDOUT SCENARIO

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.01	.06	27.1	D
	*TR	.12	.42	21.1	C
	All			22.2	C
WB	*L	.07	.35	28.9	D
	TR	.10	.36	20.6	C
	All			25.6	D
NB	*L	.07	.46	33.1	D
	T	.13	.60	26.3	D
	R	.09	.43	24.9	C
	All			27.2	D
SB	L	.02	.10	27.3	D
	*T	.19	.76	26.8	D
	R	.03	.11	20.3	C
	All			26.5	D
Intersect:		.45	.51	26.1	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELM12A SUMMARY REPORT

****

INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR
DATE: 02-19-92
ANALYST: ME
COMMENT: NO SR 125 & EL RAMPS. W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	25	20	100	0	50	3	1
WB	59	5	15	0	50	3	1
NB	316	92	505	0	50	4	2
SB	129	445	80	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR	TR					
SB				TR	LTR				
GREEN	14	16	44	2	14	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

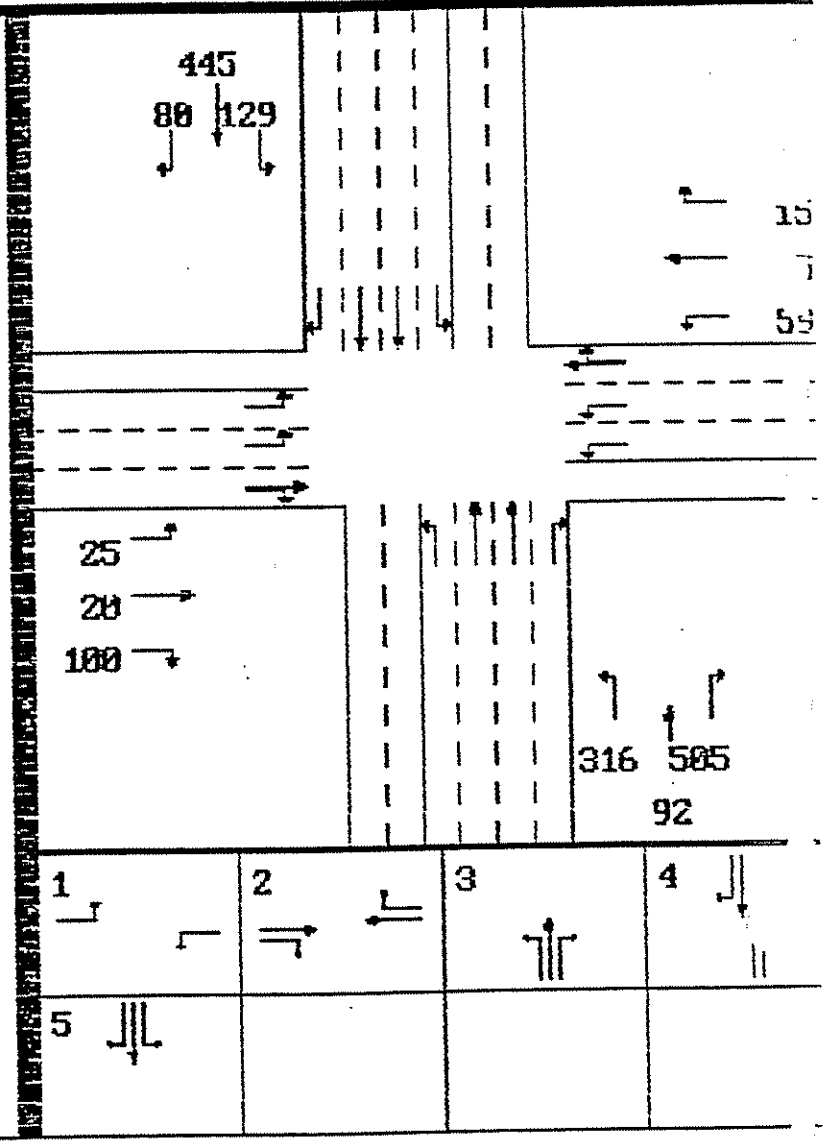
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.06	.14	L	.01	31.5	D	EB	29.9	D
	TR	.55	.15	TR	.09	29.5	D			
WB	L	.15	.14	L	.02	31.9	D	WB	30.3	D
	TR	.09	.15	TR	.01	25.8	D			
NB	L	.51	.41	L	.21	18.9	C	NB	18.7	C
	T	.06	.46	T	.03	10.5	B			
	R	.80	.46	R	.37	20.1	C			
SB	L	.62	.14	L	.08	37.5	D	SB	31.0	D
	T	.76	.19	T	.15	30.2	D			
	R	.31	.19	R	.06	24.9	C			

INTERSECT: DELAY = 24.7 SEC/VEH Xc = .52 LOS = C Sum(v/s)CR = .46

HCM Summary Results for Case: ELMI2A — MILLER ROAD /EASTLAKE PAR

AM PEAK HOUR — NO SR 125 & EL RAMPS, W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.01	.06	31.5	D
	*TR	.09	.55	29.5	D
	All			29.9	D
WB	*L	.02	.15	31.9	D
	TR	.01	.09	25.8	D
	All			30.3	D
NB	*L	.21	.51	18.9	C
	T	.03	.06	18.5	B
	R	.37	.80	20.1	C
	All			18.7	C
SB	L	.08	.62	37.5	D
	*T	.15	.76	30.2	D
	R	.06	.31	24.9	C
	All			31.0	D
Intersect:		.46	.52	24.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: ELMI2P SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK

DATE: 02-19-92

ANALYST: ME

COMMENT: NO SR 125 & EL RAMPS, W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	107	12	422	0	50	3	1
WB	489	14	125	0	50	3	1
NB	182	292	122	0	50	4	2
SB	31	510	46	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR	TR					
SB				TR	LTR				
GREEN	20	36	18	2	14	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

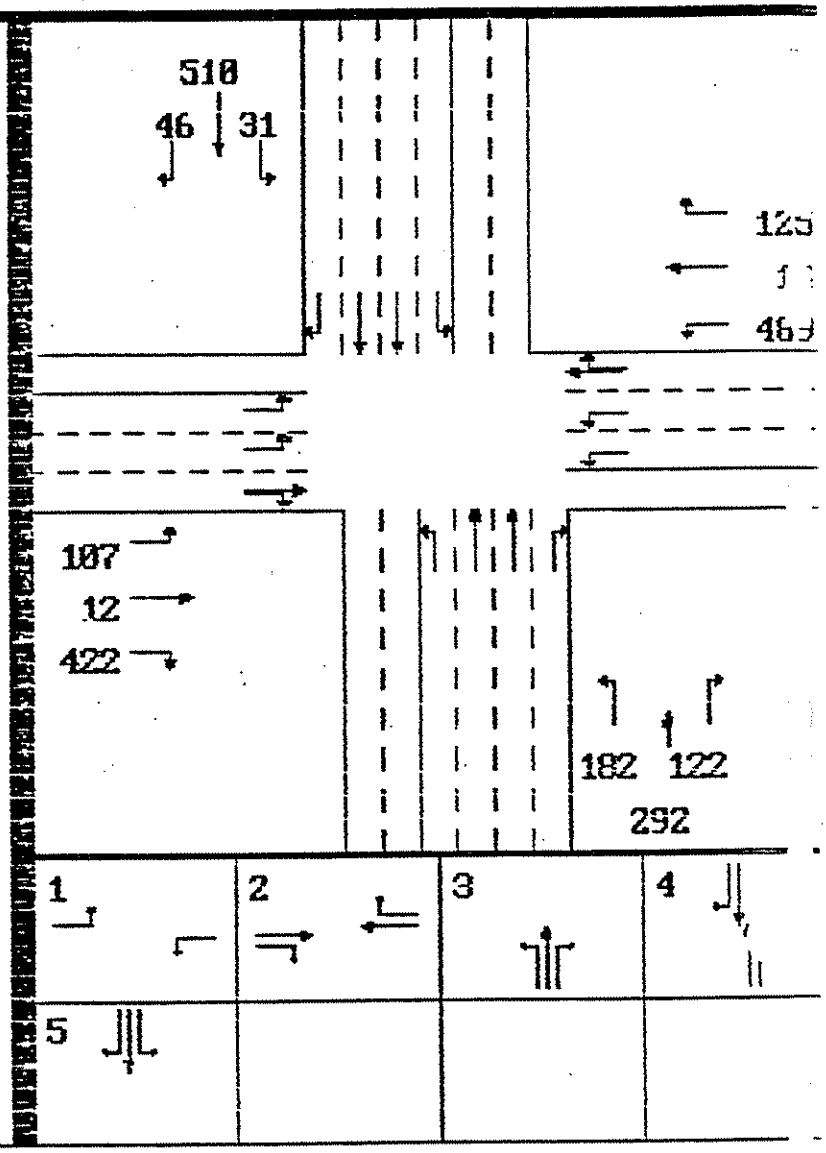
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.20	.19	L	.04	28.5	D	EB	36.7	D
	TR	.94	.34	TR	.32	38.9	D			
WB	L	.91	.19	L	.17	45.7	E	WB	39.6	D
	TR	.30	.34	TR	.10	17.5	C			
NB	L	.69	.17	L	.12	37.2	D	NB	27.7	D
	T	.42	.23	T	.10	23.6	C			
	R	.40	.23	R	.09	23.7	C			
SB	L	.15	.14	L	.02	31.8	D	SB	34.3	D
	T	.88	.19	T	.17	35.3	D			
	R	.18	.19	R	.03	24.1	C			

INTERSECT: DELAY = 34.6 SEC/VEH Xc = .87 LOS = D Sum(v/s)CR = .78

HCM Summary Results for Case: ELM12P MILLER ROAD /EASTLAKE PAR

PM PEAK NO SR 125 & EL RAMPS, W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.04	.20	28.5	D
	*TR	.32	.94	38.9	D
	All			36.7	D
WB	*L	.17	.91	45.7	E
	TR	.10	.30	17.5	C
	All			39.6	D
NB	*L	.12	.69	37.2	D
	T	.10	.42	23.6	C
	R	.09	.40	23.7	C
	All			27.7	D
SB	L	.02	.15	31.8	D
	*T	.17	.88	35.3	D
	R	.03	.10	24.1	C
	All			34.3	D
Intersect:		.78	.87	34.6	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: ELMI3A SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR

ANALYST: ME DATE: 02-19-92

COMMENT: BUILDOUT W/RAMP ACCESS INTO SITE AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	60	5	24	0	50	3	1
WB	29	31	38	0	50	3	1
NB	136	428	330	0	50	4	2
SB	330	672	190	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR	TR					
SB				TR	LTR				
GREEN	6	20	28	6	30	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

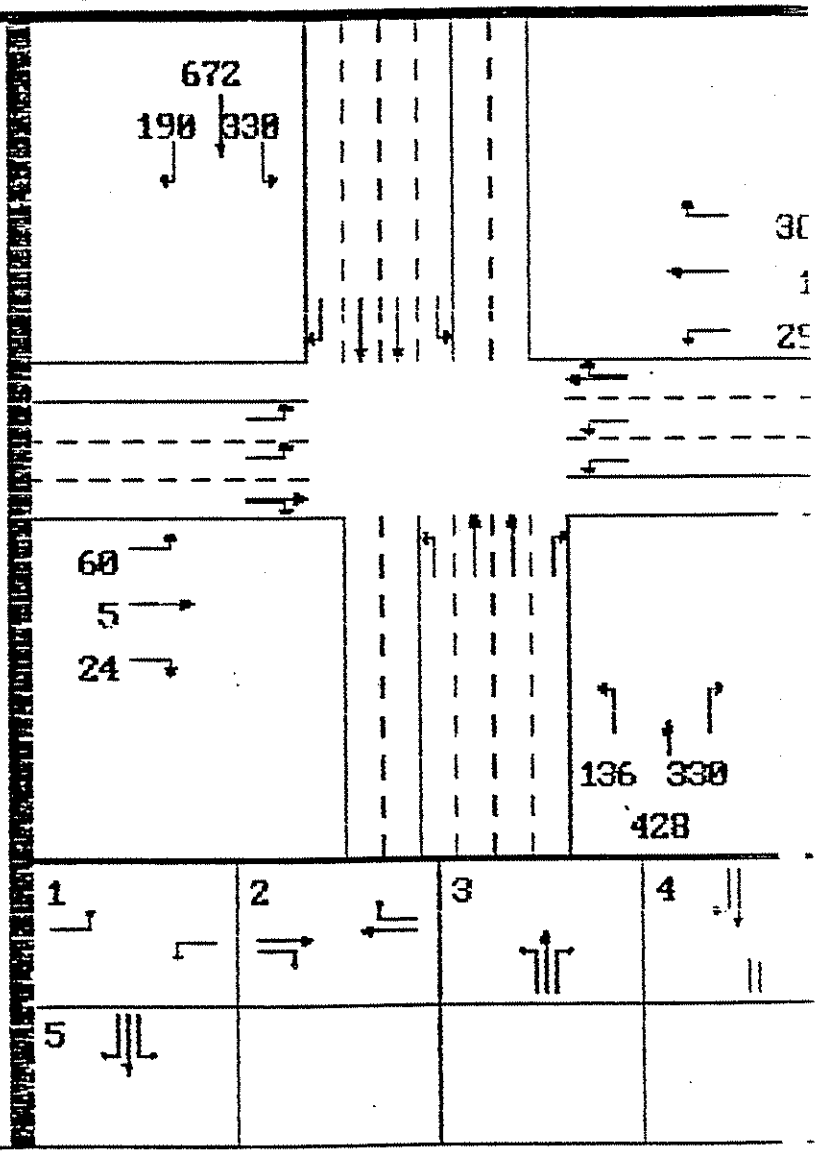
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.33	.06	L	.02	37.8	D	EB	33.3	D
	TR	.11	.19	TR	.02	23.8	C			
WB	L	.16	.06	L	.01	37.1	D	WB	28.4	D
	TR	.24	.19	TR	.05	24.5	C			
NB	L	.34	.26	L	.09	25.1	D	NB	20.0	C
	T	.40	.35	T	.14	17.3	C			
	R	.68	.35	R	.24	21.6	C			
SB	L	.77	.28	L	.22	32.7	D	SB	21.9	C
	T	.59	.37	T	.22	18.4	C			
	R	.37	.37	R	.14	16.4	C			

INTERSECT: DELAY = 21.9 SEC/VEH Xc = .48 LOS = C Sum(v/s)CR = .42

HCM Summary Results for Case: ELMI3A — MILLER ROAD /EASTLAKE PAR

AM PEAK HOUR — BUILDOUT W/RAMP ACCESS INTO SITE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.02	.33	37.8	D
	TR	.02	.11	23.8	C
	All			33.3	D
WB	L	.01	.16	37.1	D
	*TR	.05	.24	24.5	C
	All			28.4	D
NB	L	.09	.34	25.1	D
	*T	.14	.40	17.3	C
	R	.24	.68	21.6	C
	All			20.0	C
SB	*L	.22	.77	32.7	D
	T	.22	.59	18.4	C
	R	.14	.37	16.4	C
	All			21.9	C
Intersect:		.42	.48	21.9	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: ELMI3P SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK HOUR

ANALYST: ME DATE: 02-19-92

COMMENT: BUILDOUT W/RAMP ACCESS INTO SITE AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	397	12	65	0	50	3	1
WB	240	35	320	0	50	3	1
NB	69	491	80	0	50	4	2
SB	80	771	109	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR	TR					
SB				TR	LTR				
GREEN	19	30	12	6	23	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

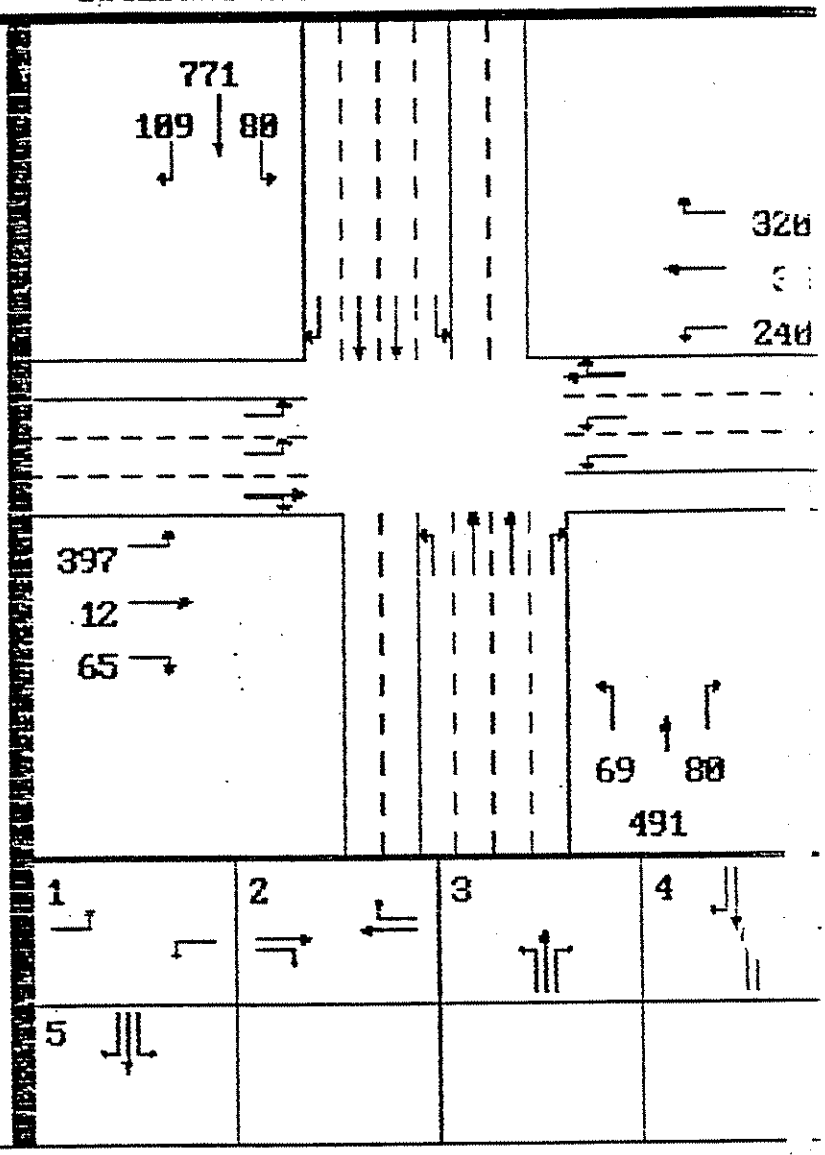
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.78	.18	L	.14	37.0	D	EB	34.3	D
	TR	.19	.28	TR	.05	19.4	C			
WB	L	.47	.18	L	.09	31.0	D	WB	35.4	D
	TR	.91	.28	TR	.26	38.6	D			
NB	L	.38	.12	L	.05	34.7	D	NB	29.3	D
	T	.77	.21	T	.16	29.4	D			
	R	.28	.21	R	.06	23.7	C			
SB	L	.24	.22	L	.05	27.0	D	SB	25.0	C
	T	.82	.31	T	.25	25.6	D			
	R	.26	.31	R	.08	18.5	C			

INTERSECT: DELAY = 30.0 SEC/VEH Xc = .78 LOS = D Sum(v/s)CR = .70

HCM Summary Results for Case: ELMI3P — MILLER ROAD /EASTLAKE PAR

PM PEAK HOUR — BUILDOUT W/RAMP ACCESS INTO SITE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.14	.78	37.0	D
	TR	.05	.19	19.4	C
	All			34.3	D
WB	L	.09	.47	31.0	D
	*TR	.26	.91	38.6	D
	All			35.4	D
NB	*L	.05	.38	34.7	D
	T	.16	.77	29.4	D
	R	.06	.28	23.7	C
	All			29.3	D
SB	L	.05	.24	27.0	D
	*T	.25	.82	25.6	D
	R	.00	.26	18.5	C
	All			25.0	C
Intersect:		.70	.78	30.0	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMI4A SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: W/SR 125 & E.L. RAMPS & U.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	60	5	71	0	50	3	1
WB	29	31	38	0	50	3	1
NB	224	428	330	0	50	4	2
SB	330	672	190	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	TR							
WB	L	TR							
NB			LTR	TR					
SB				TR	LTR				
GREEN	12	10	34	6	28	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

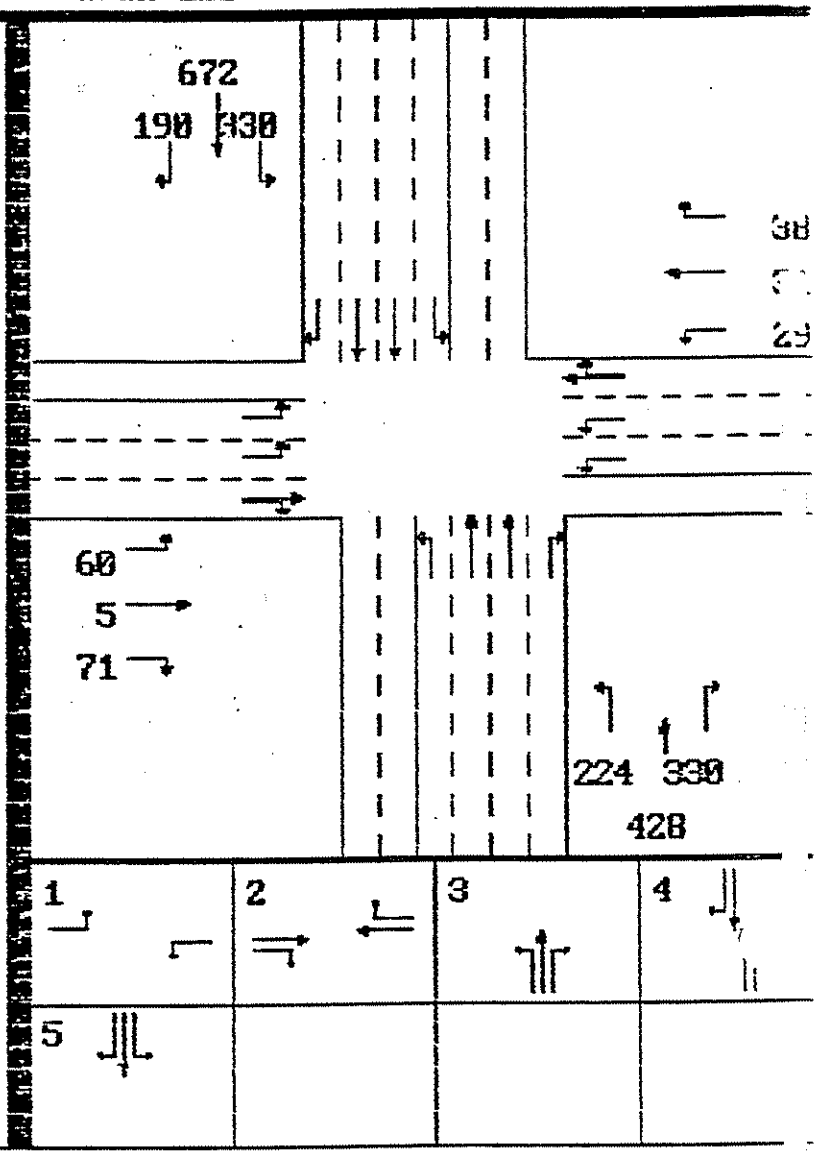
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.18	.12	L	.02	33.2	D	EB	33.2	D
	TR	.56	.10	TR	.06	33.2	D			
WB	L	.09	.12	L	.01	32.8	D	WB	31.9	D
	TR	.47	.10	TR	.05	31.5	D			
NB	L	.46	.32	L	.15	23.2	C	NB	17.4	C
	T	.34	.41	T	.14	14.5	B			
	R	.59	.41	R	.24	17.3	C			
SB	L	.82	.26	L	.22	37.1	D	SB	23.9	C
	T	.62	.35	T	.22	19.6	C			
	R	.39	.35	R	.14	17.4	C			

INTERSECT: DELAY = 22.1 SEC/VEH Xc = .50 LOS = C Sum(v/s)CR = .44

HCM Summary Results for Case: ELMI4A MILLER ROAD /EASTLAKE PAR

AM PEAK HOUR W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.02	.18	33.2	D
	*TR	.06	.56	33.2	D
	All			33.2	D
WB	L	.01	.09	32.8	D
	TR	.05	.47	31.5	D
	All			31.9	D
NB	*L	.15	.46	23.2	C
	T	.14	.34	14.5	B
	R	.24	.59	17.3	C
	All			17.4	C
SB	L	.22	.82	37.1	D
	*T	.22	.62	19.6	C
	R	.14	.39	17.4	C
	All			23.9	C
Intersect:		.44	.50	22.1	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELMI4P SUMMARY REPORT

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INTERSECTION: MILLER ROAD /EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: W/SR 125 & E.L. RAMPS & U.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	397	12	158	0	50	3	1
WB	240	35	320	0	50	3	1
NB	88	491	80	0	50	4	2
SB	80	771	109	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	TR	12		
WB	L	12	L	12	TR	12		
NB	L	12	T	12	T	12	R	12
SB	L	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	20.5	3
WB	0	2	N	0	0	.90	Y	20.5	3
NB	0	2	N	0	0	.90	Y	11.5	3
SB	0	2	N	0	0	.90	Y	11.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
EB	L		TR							
WB	L		TR							
NB				LTR	TR					
SB					TR	LTR				
GREEN		18	30	15	3	24	0	0	0	0
YELLOW		4	4	4	4	4	0	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

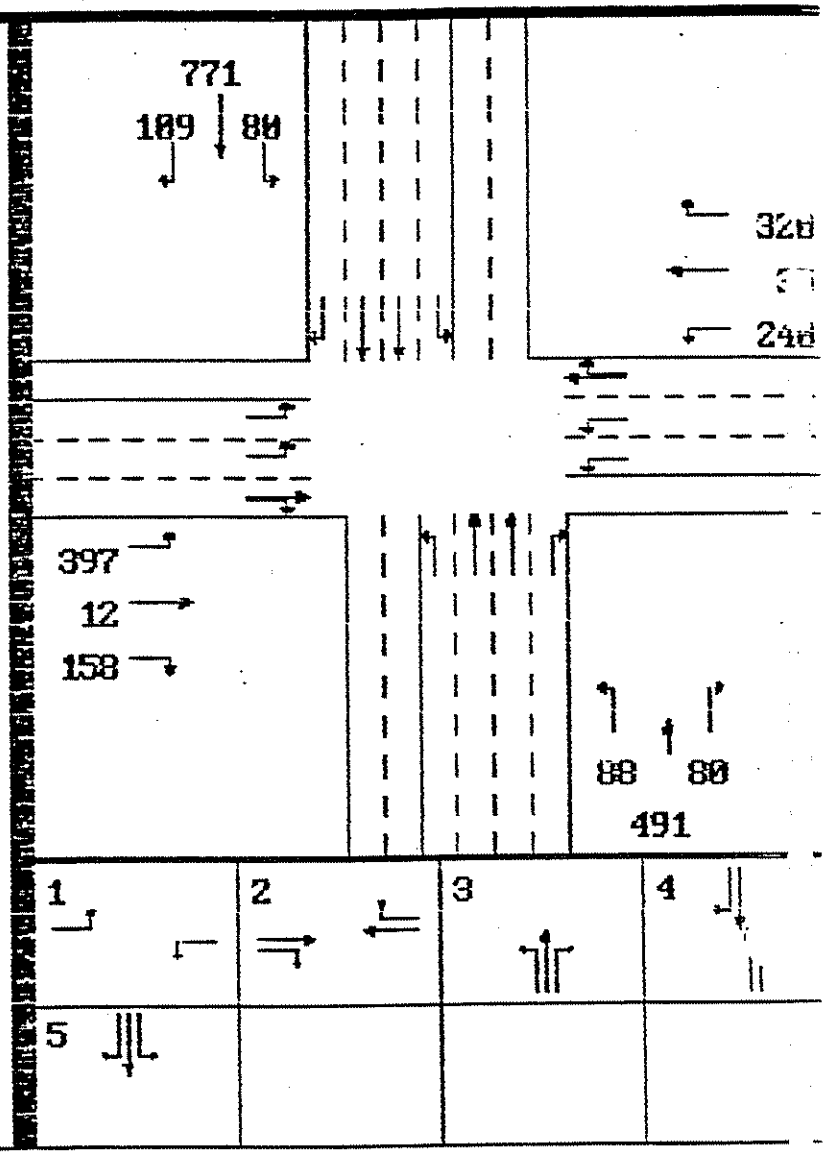
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.82	.17	L	.14	39.7	D	EB	34.4	D
	TR	.44	.28	TR	.12	21.3	C			
WB	L	.49	.17	L	.09	31.9	D	WB	35.8	D
	TR	.91	.28	TR	.26	38.6	D			
NB	L	.40	.15	L	.06	33.0	D	NB	29.2	D
	T	.77	.21	T	.16	29.4	D			
	R	.28	.21	R	.06	23.7	C			
SB	L	.23	.23	L	.05	26.4	D	SB	27.5	D
	T	.87	.29	T	.25	28.7	D			
	R	.27	.29	R	.08	19.5	C			

INTERSECT: DELAY = 31.1 SEC/VEH Xc = .79 LOS = D Sum(v/s)CR = .71

HCM Summary Results for Case: ELMI4P — MILLER ROAD /EASTLAKE PAR

PM PEAK HOUR — W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.14	.82	39.7	D
	TR	.12	.44	21.3	C
	All			34.4	D
WB	L	.09	.49	31.9	D
	*TR	.26	.91	38.6	D
	All			35.8	D
NB	*L	.06	.40	33.0	D
	T	.16	.77	29.4	D
	R	.06	.28	23.7	C
	All			29.2	D
SB	L	.05	.23	26.4	D
	*T	.25	.87	28.7	D
	R	.08	.27	19.5	C
	All			27.5	D
Intersect:		.71	.79	31.1	D



HCM/Cinema V1.2B LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: ELFE1A

****

INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR

ANALYST: ME DATE: 02-19-92

COMMENT: GENERAL PLAN BUILDOUT SCENARIO AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	26	46	79	0	50	4	1
WB	70	77	61	0	50	4	1
NB	261	642	411	0	50	4	2
SB	170	311	71	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R 12
WB	L	12	L	12	T	12	R 12
NB	L	12	L	12	T	12	TR 12
SB	L	12	L	12	T	12	TR 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB	LTR	TR		R	R				
WB		TR	LTR	R					
NB				L	LTR	TR			
SB				L		TR			
GREEN	10	2	12	17	24	21	0	0	
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.09	.10	L	.01	34.2	D
	T	.19	.15	T	.03	26.2	D
	R	.10	.57	R	.06	6.9	B
WB	L	.21	.12	L	.03	33.4	D
	T	.28	.17	T	.05	25.7	D
	R	.13	.34	R	.04	16.4	C
NB	L	.22	.42	L	.09	15.6	C
	TR	.81	.45	TR	.37	17.1	C
SB	L	.37	.16	L	.06	31.3	D
	TR	.64	.20	TR	.13	22.8	C

APPROACH: DELAY L

EB	17.6
WB	25.7
NB	16.8
SB	25.

= 19.8 SEC/VEH Xc = .54 LOS = C Sum(v/s)CR

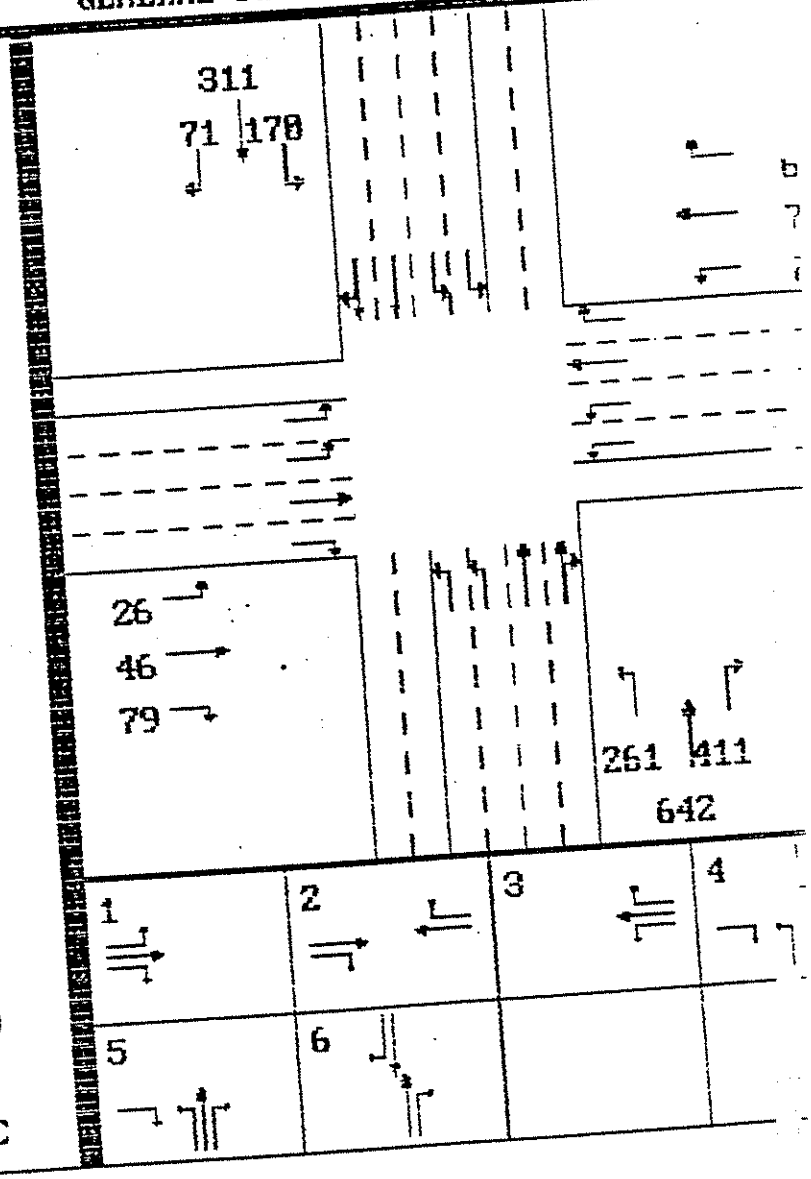
HCM Summary Results for Case: ELFE1A

FENTON STREE/EASTLAKE PAR

GENERAL PLAN BUILDOUT SCENARIO

AM PEAK HOUR

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.01	.09	34.2	D
	T	.03	.19	26.2	D
	R	.06	.18	6.9	B
	All			17.6	C
WB	L	.03	.21	33.4	D
	*T	.05	.28	25.7	D
	R	.04	.13	16.4	C
	All			25.7	D
NB	L	.09	.22	15.6	C
	*TR	.37	.81	17.1	C
	All			16.8	C
SB	*L	.06	.37	31.3	D
	TR	.13	.64	22.8	C
	All			25.4	D
Intersect:		.48	.54	19.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: ELFE1P

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR

ANALYST: ME DATE: 02-19-92

COMMENT: GENERAL PLAN BUILDOUT SCENARIO AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	66	68	268	0	50	4	1
WB	354	99	205	0	50	4	1
NB	139	345	94	0	50	4	2
SB	384	470	90	0	50	4	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R 12
WB	L	12	L	12	T	12	R 12
NB	L	12	L	12	T	12	TR 12
SB	L	12	L	12	T	12	TR 12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED O
EB	LTR	TR		R	R				
WB		TR	LTR	R		TR			
NB				L	LTR	TR			
SB				L					
GREEN	10	2	28	20	2	24	0	0	
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE) APPROACH: DELAY L

APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS		
EB	L	.23	.10	L	.02	34.7	D	EB	21.2
	T	.28	.15	T	.04	26.7	D		
	R	.49	.40	R	.20	16.4	C		
WB	L	.48	.26	L	.13	26.3	D	WB	20.1
	T	.19	.32	T	.06	17.6	C		
	R	.30	.51	R	.15	10.1	B		
NB	L	.20	.25	L	.05	25.1	D	NB	18.1
	TR	.53	.28	TR	.15	16.0	C		
SB	L	.72	.19	L	.14	34.4	D	SB	30.
	TR	.83	.23	TR	.19	27.9	D		

= 23.7 SEC/VEH Xc = .51 LOS = C Sum(v/s)CR

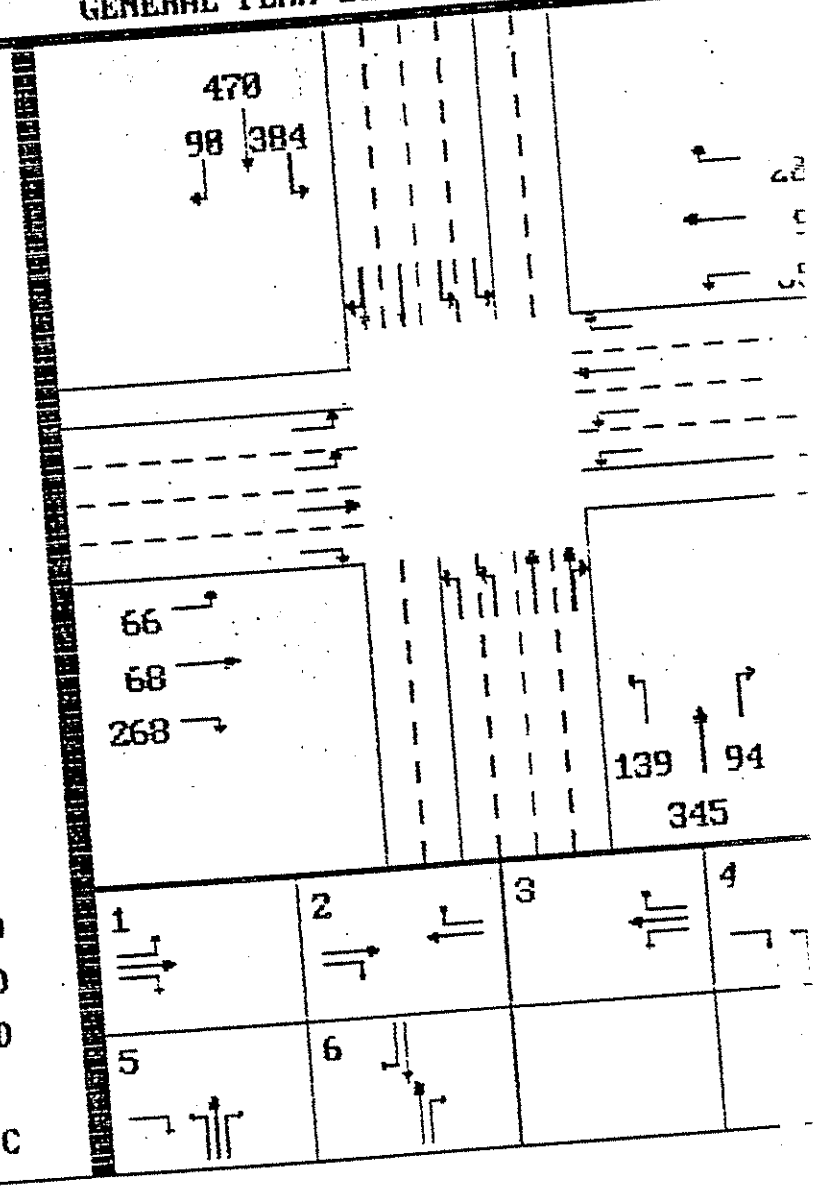
HCM Summary Results for Case: ELFE1P

FENTON STREE/EASTLAKE PAR

PM PEAK HOUR

GENERAL PLAN BUILDOUT SCENARIO

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.02	.23	34.7	D
	*T	.04	.28	26.7	D
	R	.20	.49	16.4	C
	All			21.2	C
WB	*L	.13	.48	26.3	D
	T	.06	.19	17.6	C
	R	.15	.30	10.1	B
	All			20.1	C
NB	L	.05	.20	25.1	D
	*TR	.15	.53	16.8	C
	All			18.1	C
SB	*L	.14	.72	34.4	D
	TR	.19	.83	27.9	D
	All			30.6	D
Intersect:		.45	.51	23.7	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ELFE2A

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
DATE: 02-19-92
ANALYST: ME
COMMENT: NO SR 125 & EL RAMPS. W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	29	51	64	0	50	4	1
WB	77	90	20	0	50	4	1
NB	298	821	498	0	50	5	3
SB	189	329	86	0	50	5	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12		
WB	L	12	L	12	T	12	R	12		
NB	L	12	L	12	T	12	T	12	TR	12
SB	L	12	L	12	T	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1.	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR	R					
NB				L	LTR	TR			
SB				L		TR			
GREEN	10	2	12	17	24	21	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

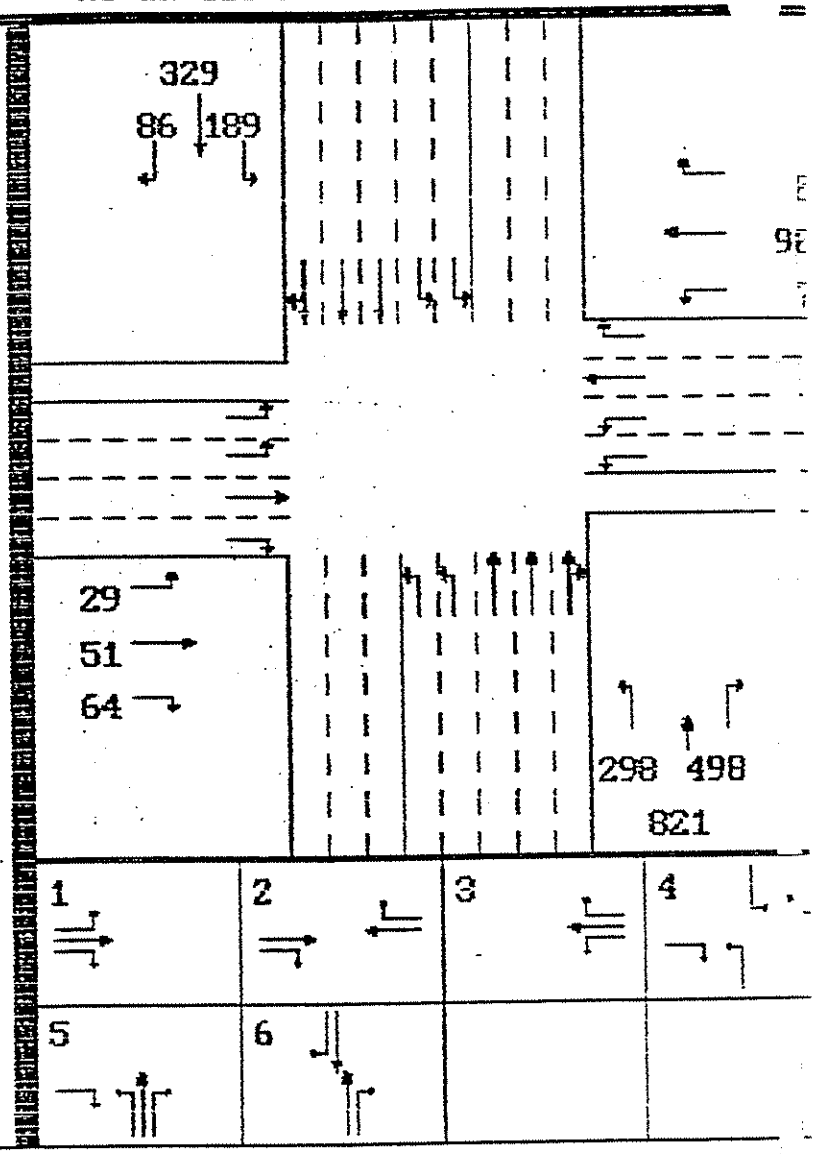
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.10	.10	L	.01	34.2	D	EB	19.4	C
	T	.21	.15	T	.03	26.3	D			
	R	.08	.57	R	.05	6.8	B			
WB	L	.23	.12	L	.03	33.5	D	WB	28.1	D
	T	.32	.17	T	.06	26.0	D			
	R	.04	.34	R	.01	15.9	C			
NB	L	.25	.42	L	.11	15.9	C	NB	13.9	B
	TR	.70	.45	TR	.32	13.5	B			
SB	L	.41	.16	L	.07	31.6	D	SB	22.5	C
	TR	.49	.20	TR	.10	18.6	C			

INTERSECT. DELAY = 17.2 SEC/VEH Xc = .51 LOS = C Sum(v/s)CR = .45

HCM Summary Results for Case: ELFE2A — FENTON STREE/EASTLAKE PAR

AM PEAK HOUR — NO SR 125 & EL RAMPS, W/LT'S IN &

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.01	.10	34.2	D
	T	.03	.21	26.3	D
	R	.05	.08	6.8	B
	All			19.4	C
WB	L	.03	.23	33.5	D
	*T	.06	.32	26.0	D
	R	.01	.04	15.9	C
	All			28.1	D
NB	L	.11	.25	15.9	C
	*TR	.32	.70	13.5	B
	All			13.9	B
SB	*L	.07	.41	31.6	D
	TR	.10	.49	18.6	C
	All			22.5	C
Intersect:		.45	.51	17.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFE2P SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: NO SR 125 & EL RAMPS. W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	132	140	371	0	50	4	1
WB	613	98	160	0	50	4	1
NB	305	304	297	0	50	5	3
SB	217	911	71	0	50	5	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12		
WB	L	12	L	12	T	12	R	12		
NB	L	12	L	12	T	12	T	12	TR	12
SB	L	12	L	12	T	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR	R					
NB				L	LTR	TR			
SB				L		TR			
GREEN	11	3	28	12	1	31	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

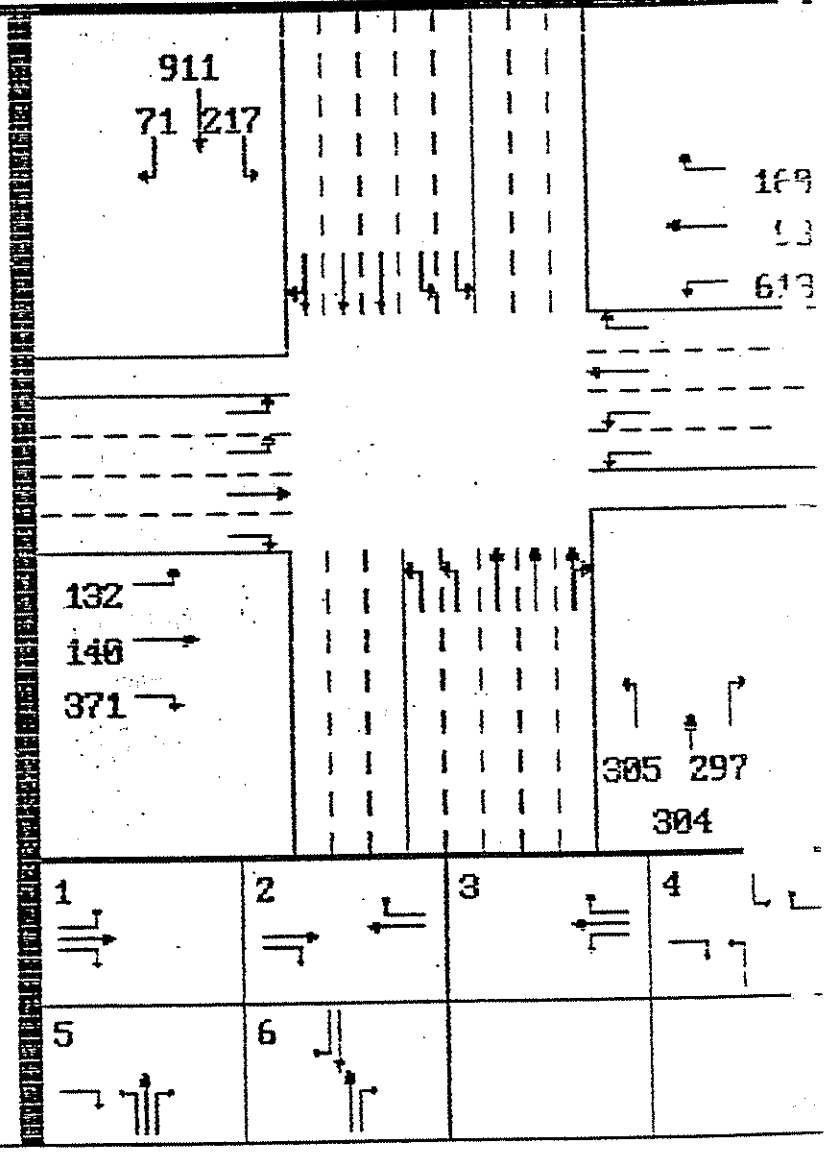
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.43	.11	L	.05	35.3	D	EB	28.9	D
	T	.51	.17	T	.09	27.6	D			
	R	.81	.34	R	.27	27.0	D			
WB	L	.83	.26	L	.22	33.7	D	WB	28.1	D
	T	.19	.33	T	.06	17.1	C			
	R	.26	.45	R	.12	12.4	B			
NB	L	.66	.16	L	.11	34.9	D	NB	20.5	C
	TR	.44	.34	TR	.15	13.5	B			
SB	L	.65	.12	L	.08	37.9	D	SB	23.6	C
	TR	.78	.29	TR	.23	20.6	C			

HCM Summary Results for Case: ELFE2P — FENTON STREE/EASTLAKE PAR

PM PEAK HOUR — NO SR 125 & EL RAMPS, W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.05	.43	35.3	D
	*T	.09	.51	27.6	D
	R	.27	.81	27.8	D
	All			28.9	D
WB	*L	.22	.83	33.7	D
	T	.06	.19	17.1	C
	R	.12	.26	12.4	B
	All			28.1	D
NB	*L	.11	.66	34.9	D
	TR	.15	.44	13.5	B
	All			20.5	C
SB	L	.08	.65	37.9	D
	*TR	.23	.78	20.6	C
	All			23.6	C
Intersect:		.64	.72	24.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: ELFE3A

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
DATE: 02-19-92
ANALYST: ME
COMMENT: B.O. W/RMP ACC. INTO SITE (RT OUT) AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	30	42	44	0	50	4	1
WB	279	127	164	0	50	4	1
NB	145	700	495	0	50	5	3
SB	334	491	93	0	50	5	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12		
WB	L	12	L	12	T	12	R	12		
NB	L	12	L	12	T	12	T	12	TR	12
SB	L	12	L	12	T	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR	R					
NB				L	LTR	TR			
SB				L		TR			
GREEN	10	2	16	21	16	21	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

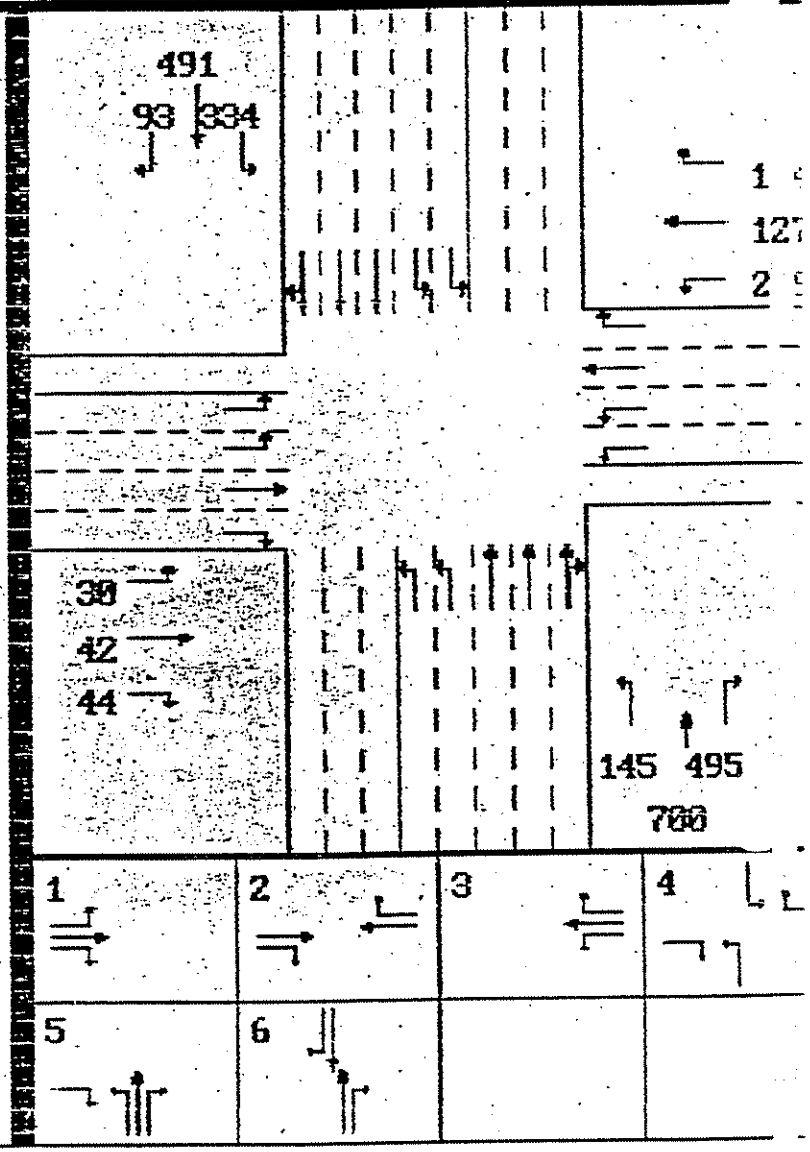
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.11	.10	L	.01	34.2	D	EB	21.5	C
	T	.17	.15	T	.03	26.1	D			
	R	.06	.54	R	.03	7.9	B			
WB	L	.64	.15	L	.10	35.1	D	WB	26.9	D
	T	.38	.21	T	.08	24.4	C			
	R	.29	.41	R	.12	14.2	B			
NB	L	.13	.38	L	.05	16.8	C	NB	16.9	C
	TR	.76	.38	TR	.29	16.9	C			
SB	L	.59	.20	L	.12	31.4	D	SB	25.9	D
	TR	.68	.20	TR	.14	22.9	C			

INTERSECTION DELAY = 25.0 LOS = C SUM V/S RUR = .54

HCM Summary Results for Case: ELFE3AZ FEMTOM STREE/EASTLAKE PAR

AM PEAK HOUR B.O. W/RMP ACC. INTO SITE (RT OUT)

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.01	.11	34.2	D
	*T	.03	.17	26.1	D
	R	.03	.06	7.9	B
	All			21.5	C
WB	*L	.10	.64	35.1	D
	T	.08	.30	24.4	C
	R	.12	.29	14.2	B
	All			26.9	D
NB	L	.05	.13	16.8	C
	*TR	.29	.76	16.9	C
	All			16.9	C
SB	*L	.12	.59	31.4	D
	TR	.14	.68	22.9	C
	All			25.9	D
Intersect:		.54	.68	21.8	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFE3PZ SUMMARY REPORT
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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: NE DATE: 02-19-92
COMMENT: B.O. W/RMP ACC. INTO SITE (RT OUT) AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	126	254	156	0	50	4	1
WB	643	170	297	0	50	4	1
NB	190	217	120	0	50	5	3
SB	364	825	72	0	50	5	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12		
WB	L	12	L	12	T	12	R	12		
NB	L	12	L	12	T	12	T	12	TR	12
SB	L	12	L	12	T	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR	R					
NB				L	LTR	TR			
SB				L		TR			
GREEN	12	4	27	19	1	23	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

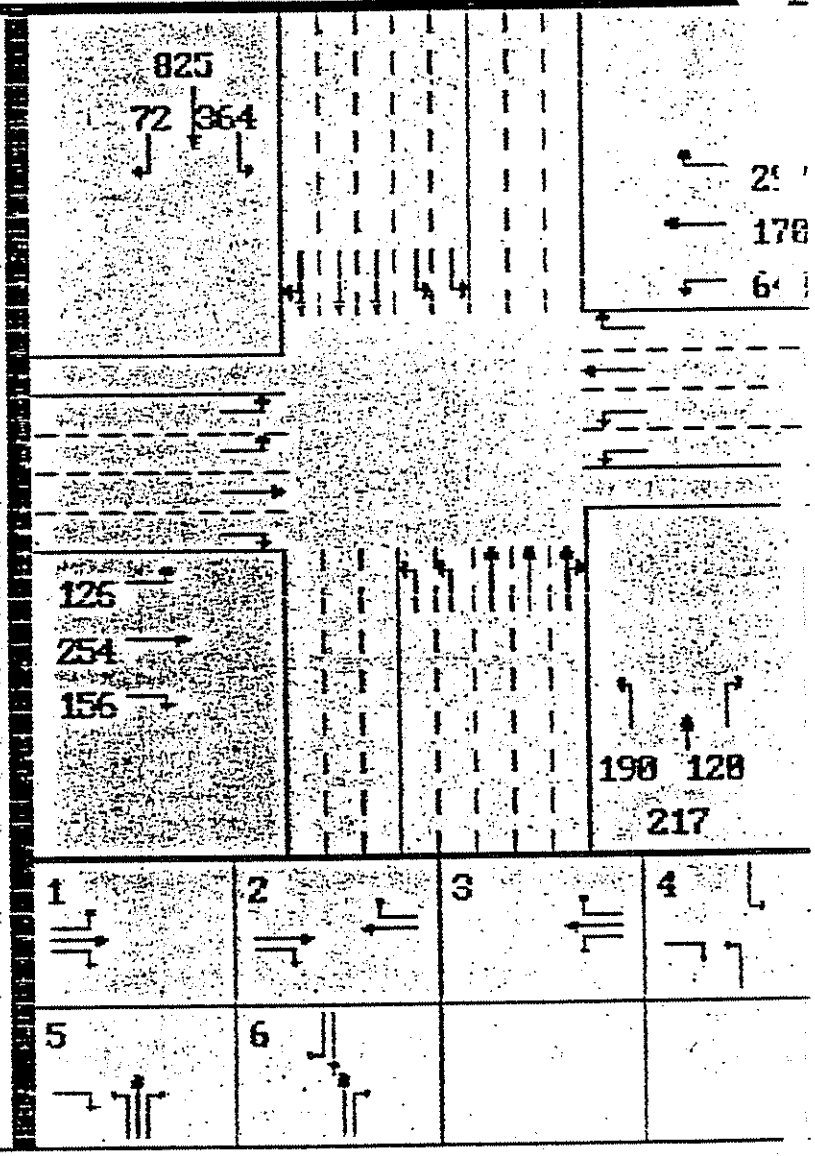
CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.38	.12	L	.04	34.3	D	EB	29.5	D
	T	.83	.19	T	.16	36.8	D			
	R	.27	.42	R	.11	13.6	B			
WB	L	.90	.25	L	.23	39.1	D	WB	28.7	D
	T	.32	.33	T	.11	18.1	C			
	R	.43	.51	R	.22	11.2	B			
NB	L	.30	.23	L	.07	26.8	D	NB	19.4	C
	TR	.31	.26	TR	.08	15.3	C			
SB	L	.71	.18	L	.13	34.9	D	SB	34.6	D
	TR	.95	.22	TR	.21	34.5	D			

INTERSECT: DELAY = 29.6 SEC/VEH X= .74 LOS = D SUM(V/S)CR = .66

HCM Summary Results for Case: ELFE3PZ FENTON STREET/EASTLAKE PAR
PM PEAK HOUR B.O. W/RMP ACC. INTO SITE (RT OUT)

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.04	.38	34.3	D
	*T	.16	.83	36.8	D
	R	.11	.27	13.6	B
	All			29.5	D
WB	*L	.23	.98	39.1	D
	T	.11	.32	18.1	C
	R	.22	.43	11.2	B
	All			28.7	D
NB	*L	.87	.38	26.8	D
	TR	.08	.31	15.3	C
	All			19.4	C
SB	L	.13	.71	34.9	D
	*TR	.21	.95	34.5	D
	All			34.6	D
Intersect:		.66	.74	29.6	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ELFE4A SUMMARY REPORT

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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	30	42	61	0	50	4	1
WB	279	127	164	0	50	4	1
NB	213	788	495	0	50	5	3
SB	334	537	93	0	50	5	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12		
WB	L	12	L	12	T	12	R	12		
NB	L	12	L	12	T	12	T	12	TR	12
SB	L	12	L	12	T	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	LTR	TR		R	R				
WB		TR	LTR	R					
NB				L	LTR	TR			
SB				L		TR			
GREEN	8	1	15	19	10	33	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

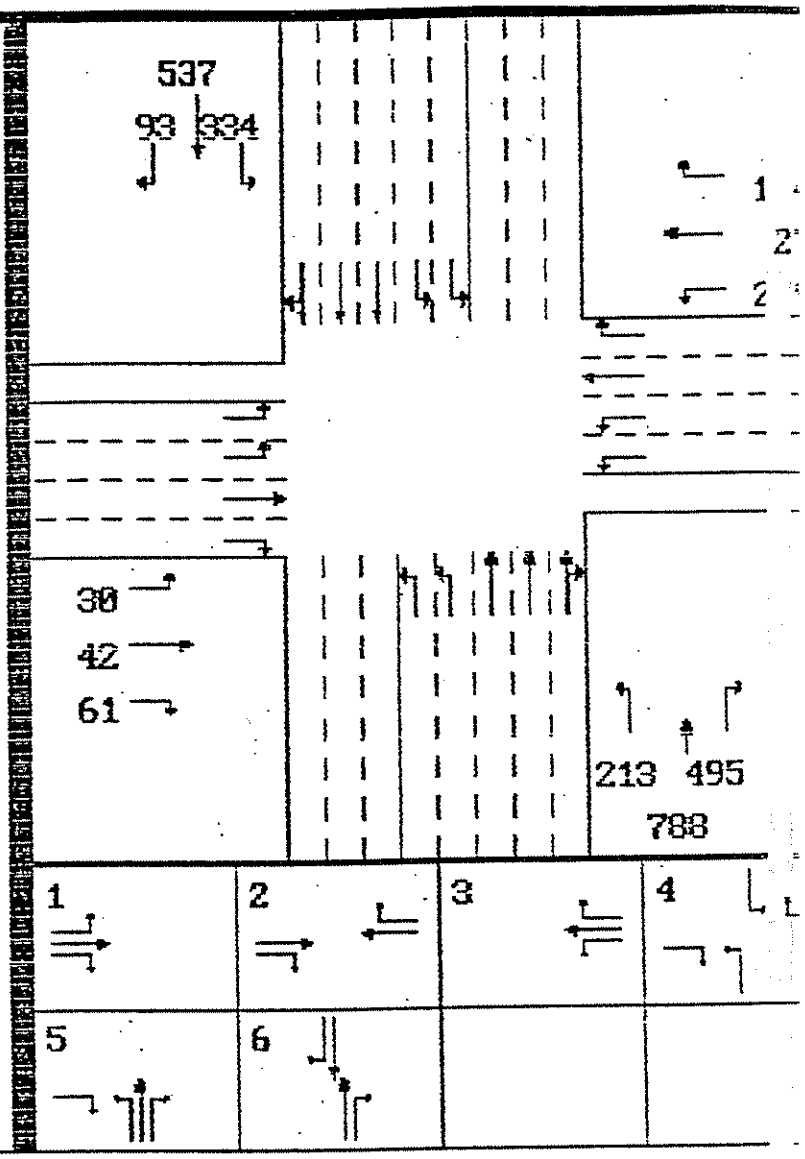
LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.13	.08	L	.01	35.6	D	EB	22.4	C
	T	.21	.13	T	.03	27.9	D			
	R	.10	.44	R	.04	11.8	B			
WB	L	.68	.15	L	.10	36.7	D	WB	28.5	D
	T	.41	.19	T	.08	25.7	D			
	R	.32	.37	R	.12	16.0	C			
NB	L	.25	.31	L	.08	21.6	C	NB	15.3	C
	TR	.71	.44	TR	.31	14.3	B			
SB	L	.65	.18	L	.12	33.6	D	SB	21.0	C
	TR	.48	.31	TR	.15	14.6	B			

INTERSECT: DELAY = 19.6 SEC/VEH Xc = .62 LOS = C Sum(v/s)CR = .5

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.01	.13	35.6	D
	*T	.03	.21	27.9	D
	R	.04	.10	11.8	B
	All			22.4	C
WB	*L	.10	.68	36.7	D
	T	.08	.41	25.7	D
	R	.12	.32	16.8	C
	All			28.5	D
NB	L	.08	.25	21.6	C
	*TR	.31	.71	14.3	B
	All			15.3	C
SB	*L	.12	.65	33.6	D
	TR	.15	.48	14.6	B
	All			21.0	C
Intersect:		.56	.62	19.6	C



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INTERSECTION: FENTON STREE/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	126	254	246	0	50	4	1
WB	643	170	297	0	50	4	1
NB	246	236	120	0	50	5	3
SB	364	918	72	0	50	5	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	R	12		
WB	L	12	L	12	T	12	R	12		
NB	L	12	L	12	T	12	T	12	TR	12
SB	L	12	L	12	T	12	T	12	TR	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	25.8	3
WB	0	2	N	0	0	.90	Y	25.8	3
NB	0	2	N	0	0	.90	Y	19.8	4
SB	0	2	N	0	0	.90	Y	19.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R	R				
WB		TR	LTR	R					
NB				L	LTR	TR			
SB				L		TR			
GREEN	11	2	29	18	1	25	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

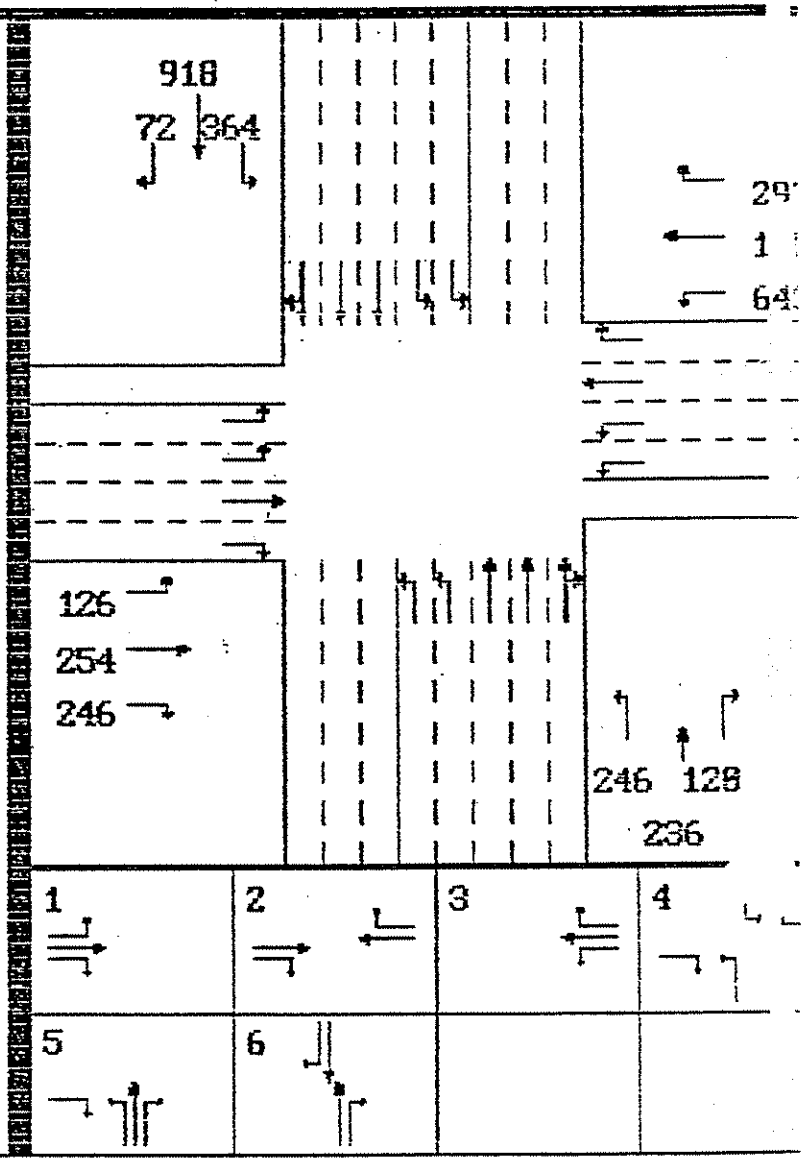
APP	LANE GRP.	v/c	o/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.41	.11	L	.04	35.2	D	EB	36.7	D
	T	.97	.16	T	.16	56.7	E			
	R	.47	.38	R	.18	17.0	C			
WB	L	.84	.27	L	.23	33.7	D	WB	25.6	D
	T	.32	.33	T	.11	18.1	C			
	R	.44	.50	R	.22	11.6	B			
NB	L	.40	.22	L	.09	28.2	D	NB	20.0	C
	TR	.30	.28	TR	.09	14.6	B			
SB	L	.75	.17	L	.13	36.7	D	SB	35.6	D
	TR	.97	.24	TR	.23	35.3	D			

INTERSECT: DELAY = 30.3 SEC/VEH Xc = .79 LOS = D Sum(v/s)CR = .70

HCM Summary Results for Case: ELFE4P — FENTON STREE/EASTLAKE PAI

PM PEAK HOUR — W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	L	.04	.41	35.2	D
	*T	.16	.97	56.7	E
	R	.18	.47	17.0	C
	All			36.7	D
WB	*L	.23	.84	33.7	D
	T	.11	.32	18.1	C
	R	.22	.44	11.6	B
	All			25.6	D
NB	*L	.09	.40	28.2	D
	TR	.09	.30	14.6	B
	All			20.0	C
SB	L	.13	.75	36.7	D
	*TR	.23	.97	35.3	D
	All			35.6	D
Intersect:		.70	.79	30.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLEL1A
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: GENERAL PLAN BUILDOUT SCENARIO AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	596	453	460	0	50	6	3
WB	32	1326	195	0	50	6	3
NB	450	523	103	0	50	5	2
SB	55	146	257	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R 12
WB	L	12	L	12	T	12	T	12	T	12	R 12
NB	L	12	L	12	T	12	T	12	R	12	
SB	L	12	L	12	T	12	T	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1

PHASE:	1	2	3	4	5	6	7	8	PED ON
EB	L	LTR	TR	R	R				
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	23	2	35	6	12	8	0	0	
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS
EB	L	.78	.27	L	.21	31.1	D
	T	.27	.38	T	.10	11.1	B
	R	.57	.59	R	.34	7.0	B
WB	L	.05	.22	L	.01	25.8	D
	T	.93	.33	T	.30	26.3	D
	R	.37	.39	R	.14	11.3	B
NB	L	.77	.21	L	.16	34.7	D
	T	.75	.23	T	.17	23.4	C
	R	.17	.45	R	.08	8.6	B
SB	L	.31	.06	L	.02	37.6	D
	T	.58	.08	T	.05	24.3	C
	R	.53	.35	R	.19	13.8	B

APPROACH: DELAY LO
EB 17.8
WB 24.5
NB 26.8
SB 20.2

INTERSECT: DELAY = 22.4 SEC/VEH Xc = .81 LOS = C SUM(V/S)CR =

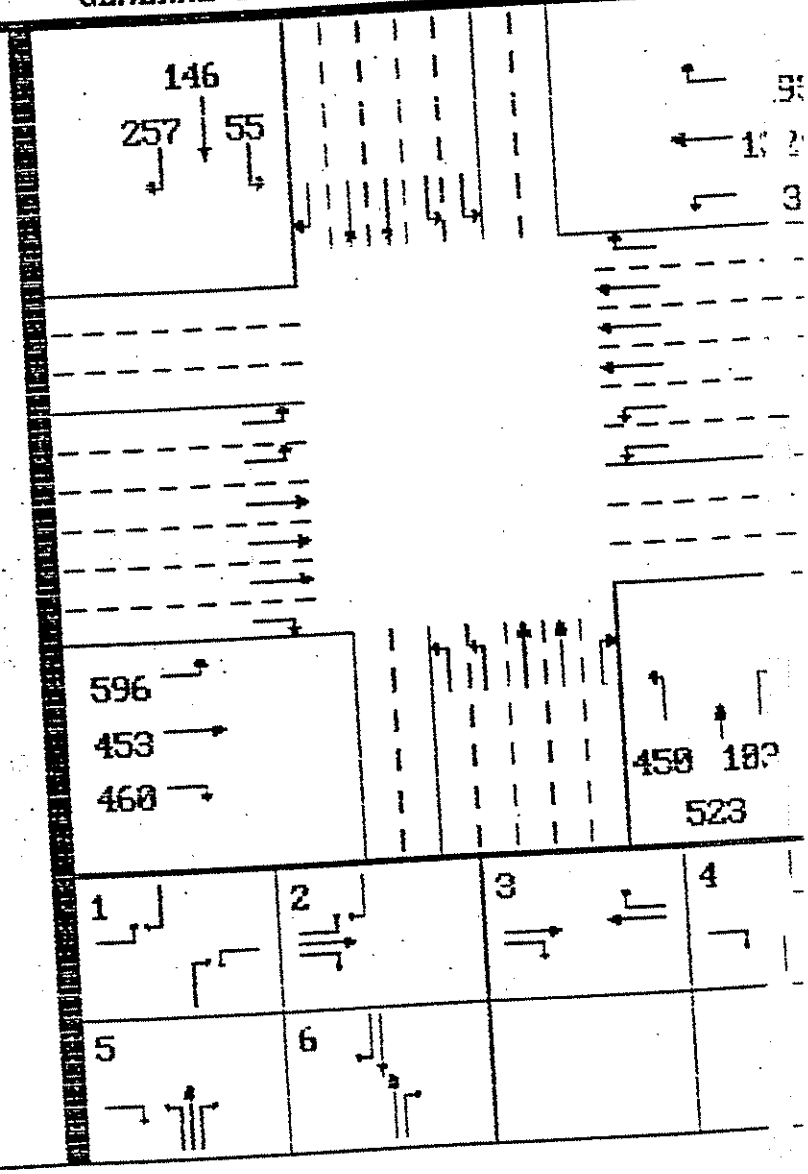
HCM Summary Results for Case: OLELIA

OTAY LAKES R/EASTLAKE PAF

GENERAL PLAN BUILDOUT SCENARIO

AM PEAK HOUR

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.21	.78	31.1	D
	T	.10	.27	11.1	B
	R	.34	.57	7.0	B
	All			17.8	C
WB	L	.81	.85	25.8	D
	*T	.30	.93	26.3	D
	R	.14	.37	11.3	B
	All			24.5	C
NB	*L	.16	.77	34.7	D
	T	.17	.75	23.4	C
	R	.08	.17	8.6	B
	All			26.8	D
SB	L	.02	.31	37.6	D
	*T	.05	.58	24.3	C
	R	.19	.53	13.8	B
	All			20.2	C
Intersect:		.72	.81	22.4	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLELIP
****
INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: GENERAL PLAN BUILDOUT SCENARIO AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	123	914	733	0	50	6	3
WB	69	1436	92	0	50	6	3
NB	510	363	134	0	50	5	2
SB	103	544	445	0	50	5	2

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R 12
WB	L	12	L	12	T	12	T	12	T	12	R 12
NB	L	12	L	12	T	12	T	12	R	12	
SB	L	12	L	12	T	12	T	12	R	12	

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

OPERATIONAL ANALYSIS CYCLE LENGTH: 1

SIGNAL SETTINGS: ACTUATED

PHASE:	1	2	3	4	5	6	7	8	PED ON
EB	L	LTR	TR	R	R				
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	9	1	35	12	7	22	0	0	
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LO
EB	L	.32	.14	L	.04	32.8	D	EB	16.8	C
	T	.56	.37	T	.21	13.1	B			
	R	.91	.59	R	.54	19.1	C			
WB	L	.27	.09	L	.02	35.5	D	WB	34.0	
	T	1.00	.33	T	.33	35.4	D			
	R	.15	.45	R	.07	8.6	B			
NB	L	.83	.22	L	.18	37.0	D	NB	25.3	
	T	.38	.31	T	.12	14.1	B			
	R	.25	.40	R	.10	10.4	B			
SB	L	.31	.12	L	.04	33.9	D	SB	32.5	
	T	.85	.21	T	.18	29.9	D			
	R	.94	.35	R	.33	35.6	D			

INTERSECT: DELAY = 26.6 SEC/VEH Xc = .82 LOS = D Sum(v/s)CR =

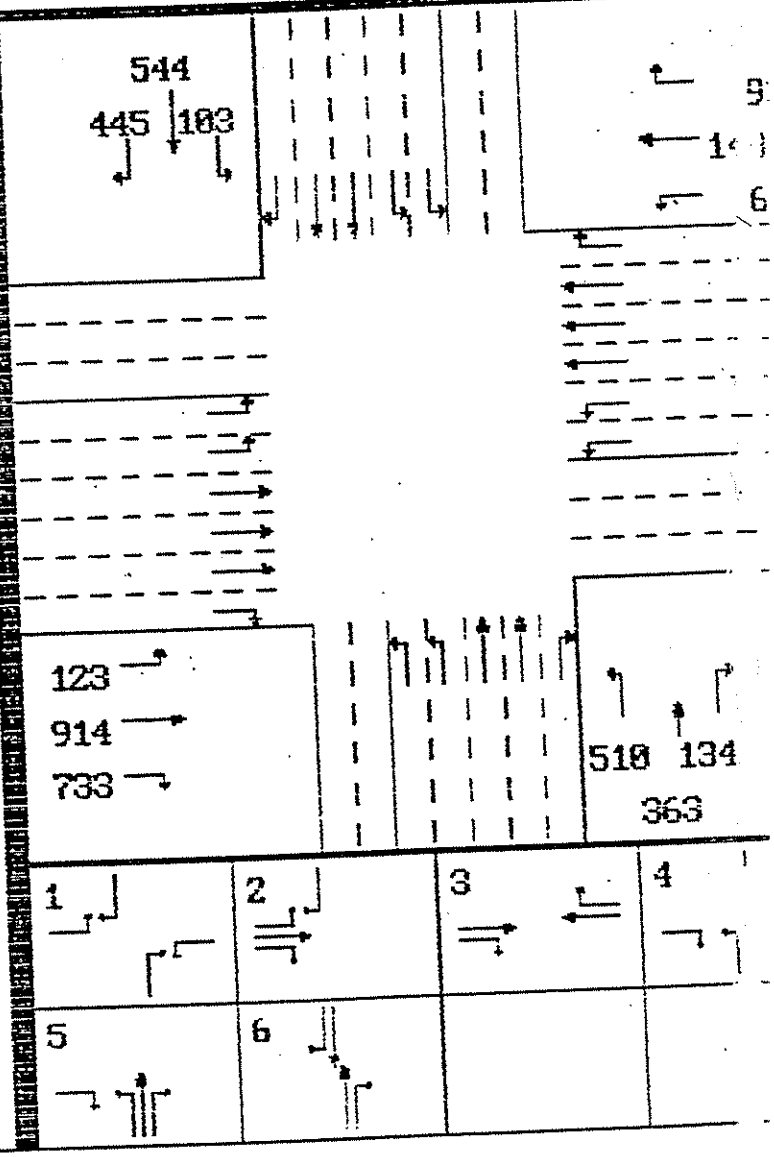
HCM Summary Results for Case: OLEL1P

OTAY LAKES R/EASTLAKE PAF

PM PEAK HOUR

GENERAL PLAN BUILDOUT SCENARIO

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.04	.32	32.8	D
	T	.21	.56	13.1	B
	R	.54	.91	19.1	C
	All			16.8	C
WB	L	.02	.27	35.5	D
	*T	.33	1.00	35.4	D
	R	.07	.15	8.6	B
	All			34.0	D
NB	*L	.18	.83	37.0	D
	T	.12	.38	14.1	B
	R	.10	.25	10.4	B
	All			25.3	D
SB	L	.04	.31	33.9	D
	*T	.18	.85	29.9	D
	R	.33	.94	35.6	D
	All			32.5	D
Intersect:		.73	.82	26.6	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLEL2A SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: NO SR 125 & EL RAMPS, W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	970	755	157	0	50	6	3
WB	34	1135	206	0	50	6	3
NB	748	540	112	0	50	6	3
SB	74	163	282	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	T	12	R	12
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R	R				
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	30	2	26	13	12	3	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

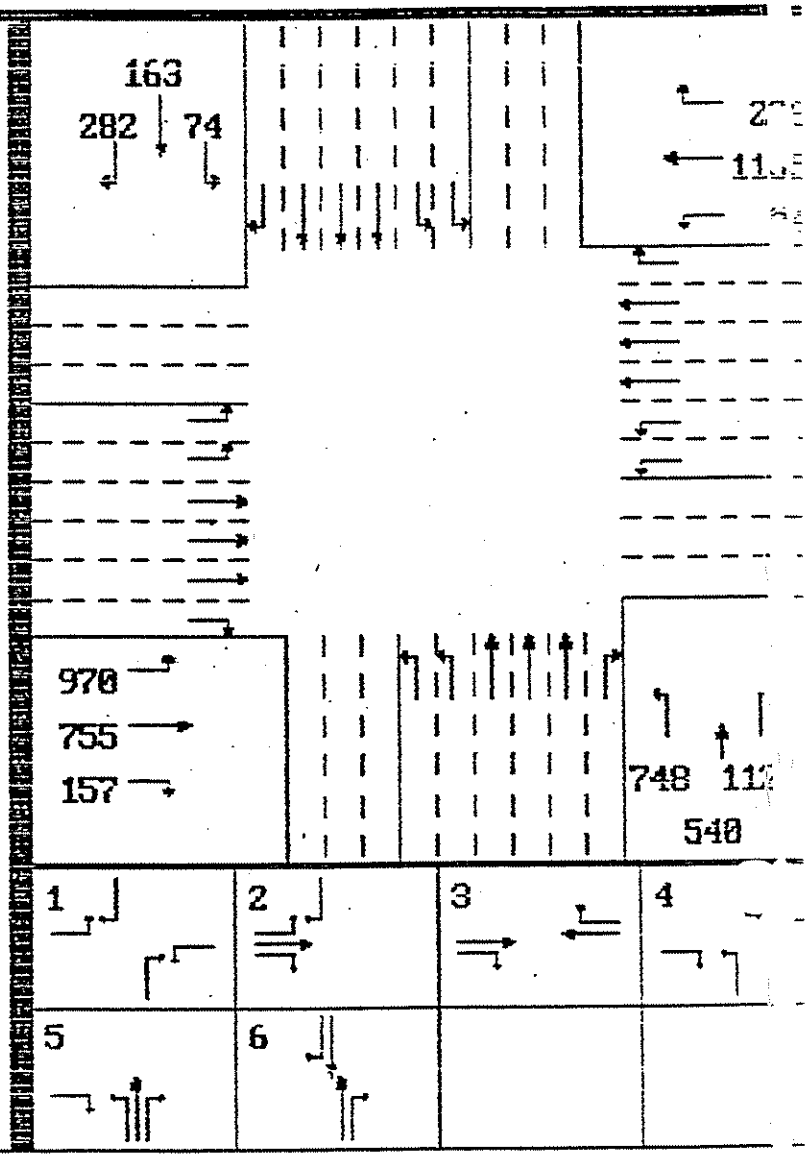
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	1.03	.34	L	.35	55.3	E	EB	34.9	D
	T	.58	.30	T	.17	15.6	C			
	R	.20	.57	R	.11	5.4	B			
WB	L	.04	.28	L	.01	21.8	C	WB	46.1	E
	T	1.06	.25	T	.26	52.4	E			
	R	.41	.37	R	.15	12.2	B			
NB	L	.98	.27	L	.27	48.4	E	NB	35.5	D
	T	.68	.18	T	.12	23.6	C			
	R	.18	.46	R	.08	8.1	B			
SB	L	.21	.13	L	.03	32.7	D	SB	37.2	D
	T	1.03	.04	T	.04	76.5	F			
	R	.55	.37	R	.21	13.4	B			

INTERSECTION DELAY = 38.3 SEC/VEH Xc = 1.02 LOS = D Sum(v/s)CR = .91

HCM Summary Results for Case: OLEL2A — OTAY LAKES R/EASTLAKE PAR

AM PEAK HOUR — NO SR 125 & EL RAMPS. W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.35	1.03	55.3	E
	T	.17	.58	15.6	C
	R	.11	.28	5.4	B
	All			34.9	D
WB	L	.81	.84	21.8	C
	*T	.26	1.06	52.4	E
	R	.15	.41	12.2	B
	All			46.1	E
NB	*L	.27	.98	48.4	E
	T	.12	.68	23.6	C
	R	.08	.18	8.1	B
	All			35.5	D
SB	L	.03	.21	32.7	D
	*T	.04	1.03	76.5	F
	R	.21	.55	13.4	B
	All			37.2	D
Intersect:		.91	1.02	38.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLEL2P SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: NO SR 125 & EL RAMPS, W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	585	587	137	0	50	6	3
WB	38	1533	87	0	50	6	3
NB	797	256	128	0	50	6	3
SB	320	656	1110	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	T	12	R	12
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R	R				
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	15	2	22	11	10	26	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

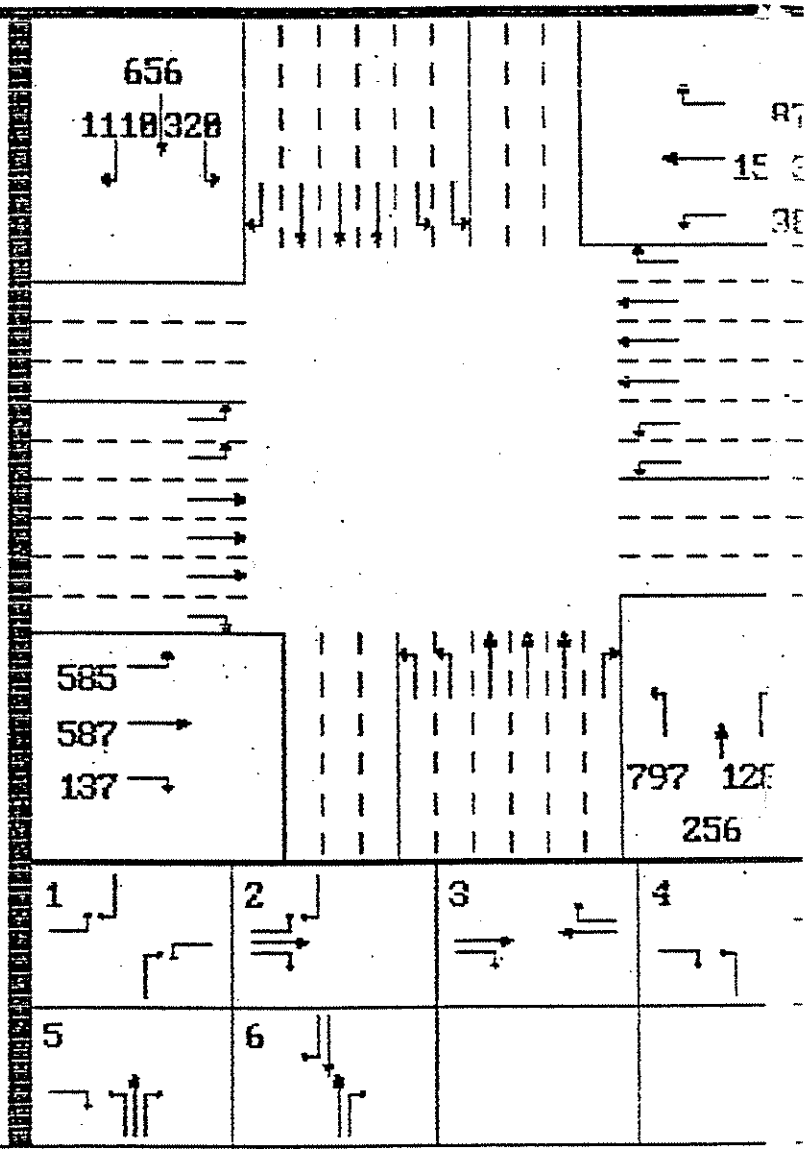
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	1.04	.20	L	.21	71.5	F	EB	39.7	D
	T	.51	.26	T	.13	16.4	C			
	R	.20	.50	R	.10	7.2	B			
WB	L	.09	.15	L	.01	30.9	D	WB	-	F
	T	1.68	.21	T	.35	-	F			
	R	.20	.32	R	.06	12.9	B			
NB	L	1.20	.24	L	.28	145.1	F	NB	100.7	F
	T	.16	.37	T	.06	10.8	B			
	R	.18	.52	R	.09	6.6	B			
SB	L	1.04	.11	L	.11	87.3	F	SB	-	F
	T	.61	.25	T	.15	20.3	C			
	R	1.83	.45	R	.81	-	F			

INTERSECT: DELAY = - SEC/VEH Xc = 1.11 LOS = F Sum(v/s)CR = .99

HCM Summary Results for Case: OLEL2P — OTAY LAKES R/EASTLAKE PAI

PM PEAK HOUR — NO SR 125 & EL RAMPS, W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.21	1.04	71.5	F
	T	.13	.51	16.4	C
	R	.10	.20	7.2	B
	All			39.7	D
WB	L	.01	.09	30.9	D
	*T	.35	1.68	-	F
	R	.06	.20	12.9	B
	All			-	F
NB	*L	.20	1.20	145.1	F
	T	.06	.16	10.8	B
	R	.09	.10	6.6	B
	All			100.7	F
SB	L	.11	1.04	87.3	F
	*T	.15	.61	20.3	C
	R	.01	1.03	-	F
	All			-	F
Intersect:		.99	1.11	-	F



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ULELJAZ SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: EDR DATE: 02-19-92
COMMENT: B.O. W/RMP ACC. INTO SITE (RT OUT) AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	498	874	185	0	50	6	3
WB	21	1342	126	0	50	6	3
NB	687	716	41	0	50	6	3
SB	67	504	242	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	T	12	R	12
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	38.5	4
WB	0	2	N	0	0	.90	Y	38.5	4
NB	0	2	N	0	0	.90	Y	38.5	4
SB	0	2	N	0	0	.90	Y	38.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R	R				
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	14	2	32	21	2	15	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

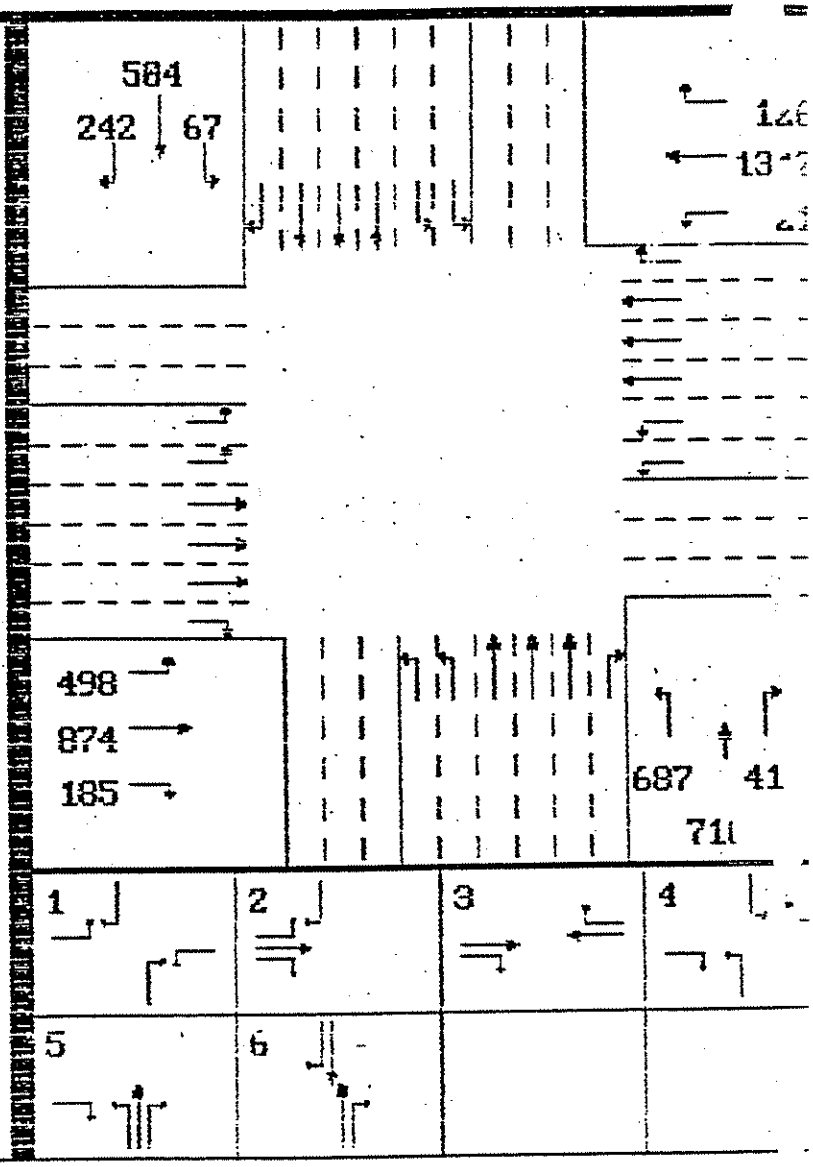
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.93	.19	L	.18	47.9	E	EB	23.4	C
	T	.56	.35	T	.20	13.7	B			
	R	.22	.61	R	.14	4.6	A			
WB	L	.05	.14	L	.01	31.4	D	WB	37.9	D
	T	1.02	.30	T	.31	40.6	E			
	R	.18	.50	R	.09	7.1	B			
NB	L	.96	.25	L	.24	46.8	E	NB	36.2	D
	T	.82	.20	T	.16	27.8	D			
	R	.09	.34	R	.03	11.8	B			
SB	L	.12	.20	L	.02	27.4	D	SB	23.7	C
	T	.79	.15	T	.12	27.3	D			
	R	.53	.34	R	.18	14.4	B			

INTERSECT DELAY = 31.0 SEC/VEH X= .95 LOS = D Sum(v/s)LR = .84

HCM Summary Results for Case: OLEL3AZ — OTAY LAKES R/EASTLAKE PAR

AM PEAK HOUR — B.O. W/RMP ACC. INTO SITE (RT OUT)

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.18	.93	47.9	E
	T	.28	.56	13.7	B
	R	.14	.22	4.6	A
	All			23.4	C
WB	L	.01	.85	31.4	D
	*T	.31	1.02	40.6	E
	R	.09	.18	7.1	B
	All			37.9	D
NB	*L	.24	.96	46.8	E
	T	.16	.82	27.8	D
	R	.03	.09	11.8	B
	All			36.2	D
SB	L	.02	.12	27.4	D
	*T	.12	.79	27.3	D
	R	.18	.53	14.4	B
	All			23.7	C
Intersect:		.84	.95	31.8	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ULEL3PZ SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: EUR DATE: 02-19-92
COMMENT: B.O W/RMP ACC. INTO SITE (RT OUT) AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	280	949	254	0	50	6	3
WB	24	1161	70	0	50	6	3
NB	764	210	47	0	50	6	3
SB	208	1039	377	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	T	12	R	12
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	38.5	4
WB	0	2	N	0	0	.90	Y	38.5	4
NB	0	2	N	0	0	.90	Y	38.5	4
SB	0	2	N	0	0	.90	Y	38.5	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	L	LTR	TR	R	R				
	WB	L		TR	R					
	NB	R			L	LTR	TR			
	SB	R	R		L		TR			
GREEN		8	1	27	11	15	24	0	0	0
YELLOW		4	4	4	4	4	4	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

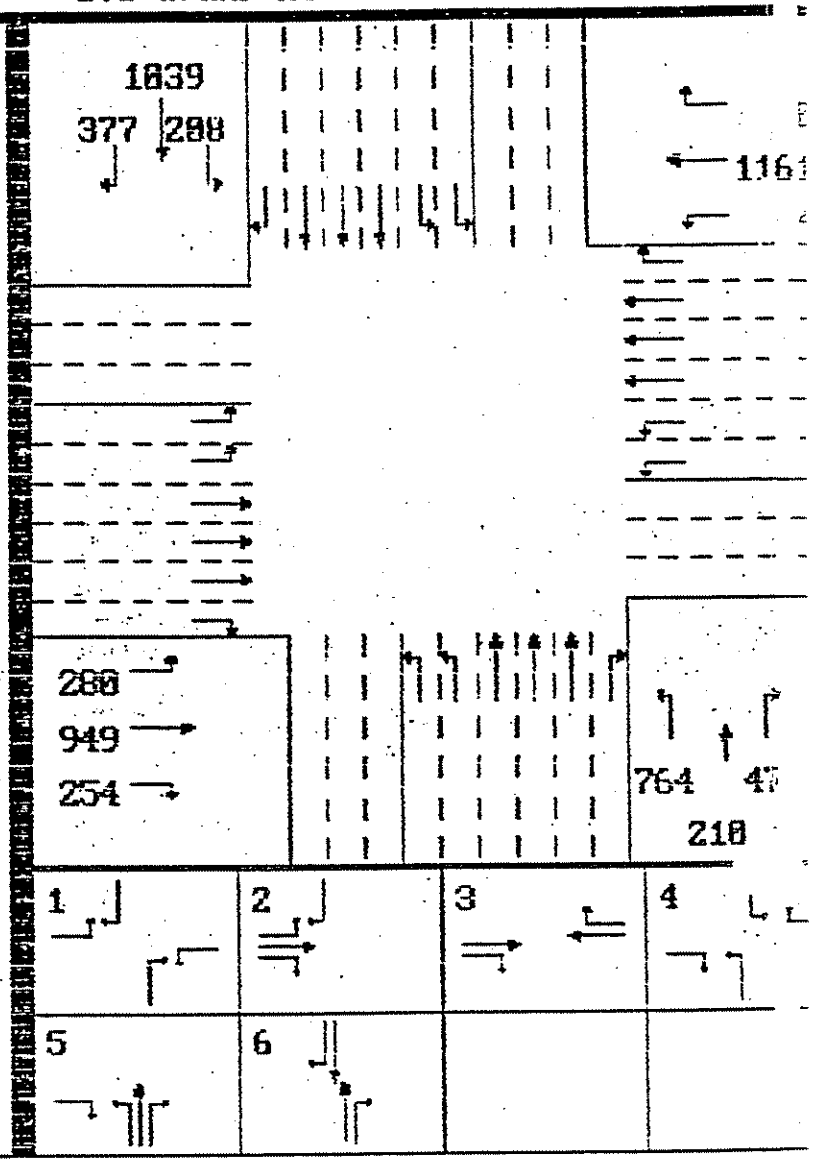
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.78	.13	L	.10	41.9	E	EB	21.3	C
	T	.72	.30	T	.22	19.4	C			
	R	.32	.58	R	.19	5.6	B			
WB	L	.10	.08	L	.01	35.6	D	WB	45.8	E
	T	1.04	.25	T	.27	48.0	F			
	R	.14	.36	R	.05	11.1	B			
NB	L	.96	.28	L	.27	45.4	E	NB	36.2	D
	T	.12	.40	T	.05	9.8	B			
	R	.07	.48	R	.03	7.2	B			
SB	L	.68	.11	L	.07	39.4	D	SB	42.4	E
	T	1.04	.23	T	.24	50.2	E			
	R	.78	.35	R	.28	20.7	C			

INTERSECT: DELAY = 36.3 SEC/VEH Xc = .98 LOS = D Sum(v/s)CR = .87

HCM Summary Results for Case: OLEL3PZ — OTAY LAKES R/EASTLAKE PAR

PM PEAK HOUR — B.O W/RMP ACC. INTO SITE (RT OUT)

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.10	.78	41.9	E
	T	.22	.72	19.4	C
	R	.19	.32	5.6	B
	All			21.3	C
WB	L	.01	.10	35.6	D
	*T	.27	1.04	48.0	E
	R	.05	.14	11.1	B
	All			45.8	E
NB	*L	.27	.96	45.4	E
	T	.05	.12	9.8	B
	R	.03	.07	7.2	B
	All			36.2	D
SB	L	.07	.68	39.4	D
	*T	.24	1.04	58.2	E
	R	.28	.78	28.7	C
	All			42.4	E
Intersect:		.87	.98	36.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLEL4A SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: AM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	641	883	165	0	50	6	3
WB	21	1166	138	0	50	6	3
NB	397	785	41	0	50	6	3
SB	48	505	324	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	T	12	R	12
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	L	LTR	TR	R	R				
WB	L		TR	R					
NB	R			L	LTR	TR			
SB	R	R		L		TR			
GREEN	20	3	28	6	8	21	0	0	0
YELLOW	4	4	4	4	4	4	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.90	.25	L	.23	38.9	D	EB	24.4	C
	T	.62	.33	T	.20	17.2	C			
	R	.24	.50	R	.12	7.4	B			
WB	L	.04	.19	L	.01	27.6	D	WB	37.8	D
	T	1.01	.26	T	.27	40.6	E			
	R	.31	.33	R	.10	13.1	B			
NB	L	.82	.17	L	.14	39.7	D	NB	22.7	C
	T	.58	.31	T	.18	15.3	C			
	R	.06	.50	R	.03	6.7	B			
SB	L	.27	.06	L	.02	37.5	D	SB	17.1	C
	T	.58	.20	T	.12	19.1	C			
	R	.52	.45	R	.24	10.5	B			

INTERSECT: DELAY = 26.3 SEC/VEH Xc = .84 LOS = D Sum(v/s)CR = .75

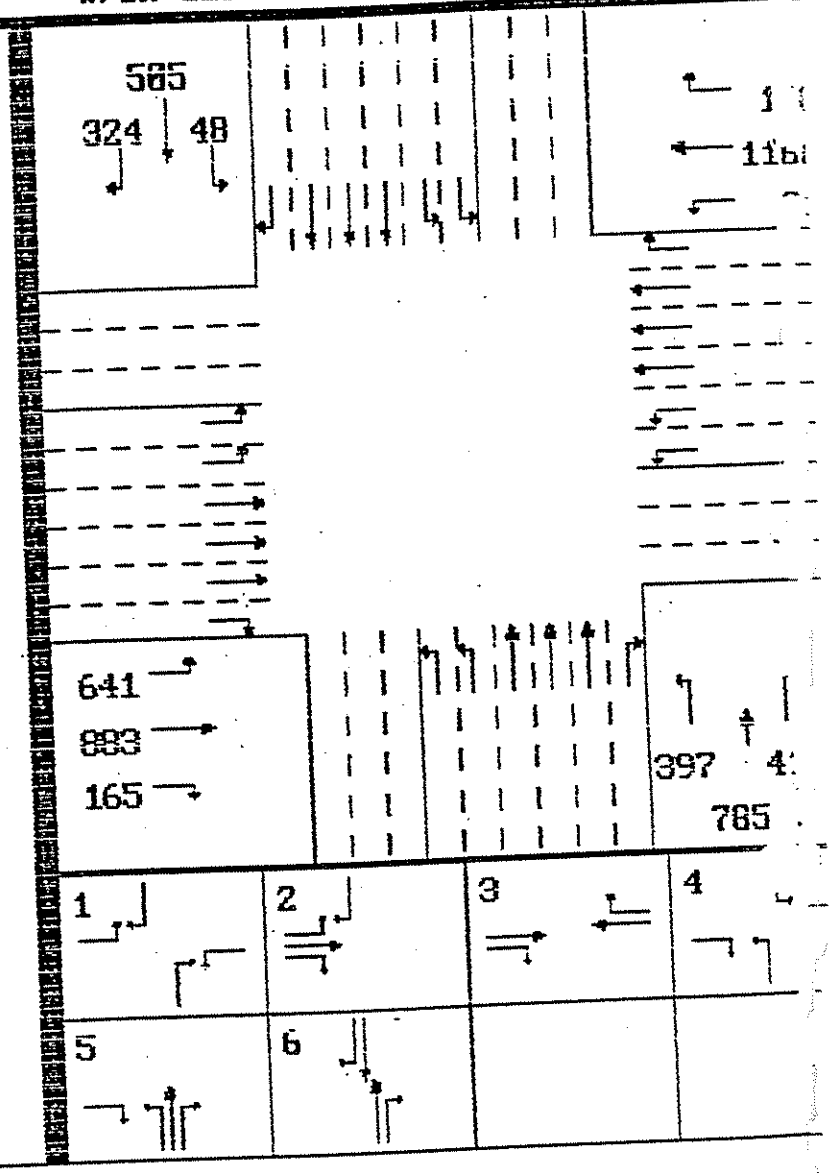
HCM Summary Results for Case: OLEL4A

OTAY LAKES R/EASTLAKE PA

AM PEAK HOUR

W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.23	.90	38.9	D
	T	.28	.62	17.2	C
	R	.12	.24	7.4	B
	All			24.4	C
WB	L	.81	.84	27.6	D
	*T	.27	1.01	40.6	E
	R	.10	.31	13.1	B
	All			37.8	D
NB	*L	.14	.82	39.7	D
	T	.18	.58	15.3	C
	R	.03	.06	6.7	B
	All			22.7	C
SB	L	.82	.27	37.5	D
	*T	.12	.58	19.1	C
	R	.24	.52	18.5	B
	All			17.1	C
Intersect:		.75	.84	26.3	D



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLEL4P SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/EASTLAKE PAR TIME: PM PEAK HOUR
ANALYST: ME DATE: 02-19-92
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	331	1012	189	0	50	6	3
WB	24	1337	82	0	50	6	3
NB	455	202	47	0	50	6	3
SB	127	1021	659	0	50	6	3

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	R	12
WB	L	12	L	12	T	12	T	12	T	12	R	12
NB	L	12	L	12	T	12	T	12	T	12	R	12
SB	L	12	L	12	T	12	T	12	T	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	34.8	4
WB	0	2	N	0	0	.90	Y	34.8	4
NB	0	2	N	0	0	.90	Y	40.8	4
SB	0	2	N	0	0	.90	Y	40.8	4

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	L	LTR	TR	R	R				
	WB	L		TR	R					
	NB	R			L	LTR	TR			
	SB	R	R		L		TR			
GREEN		2	5	32	12	1	34	0	0	0
YELLOW		4	4	4	4	4	4	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	1.08	.11	L	.12	99.8	F	EB	31.9	D
	T	.61	.38	T	.23	15.0	C			
	R	.25	.55	R	.14	6.2	B			
WB	L	.31	.03	L	.01	40.6	E	WB	38.4	D
	T	1.02	.30	T	.31	39.9	D			
	R	.14	.42	R	.06	9.3	B			
NB	L	.99	.16	L	.16	62.1	F	NB	43.7	E
	T	.13	.36	T	.05	11.0	B			
	R	.09	.39	R	.03	10.0	B			
SB	L	.38	.12	L	.05	34.4	D	SB	40.3	E
	T	.73	.32	T	.23	18.8	C			
	R	1.13	.43	R	.48	78.1	F			

INTERSECT'N DELAY = 37.8 SEC/VEH Xc = .92 LOS = D Sum(v/s)CR = .82

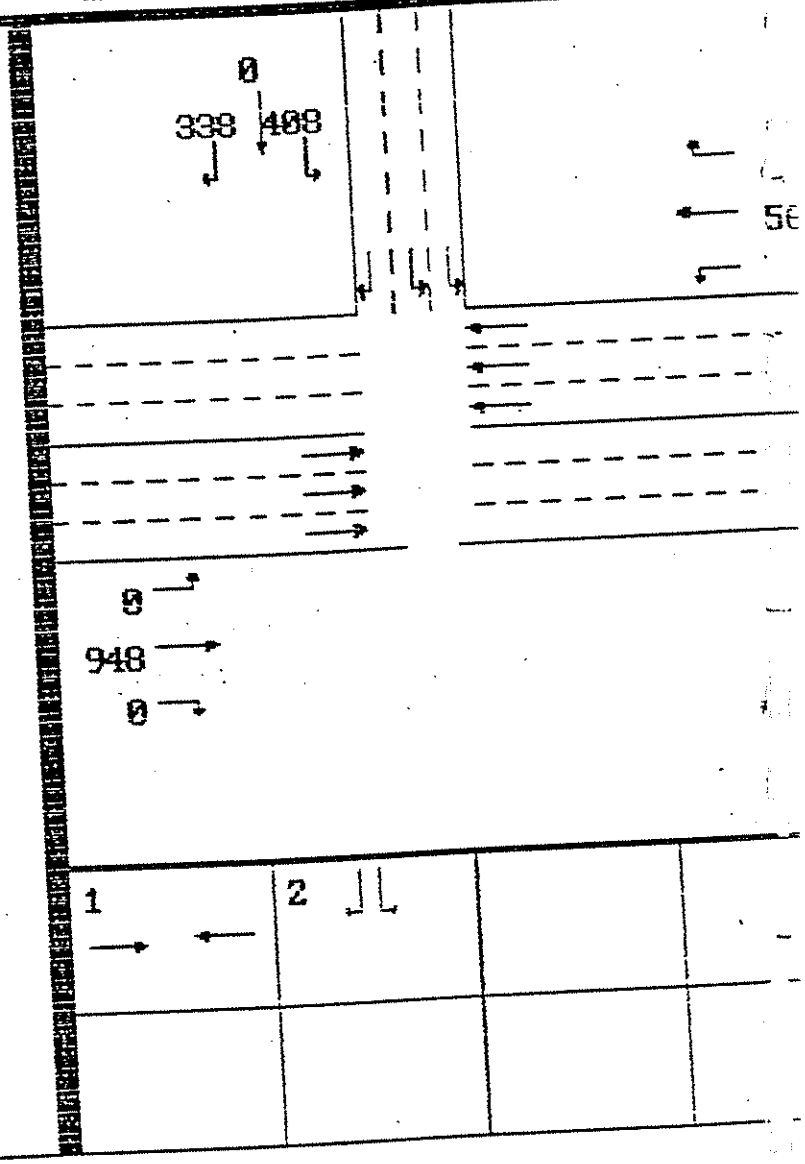
HCM Summary Results for Case: OLSR1A

OTAY LAKES R/SR 125 SOUTH

GENERAL PLAN BUILDOUT SCENARIO

AM PEAK HOUR

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.22	.49	10.3	B
	All			10.3	B
WB	T	.13	.29	9.2	B
	All			9.2	B
SB	L	.15	.29	12.3	B
	*R	.25	.50	12.2	B
	All			12.2	B
Intersect:		.46	.49	10.6	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: OLSR1P

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INTERSECTION: OTAY LAKES R/SR 125 SOUTH TIME: PM PEAK HOUR

ANALYST: ME DATE: 03-02-92

COMMENT: GENERAL PLAN BUILDOUT SCENARIO AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1232	0	0	50	3	3
WB	0	1037	0	0	50	3	3
NB	0	0	0	0	50	0	0
SB	364	0	309	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1

PHASE:	1	2	3	4	5	6	7	8	PED OI
EB	T								
WB	T								
NB									
SB		LR							
GREEN	50	52	0	0	0	0	0	0	
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	a/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY L
EB	T	.61	.46	T	.28	12.1	B	EB	12.1
WB	T	.51	.46	T	.24	9.9	B	WB	9.9
SB	L	.27	.48	L	.13	12.9	B	SB	12.8
	R	.47	.48	R	.23	12.6	B		

AVG. DELAY = 11.5 SEC/VEH Xc = .54 LOS = B Sum(v/s)CR =

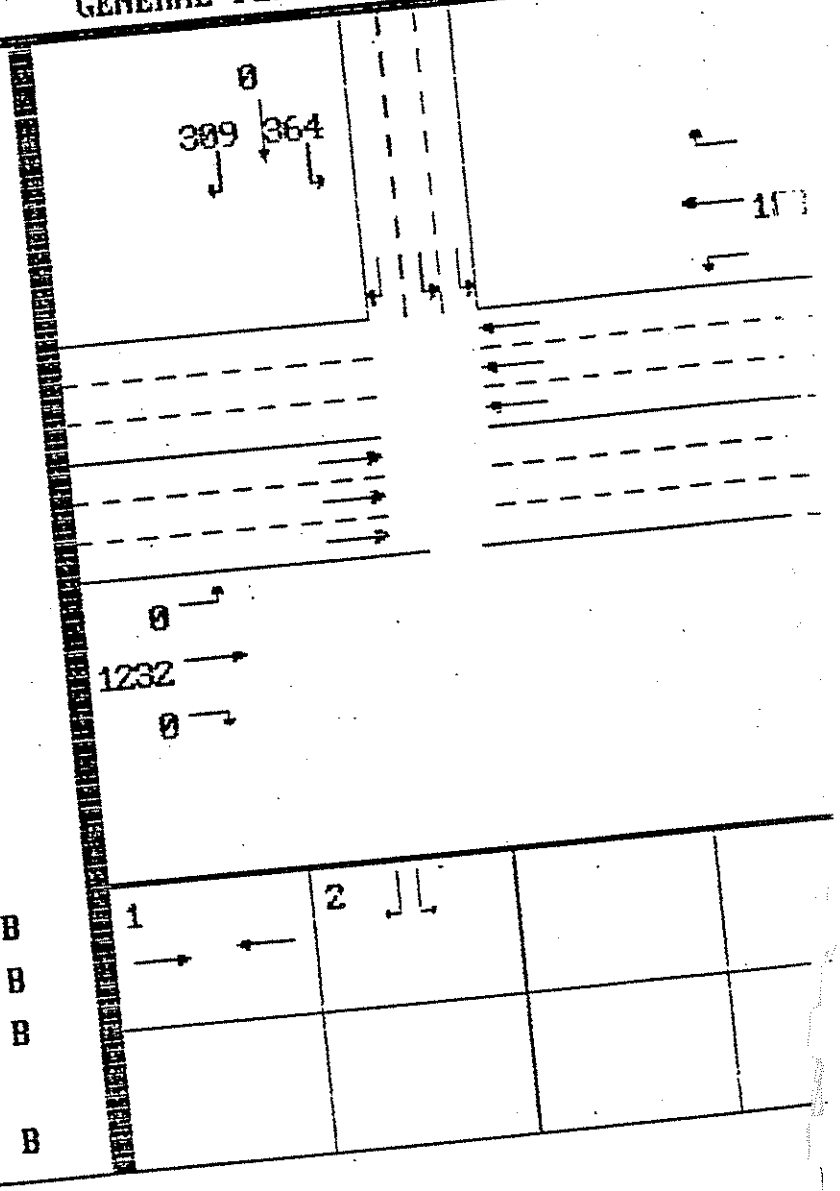
HCM Summary Results for Case: OLSR1P

OTAY LAKES R/SR 125 SOUTH

GENERAL PLAN BUILDOUT SCENARIO

PM PEAK HOUR

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.28	.61	12.1	B
	All			12.1	B
WB	T	.24	.51	9.9	B
	All			9.9	B
SB	L	.13	.27	12.9	B
	*R	.23	.47	12.8	B
	All			12.8	B
Intersect:		.51	.54	11.5	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLSR2A

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INTERSECTION: OTAY LAKES R/SR 125 SOUTH TIME: AM PEAK HOUR
DATE: 03-02-92
ANALYST: ME
COMMENT: NO SR 125 & EL RAMPS, W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1203	0	0	50	3	3
WB	0	640	0	0	50	3	3
NB	0	0	0	0	50	0	0
SB	625	0	338	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		LR							
GREEN	48	54	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

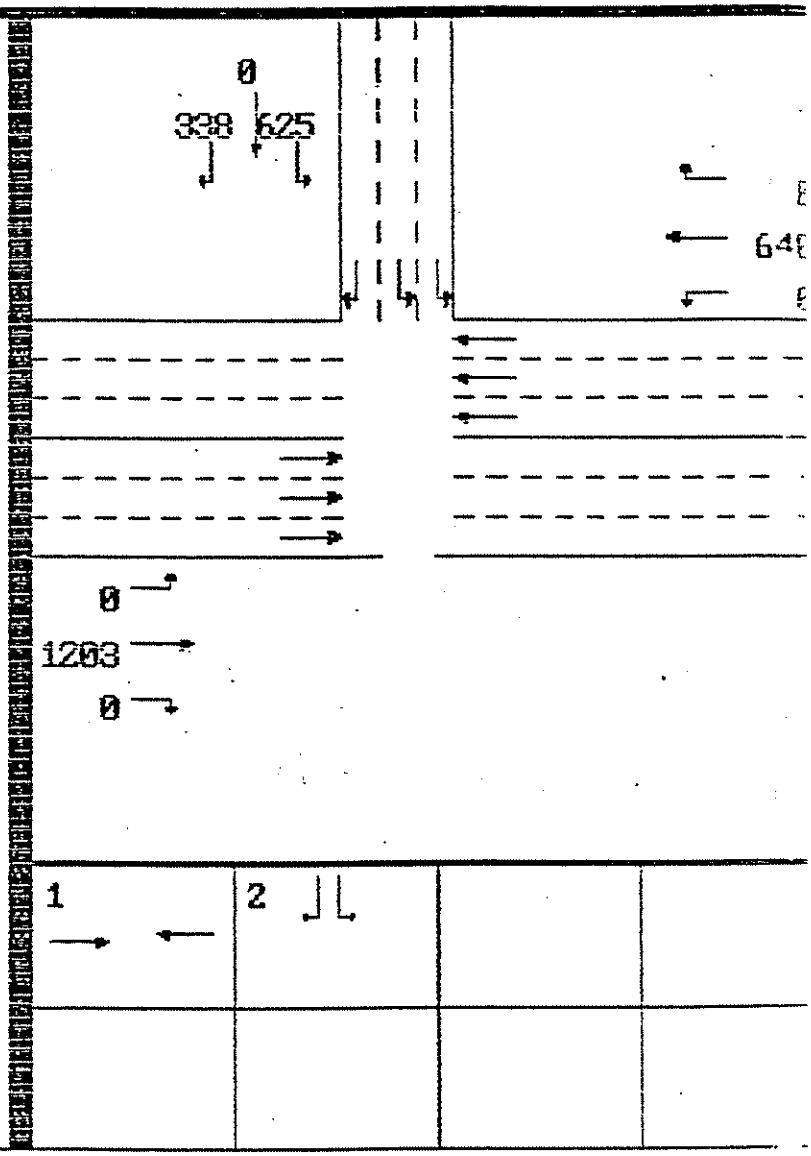
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.62	.45	T	.28	12.8	B	EB	12.8	B
WB	T	.33	.45	T	.15	9.4	B	WB	9.4	B
SB	L	.44	.50	L	.22	13.6	B	SB	13.1	B
	R	.50	.50	R	.25	12.2	B			

INTERSECT: DELAY = 12.1 SEC/VEH Xc = .55 LOS = B Sum(v/s)CR = .52

HCM Summary Results for Case: OLSR2A — OTAY LAKES R/SR 125 SOUTH

AM PEAK HOUR — NO SR 125 & EL RAMPS, W/LT'S IN & L

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.28	.62	12.8	B
	All			12.8	B
WB	T	.15	.33	9.4	B
	All			9.4	B
SB	L	.22	.44	13.6	B
	*R	.25	.58	12.2	B
	All			13.1	B
Intersect:		.52	.55	12.1	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLSR2P
****
INTERSECTION: OTAY LAKES R/SR 125 SOUTH TIME: PM PEAK HOUR
DATE: 03-02-92
ANALYST: ME
COMMENT: NO SR 125 & EL RAMPS, W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	964	0	0	50	3	3
WB	0	1145	0	0	50	3	3
NB	0	0	0	0	50	0	0
SB	717	0	387	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		LR							
GREEN	44	58	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

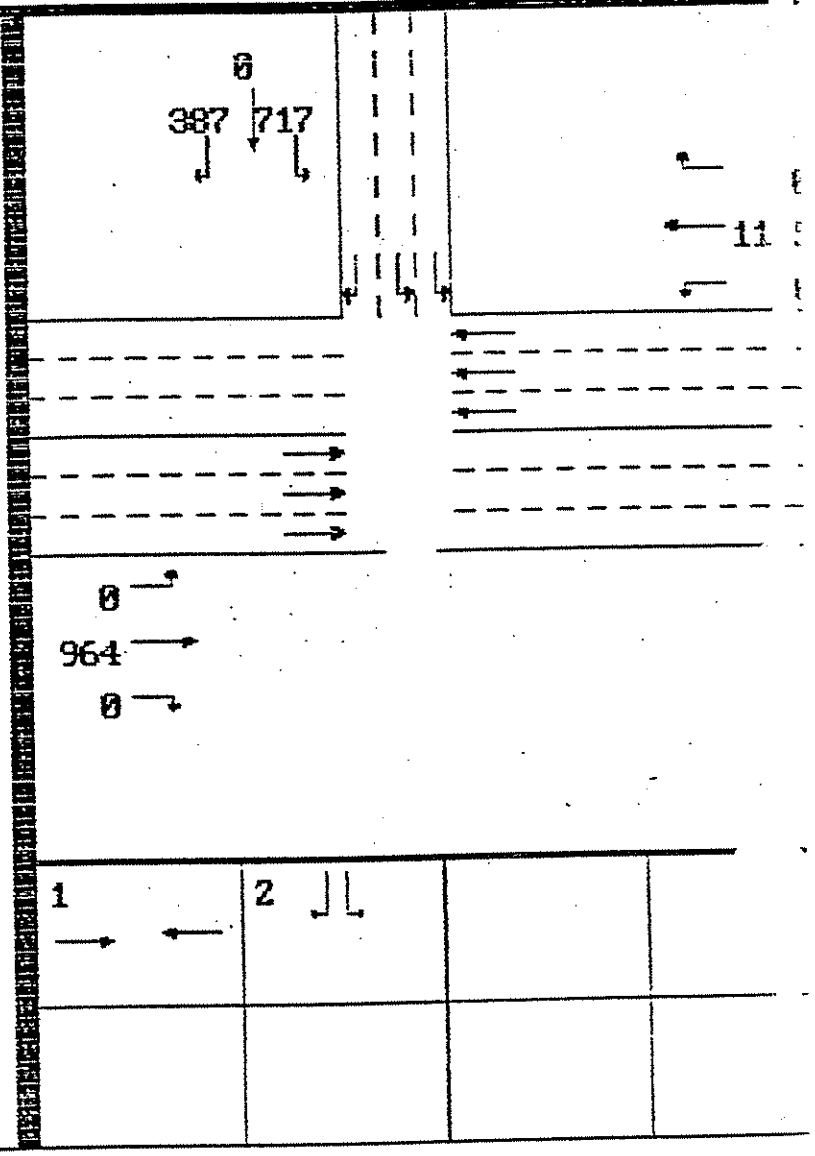
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.54	.41	T	.22	11.7	B	EB	11.7	B
WB	T	.64	.41	T	.26	14.4	B	WB	14.4	B
SB	L	.48	.54	L	.26	12.2	B	SB	11.8	B
	R	.53	.54	R	.28	11.1	B			

INTERSECT: DELAY = 12.7 SEC/VEH Xc = .58 LOS = B Sum(v/s)CR = .55

HCM Summary Results for Case: OLSR2P — OTAY LAKES R/SR 125 SOUTH

PM PEAK HOUR — NO SR 125 & EL RAMPS, W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.22	.54	11.7	B
	All			11.7	B
WB	*T	.26	.64	14.4	B
	All			14.4	B
SB	L	.26	.48	12.2	B
	*R	.28	.53	11.1	B
	All			11.8	B
Intersect:		.55	.58	12.7	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLSR3A SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/SR 125 SOUTH TIME: AM PEAK HOUR
ANALYST: ME DATE: 03-02-92
COMMENT: BUILDOUT W/RAMP ACCESS INTO SITE AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1968	0	0	50	3	3
WB	0	800	0	0	50	3	3
NB	0	0	0	0	50	0	0
SB	551	0	330	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		LR							
GREEN	52	50	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.93	.48	T	.45	20.0	C	EB	20.0	C
WB	T	.38	.48	T	.18	8.5	B	WB	8.5	B
SB	L	.42	.46	L	.20	15.1	C	SB	14.7	B
	R	.52	.46	R	.24	14.0	B			

INTERSECTION DELAY = 16.2 SEC/VEH v/c = .73 LOS = C Sum(v/s)CR = .6[illegible]

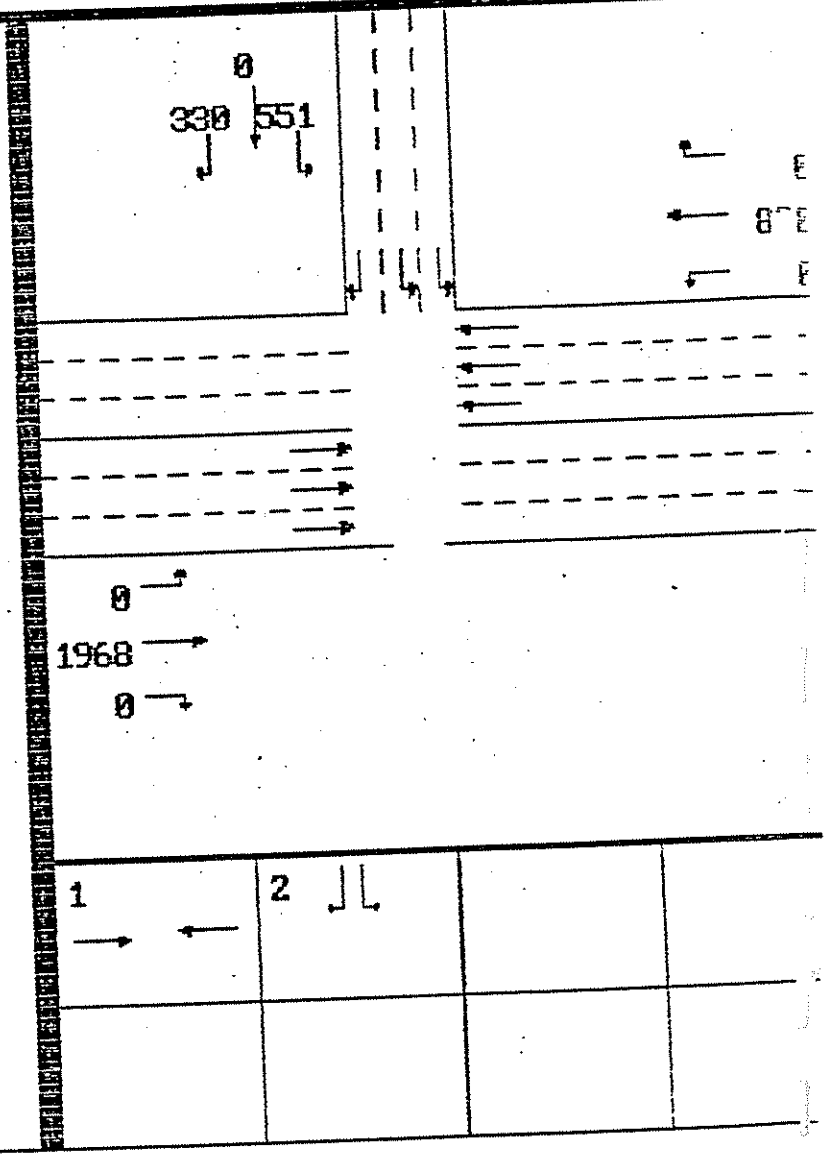
HCM Summary Results for Case: OLSR3A

OTAY LAKES R/SR 125 SOUTH

AM PEAK HOUR

BUILDOUT W/RAMP ACCESS INTO SITE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.45	.93	20.0	C
	All			20.0	C
WB	T	.18	.38	8.5	B
	All			8.5	B
SB	L	.20	.42	15.1	C
	*R	.24	.52	14.8	B
	All			14.7	B
Intersect:		.69	.73	16.2	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLSR3P

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INTERSECTION: OTAY LAKES R/SR 125 SOUTH TIME: PM PEAK HOUR
DATE: 03-02-92
ANALYST: ME
COMMENT: BUILDOUT W/RAMP ACCESS INTO SITE AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1386	0	0	50	3	3
WB	0	901	0	0	50	3	3
NB	0	0	0	0	50	0	0
SB	632	0	379	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		LR							
GREEN	50	52	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

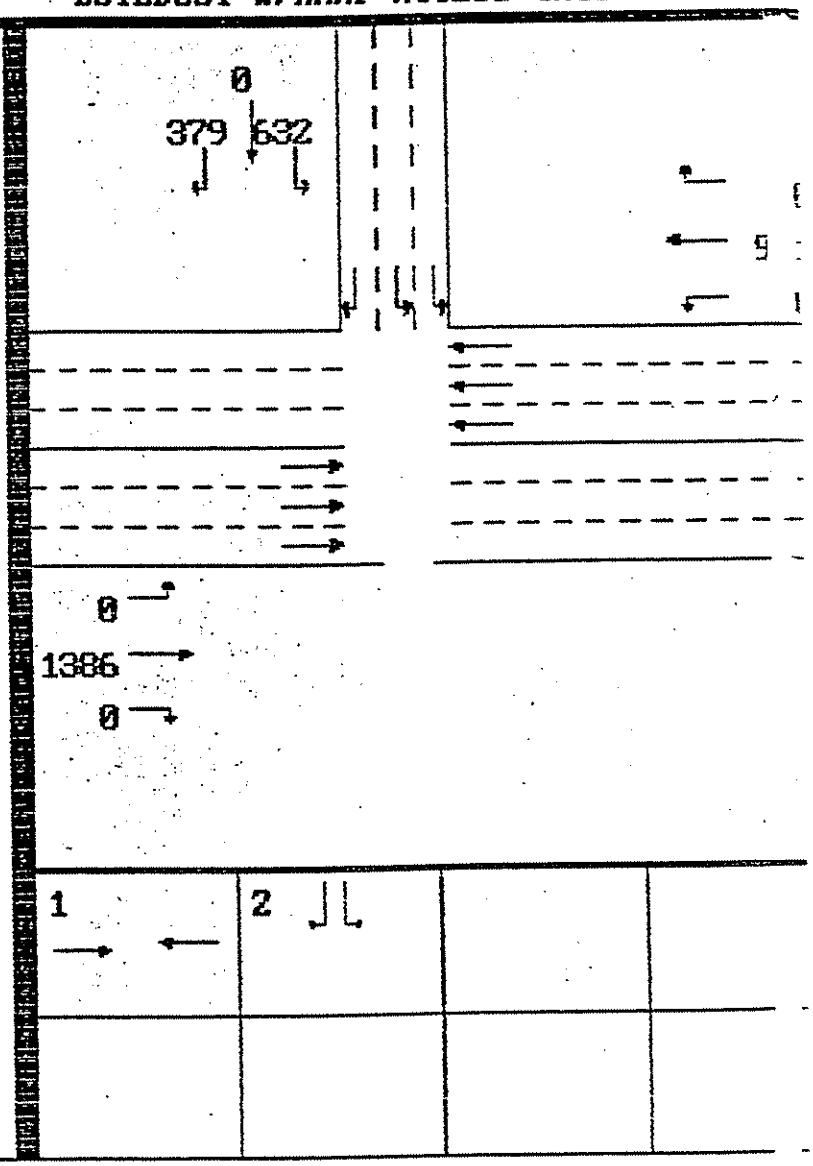
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.68	.46	T	.32	12.9	B	EB	12.9	B
WB	T	.44	.46	T	.21	9.4	B	WB	9.4	B
SB	L	.47	.48	L	.22	14.6	B	SB	14.4	B
	R	.58	.48	R	.28	13.9	B			

INTERSECT: DELAY = 12.4 SEC/VEH Xc = .63 LOS = B Sum(v/s)CR = .3

HCM Summary Results for Case: OLSR3P — OTAY LAKES R/SR 125 SOUTH

PM PEAK HOUR — BUILDOUT W/RAMP ACCESS INTO SITE

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.32	.68	12.9	B
	All			12.9	B
WB	T	.21	.44	9.4	B
	All			9.4	B
SB	L	.22	.47	14.6	B
	*R	.28	.58	13.9	B
	All			14.4	B
Intersect:		.59	.63	12.4	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLSR4A
****
INTERSECTION: OTAY LAKES R/SR 125 SOUTH TIME: AM PEAK HOUR
DATE: 03-02-92
ANALYST: ME
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1968	0	0	50	3	3
WB	0	800	0	0	50	3	3
NB	0	0	0	0	50	0	0
SB	551	0	330	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB									
SB		LR							
GREEN	60	42	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

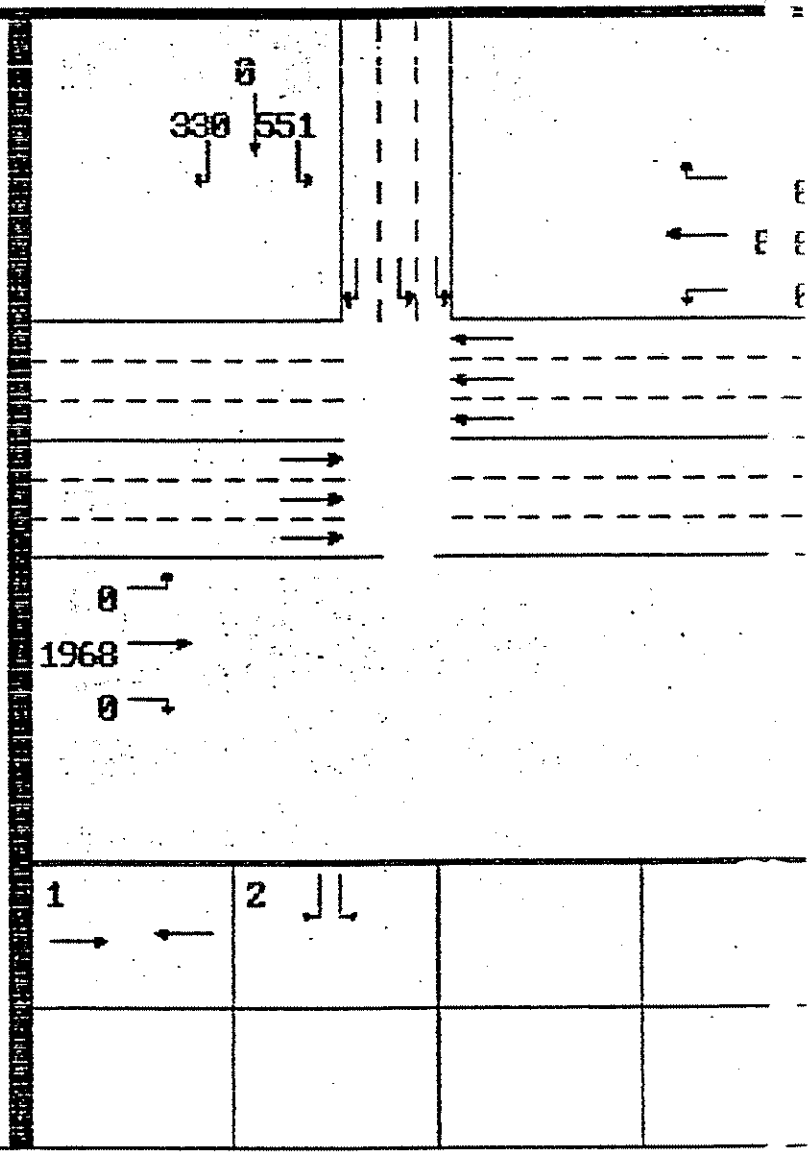
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.81	.55	T	.45	12.8	B	EB	12.8	B
WB	T	.33	.55	T	.18	6.3	B	WB	6.3	B
SB	L	.50	.39	L	.20	19.6	C	SB	19.2	C
	R	.62	.39	R	.24	18.6	C			

INTERSECT: DELAY = 12.8 SEC/VEH Xc = .73 LOS = B Sum(v/s)CR = .6

HCM Summary Results for Case: OLSR4A — OTAY LAKES R/SR 125 SOUT

AM PEAK HOUR — W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.45	.81	12.8	B
	All			12.8	B
WB	T	.18	.33	6.3	B
	All			6.3	B
SB	L	.20	.50	19.6	C
	*R	.24	.62	18.6	C
	All			19.2	C
Intersect:		.69	.73	12.8	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT

HCM SIGNALIZED INTERSECTION CASE: OLSR4P

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INTERSECTION: OTAY LAKES R/SR 125 SOUTH TIME: PM PEAK HOUR

ANALYST: ME DATE: 03-02-92

COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1386	0	0	50	3	3
WB	0	1083	0	0	50	3	3
NB	0	0	0	0	50	0	0
SB	632	0	379	0	50	3	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB						
SB	L	12	L	12	R	12

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH:

PHASE:	1	2	3	4	5	6	7	8	PED
EB	T								
WB	T								
NB		LR							
SB									
GREEN	55	47	0	0	0	0	0	0	
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY
EB	T	.62	.51	T	.32	10.7	B	EB	10.7
WB	T	.49	.51	T	.25	8.4	B	WB	8.
SB	L	.52	.44	L	.22	17.4	C	SB	17
	R	.64	.44	R	.28	16.9	C		

INTERSECT: DELAY = 11.8 SEC/VEH Xc = .63 LOS = B - Sum(v/s)C

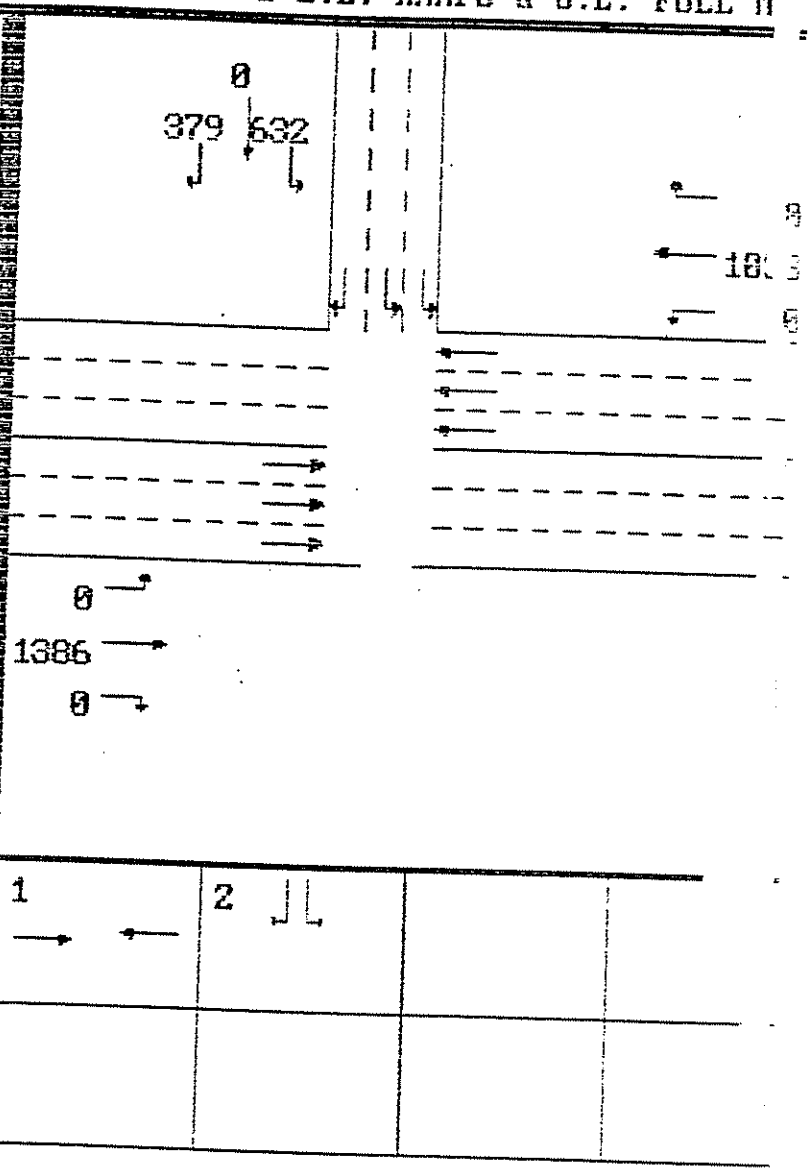
HCM Summary Results for Case: OLSR4P

PM PEAK HOUR

OTAY LAKES R/SR 125 SOUTH

W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.32	.62	18.7	B
	All			18.7	B
WB	T	.25	.49	8.4	B
	All			8.4	B
SB	L	.22	.52	17.4	C
	*R	.28	.64	16.9	C
	All			17.2	C
Intersect:		.59	.63	11.8	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLNR1A
****
INTERSECTION: OTAY LAKES R/SR 125 NORTH TIME: AM PEAK HOUR
DATE: 03-02-92
ANALYST: ME AREA TYPE: NON-CBD
COMMENT: GENERAL PLAN BUILDOUT SCENARIO

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1118	0	0	50	3	3
WB	0	1423	0	0	50	3	3
NB	177	0	391	0	50	3	0
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB	L	12	R	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	34.8	3
SB	0	2	N	0	0	.90	Y	34.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1.

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	T								
WB	T								
NB		LR							
SB									
GREEN	56	46	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.49	.52	T	.26	8.2	B	EB	8.2	B
WB	T	.63	.52	T	.33	10.4	B	WB	10.4	B
NB	L	.27	.43	L	.12	15.6	C	NB	14.6	B
	R	.40	.43	R	.17	14.2	B			

INTERSECTION v/c = .52 LOS = B SUM v/s LR =

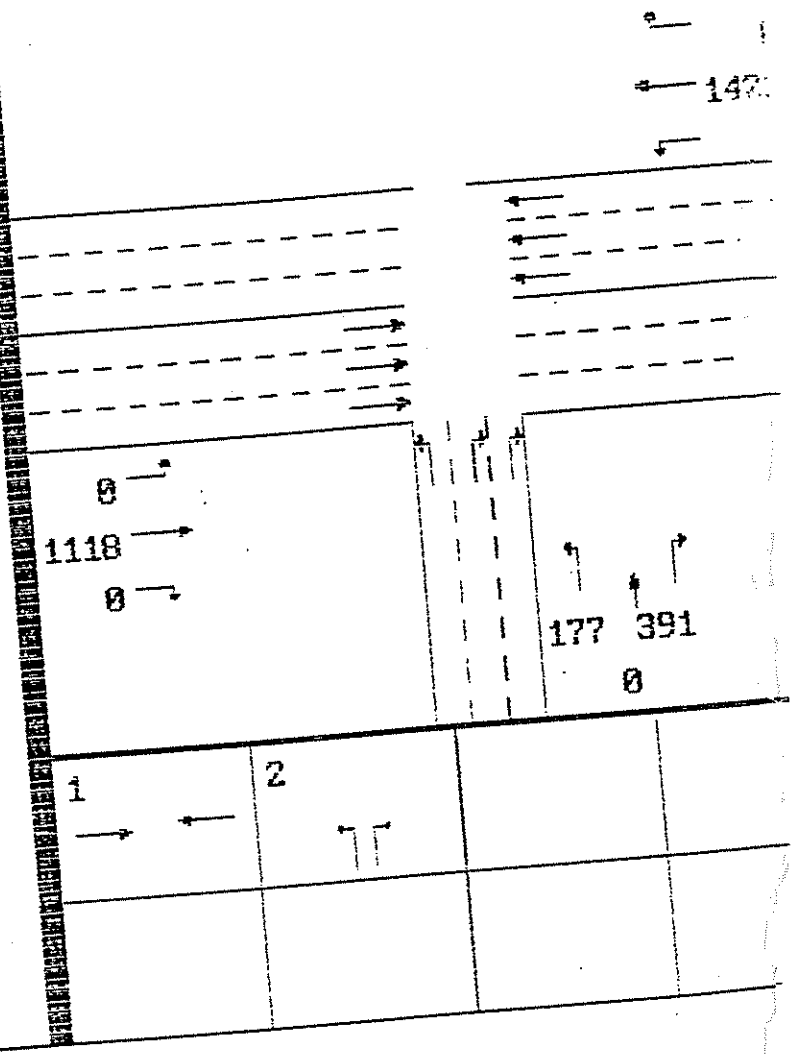
HCM Summary Results for Case: OLNR1A

OTAY LAKES R/SR 125 NORTH

AM PEAK HOUR

GENERAL PLAN BUILDOUT SCENARIO

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.26	.49	8.2	B
	All			8.2	B
WB	*T	.33	.63	10.4	B
	All			10.4	B
NB	L	.12	.27	15.6	C
	*R	.17	.40	14.2	B
	All			14.6	B
Intersect:		.50	.52	10.3	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates SUMMARY REPORT
HCM SIGNALIZED INTERSECTION CASE: OLNR1P
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INTERSECTION: OTAY LAKES R/SR 125 NORTH TIME: PM PEAK HOUR
DATE: 03-02-92
ANALYST: ME AREA TYPE: NON-CBD
COMMENT: GENERAL PLAN BUILDOUT SCENARIO

	VOLUMES LEFT	THRU	RIGHT	RTOR	PEDS.	LANES APPROACH	OUTBOUND
EB	0	1314	0	0	50	3	3
WB	0	1460	0	0	50	3	3
NB	196	0	456	0	50	3	0
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12
WB	T	12	T	12	T	12
NB	L	12	R	12	R	12
SB						

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.5	4
WB	0	2	N	0	0	.90	Y	11.5	4
NB	0	2	N	0	0	.90	Y	20.5	3
SB	0	2	N	0	0	.90	Y	20.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 1

PHASE:	1	2	3	4	5	6	7	8	PED ONL
EB	T								
WB	T								
NB		LR							
SB									
GREEN	53	49	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.61	.49	T	.30	11.2	B	EB	11.2	B
WB	T	.68	.49	T	.33	11.9	B	WB	11.9	B
NB	L	.28	.45	L	.13	14.3	B	NB	13.6	B
	R	.44	.45	R	.20	13.3	B			

INTERSECT: DELAY = 12.0 SEC/VEH Xc = .56 LOS = B Sum(v/s)CR =

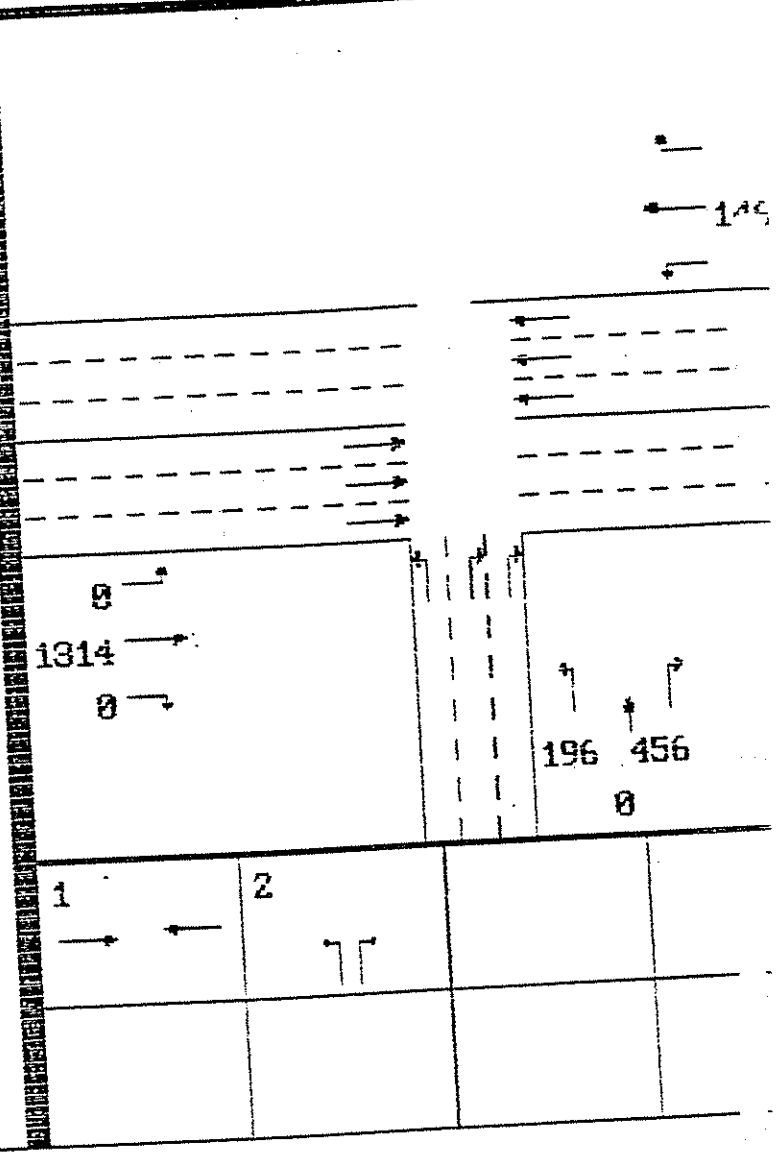
HCM Summary Results for Case: OLNR1P

OTAY LAKES R/SR 125 NORTH

GENERAL PLAN BUILDOUT SCENARIO

PM PEAK HOUR

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.30	.61	11.2	B
	All			11.2	B
WB	*T	.33	.68	11.9	B
	All			11.9	B
NB	L	.13	.28	14.3	B
	*R	.28	.44	13.3	B
	All			13.6	B
Intersect:		.53	.56	12.0	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: ULNR2AZ SUMMARY REPORT

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INTERSECTION: UTAY LAKES R/SR 125 NORTH TIME: AM PEAK HOUR

ANALYST: ME DATE: 03-02-92

COMMENT: NO SR 125 & EL RAMPS. W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1552	0	0	50	3	3
WB	0	1387	0	0	50	4	4
NB	101	0	472	0	50	3	0
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12		
WB	T	12	T	12	T	12	T	12
NB	L	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	T								
	WB	T								
	NB		LR							
	SB									
GREEN		56	46	0	0	0	0	0	0	0
YELLOW		4	4	0	0	0	0	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

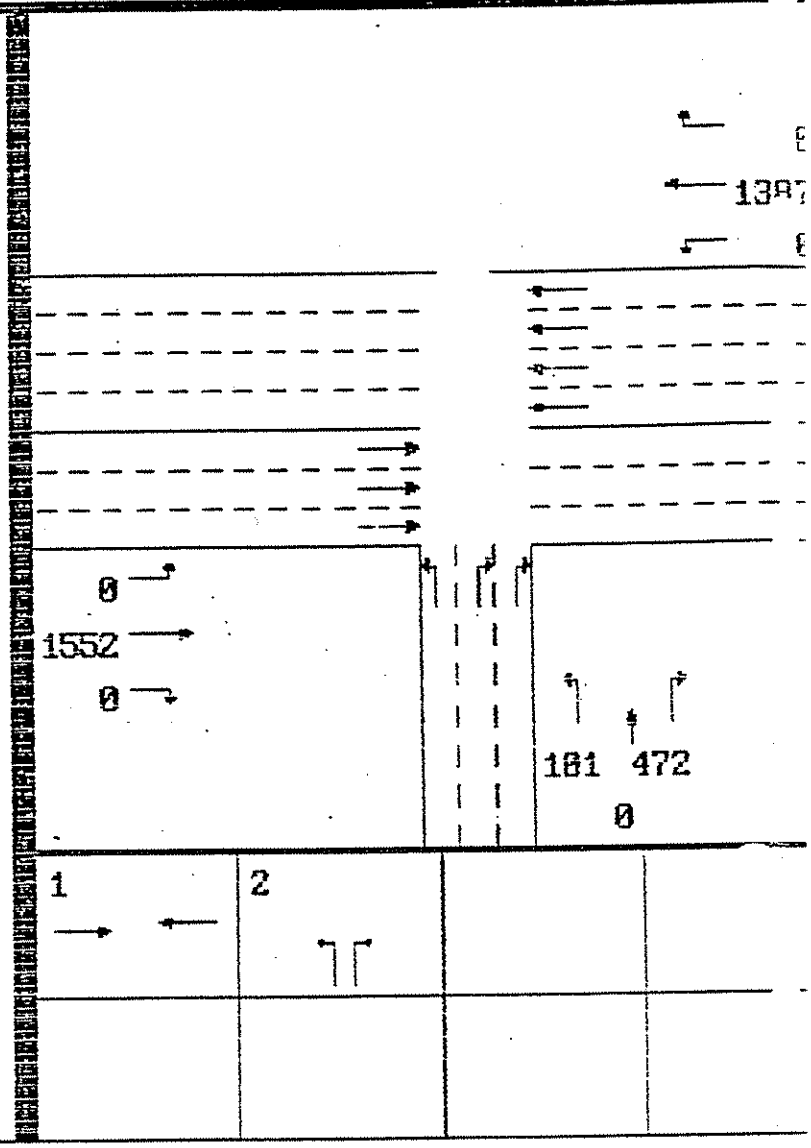
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.68	.52	T	.35	11.0	B	EB	11.0	B
WB	T	.46	.52	T	.24	7.9	B	WB	7.9	B
NB	L	.15	.43	L	.07	14.7	B	NB	14.9	B
	R	.48	.43	R	.21	14.9	B			

INTERSECT: DELAY = 10.4 SEC/VEH Xc = .59 LOS = B Sum(v/s)CR = .36

HCM Summary Results for Case: OLNR2A8 OTAY LAKES R/OR 125 NORTH

AM PEAK HOUR NO SR 125 & EL RAMPS, W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.35	.68	11.0	B
	All			11.0	B
WB	T	.24	.46	7.9	B
	All			7.9	B
NB	L	.07	.15	14.7	B
	*R	.21	.48	14.9	B
	All			14.9	B
Intersect:		.56	.59	10.4	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: OLNR2PZ SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/SR 125 NORTH TIME: PM PEAK HOUR

ANALYST: ME DATE: 03-02-92

COMMENT: NO SR 125 & EL RAMPS, W/LT'S IN & R AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1365	0	0	50	3	3
WB	0	2395	0	0	50	4	4
NB	116	0	509	0	50	3	0
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12		
WB	T	12	T	12	T	12	T	12
NB	L	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB		LR							
SB									
GREEN	62	40	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

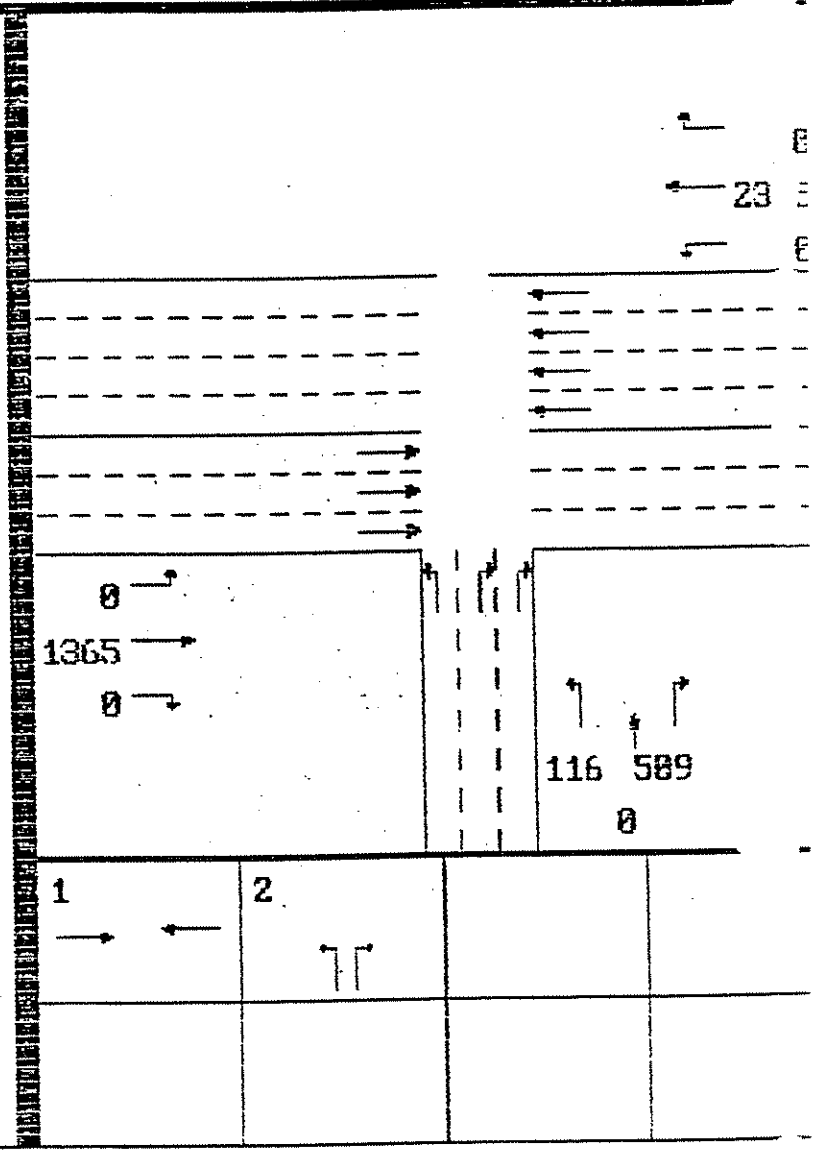
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.55	.57	T	.31	7.0	B	EB	7.0	B
WB	T	.72	.57	T	.41	9.5	B	WB	9.5	B
NB	L	.20	.37	L	.08	17.8	C	NB	18.5	C
	R	.60	.37	R	.22	18.6	C			

INTERSECT DELAY = 9.9 SEC/VEH Xc = .67 LOS = B Sum(v/s)CR = .63

HCM Summary Results for Case: OLNR2PZ — OTAY LAKES R/SR 125 NORTH

PM PEAK HOUR — NO SR 125 & EL RANPS, W/LT'S IN & R

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	T	.31	.55	7.0	B
	All			7.0	B
WB	*T	.41	.72	9.5	B
	All			9.5	B
NB	L	.08	.20	17.8	C
	*R	.22	.68	18.6	C
	All			18.5	C
Intersect:		.63	.67	9.9	B



HCM/Cinema V1.20 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ULNR3A2 SUMMARY REPORT

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INTERSECTION: UTAY LAKES R/SR 125 NORTH TIME: AM PEAK HOUR
ANALYST: ME DATE: 03-02-92
COMMENT: B.O. W/RMP ACC. INTO SITE (RT OUT) AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	101	1615	0	0	50	5	3
WB	0	2179	42	0	50	4	4
NB	101	45	423	0	50	4	2
SB	0	0	82	0	50	1	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	TR	12		
NB	L	12	T	12	R	12	R	12		
SB	R	12								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	29.5	3
SB	0	2	N	0	0	.90	Y	29.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:		1	2	3	4	5	6	7	8	PED ONLY
	EB	LT	T							
	WB		TR							
	NB			LTR						
	SB	R		R						
GREEN		18	46	34	0	0	0	0	0	0
YELLOW		4	4	4	0	0	0	0	0	
RED		0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

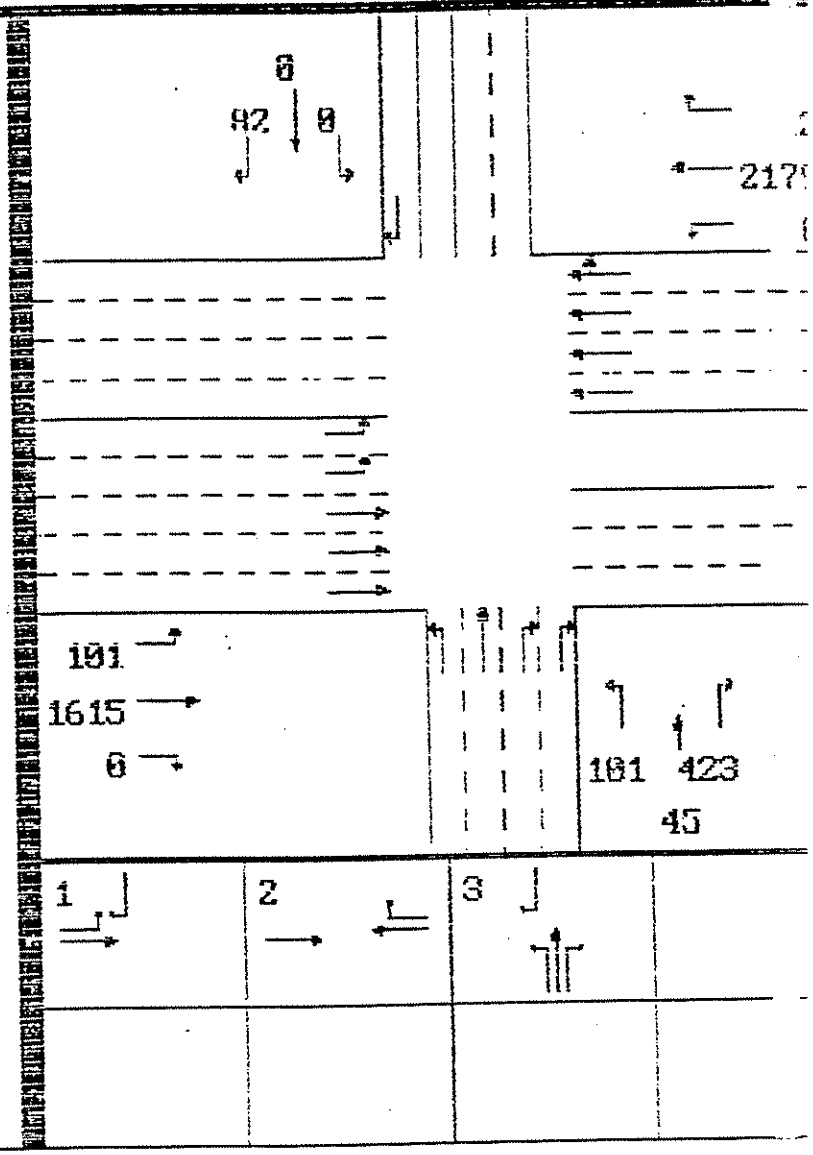
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.21	.17	L	.04	29.7	D	EB	7.2	B
	T	.59	.63	T	.37	5.8	B			
WB	TR	.89	.43	TR	.38	19.5	C	WB	19.5	C
NB	L	.21	.32	L	.07	20.8	C	NB	20.6	C
	T	.09	.32	T	.03	17.0	C			
	R	.58	.32	R	.18	20.9	C			
SB	R	.12	.49	R	.06	9.8	B	SB	9.8	B

INTERSECT DELAY = 14.6 SEC/VEH Xc = .88 LOS = B SUM(v/s)LR = .60

HCM Summary Results for Case: OLNR3AZ — OTAY LAKES R/SR 125 NORTH

AM PEAK HOUR — B.O. W/RMP ACC. INTO SITE (RT OUT)

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.04	.21	29.7	D
	T	.37	.59	5.8	B
	All			7.2	B
WB	*TR	.38	.89	19.5	C
	All			19.5	C
NB	L	.07	.21	20.8	C
	T	.03	.09	17.8	C
	*R	.18	.58	20.9	C
	All			20.6	C
SB	R	.06	.12	9.8	B
	All			9.8	B
Intersect:		.60	.66	14.8	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLNR3PZ SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/SR 125 NORTH TIME: PM PEAK HOUR
ANALYST: ME DATE: 03-02-92
COMMENT: B.O W/RMP ACC. INTO SITE (RT OUT) AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	57	1673	0	0	50	5	3
WB	0	2909	23	0	50	4	4
NB	116	26	511	0	50	4	2
SB	0	0	288	0	50	1	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12
WB	T	12	T	12	T	12	TR	12		
NB	L	12	T	12	R	12	R	12		
SB	R	12								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	14.5	4
WB	0	2	N	0	0	.90	Y	14.5	4
NB	0	2	N	0	0	.90	Y	29.5	3
SB	0	2	N	0	0	.90	Y	29.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 11(

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LT	T							
WB		TR							
NB			LTR						
SB	R		R						
GREEN	14	54	30	0	0	0	0	0	0
YELLOW	4	4	4	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 9 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

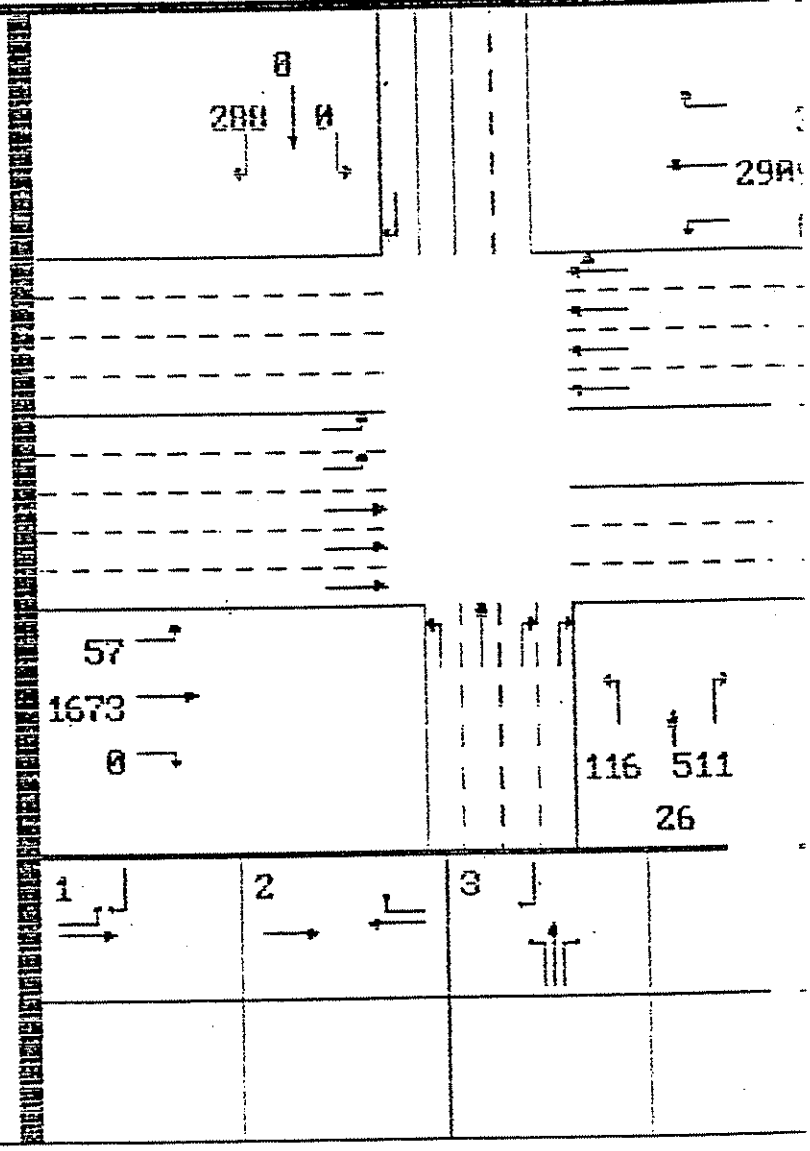
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.15	.14	L	.02	31.8	D	EB	5.7	B
	T	.58	.66	T	.38	4.9	A			
WB	TR	1.01	.50	TR	.50	26.4	D	WB	26.4	D
NB	L	.27	.28	L	.08	23.4	C	NB	26.1	D
	T	.06	.28	T	.02	18.6	C			
	R	.79	.28	R	.22	27.0	D			
SB	R	.50	.42	R	.21	15.7	C	SB	15.7	C

INTERSEC : DELAY = 19.4 SEC/VEH xc = .81 LOS = C Sum(v/s)CR = .75

HCM Summary Results for Case: OLNR3PZ — OTAY LAKES R/SR 125 NORTH

PM PEAK HOUR — B.O W/RMP ACC. INTO SITE (RT OUT)

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*L	.02	.15	31.8	D
	T	.38	.58	4.9	A
	All			5.7	B
WB	*TR	.50	1.01	26.4	D
	All			26.4	D
NB	L	.00	.27	23.4	C
	T	.82	.86	18.6	C
	*R	.22	.79	27.0	D
	All			26.1	D
SB	R	.21	.50	15.7	C
	All			15.7	C
Intersect:		.75	.81	19.4	C



HCM/Cinema V1.29 LICENSEE: JHK & Associates

HCM SIGNALIZED INTERSECTION CASE: ULNR4AZ SUMMARY REPORT

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INTERSECTION: OTAY LAKES R/SR 125 NORTH TIME: AM PEAK HOUR

ANALYST: ME DATE: 03-02-92

COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1716	0	0	50	3	3
WB	0	1531	0	0	50	4	4
NB	101	0	468	0	50	3	0
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12		
WB	T	12	T	12	T	12	T	12
NB	L	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	PED. BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB		LR							
SB									
GREEN	56	46	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

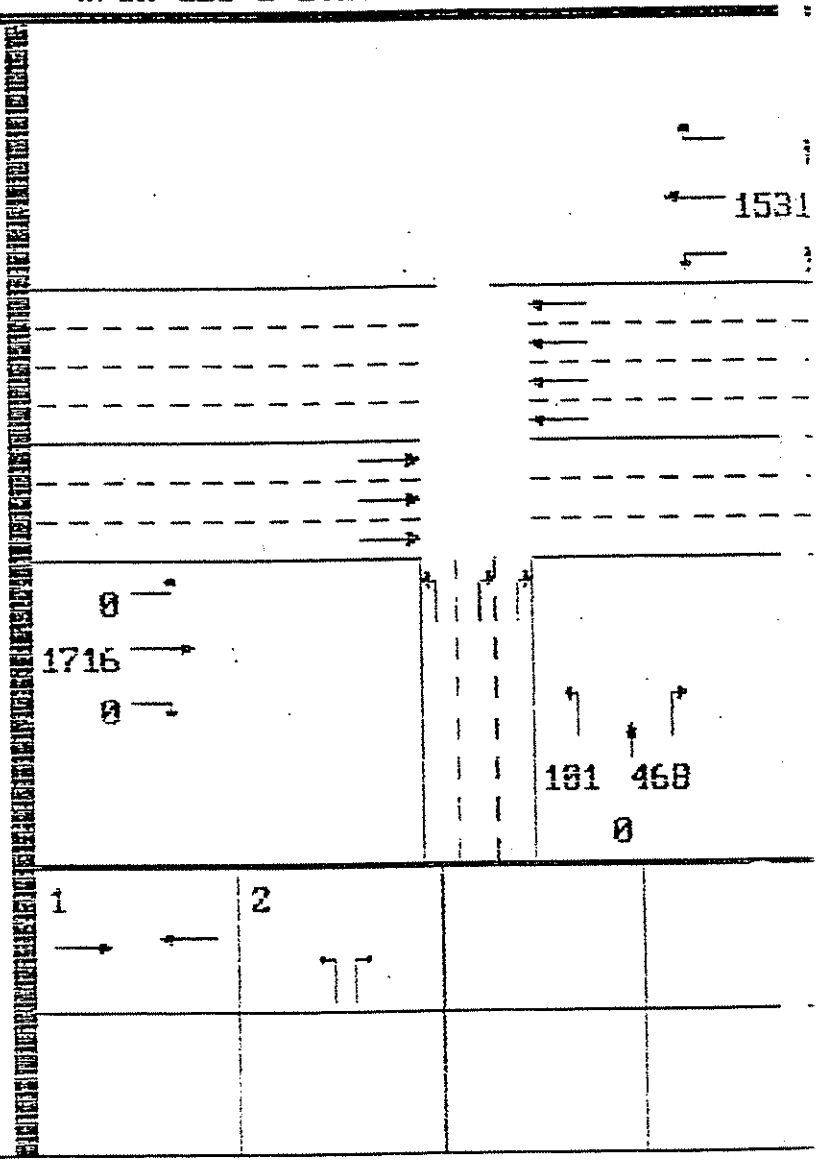
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.76	.52	T	.39	12.0	B	EB	12.0	B
WB	T	.51	.52	T	.26	8.2	B	WB	8.2	B
NB	L	.15	.43	L	.07	14.7	B	NB	14.8	B
	R	.48	.43	R	.20	14.9	B			

INTERSECT DELAY = 10.9 SEC/VEH Xc = .63 LOS = B Sum(v/s)CR = .60

HCM Summary Results for Case: OLMR4AZ — OTAY LAKES R/SR 125 NORTH

AM PEAK HOUR — W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.39	.76	12.0	B
	All			12.0	B
WB	T	.26	.51	8.2	B
	All			8.2	B
NB	L	.07	.15	14.7	B
	*R	.20	.48	14.9	B
	All			14.8	B
Intersect:		.60	.63	10.9	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: ULNR4PZ SUMMARY REPORT

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INTERSECTION: UTAY LAKES R/SR 125 NORTH TIME: PM PEAK HOUR
ANALYST: ME DATE: 03-02-92
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	0	1730	0	0	50	3	3
WB	0	2095	0	0	50	4	4
NB	116	0	537	0	50	3	0
SB	0	0	0	0	50	0	0

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	T	12	T	12	T	12		
WB	T	12	T	12	T	12	T	12
NB	L	12	R	12	R	12		
SB								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	11.3	4
WB	0	2	N	0	0	.90	Y	11.3	4
NB	0	2	N	0	0	.90	Y	23.5	3
SB	0	2	N	0	0	.90	Y	23.5	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	T								
WB	T								
NB		LR							
SB									
GREEN	60	42	0	0	0	0	0	0	0
YELLOW	4	4	0	0	0	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 6 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

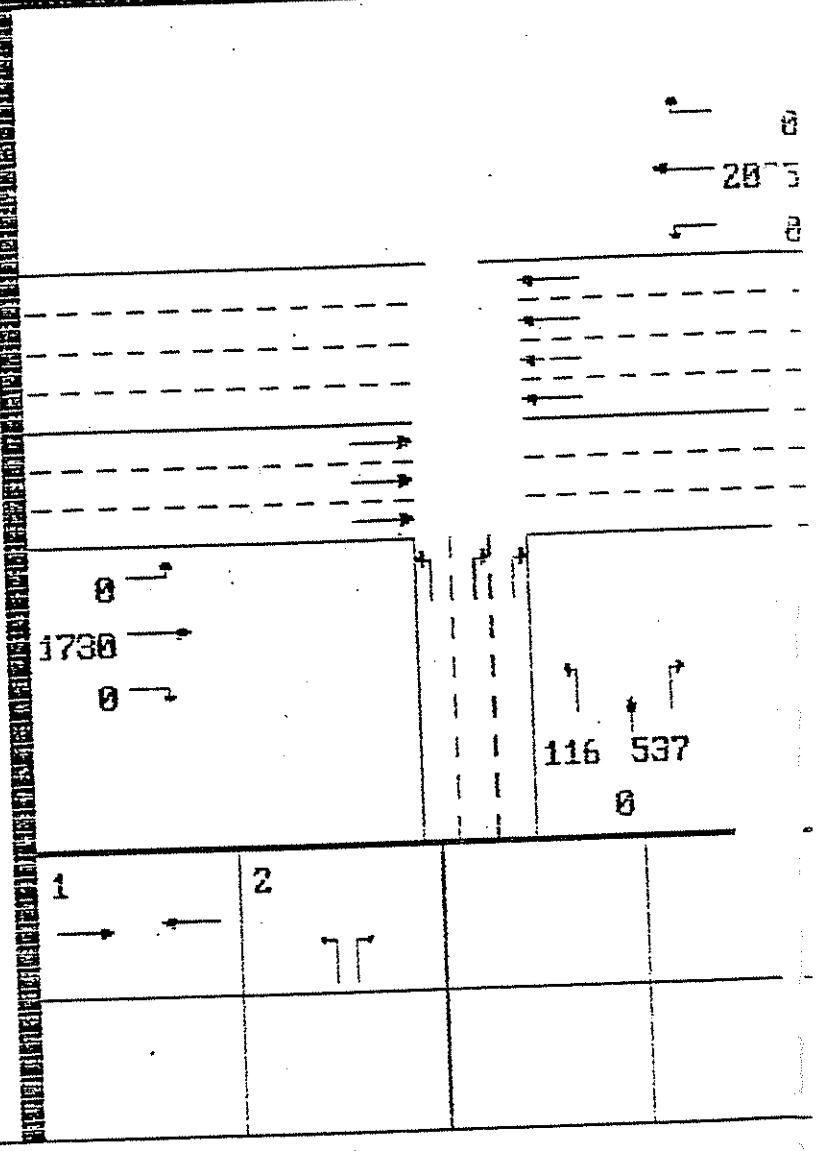
APP	LANE GRP.	v/c	q/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	T	.71	.55	T	.40	10.2	B	EB	10.2	B
WB	T	.65	.55	T	.36	9.4	B	WB	9.4	B
NB	L	.19	.39	L	.08	16.8	C	NB	17.6	C
	R	.60	.39	R	.23	17.8	C			

INTERSECT: DELAY = 10.8 SEC/VEH Xc = .67 LOS = B Sum(v/s)CR = .63

HCM Summary Results for Case: OLMR4PZ — OTAY LAKES R/SR 125 NORTH

PM PEAK HOUR — W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/ veh)	LOS
EB	*T	.40	.71	10.2	B
	All			10.2	B
WB	T	.36	.65	9.4	B
	All			9.4	B
NB	L	.08	.19	16.8	C
	*R	.23	.60	17.8	C
	All			17.6	C
Intersect:		.63	.67	10.8	B



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLMB4A SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/MID-BLOCK AC TIME: AM PEAK
ANALYST: ME DATE: 03-04-92
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	80	1613	491	0	50	6	4
WB	82	1785	20	0	50	6	4
NB	260	16	63	0	50	2	1
SB	13	3	52	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	T	12	TR	12
NB	L	12	TR	12							
SB	LT	12	R	12							

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	ADJ. PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	BUTTON min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	19.8	4
WB	0	2	N	0	0	.90	Y	19.8	4
NB	0	2	N	0	0	.90	Y	43.8	3
SB	0	2	N	0	0	.90	Y	43.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R					
WB		TR	LTR		R				
NB				LTR					
SB	R				LTR				
GREEN	13	33	12	25	7	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

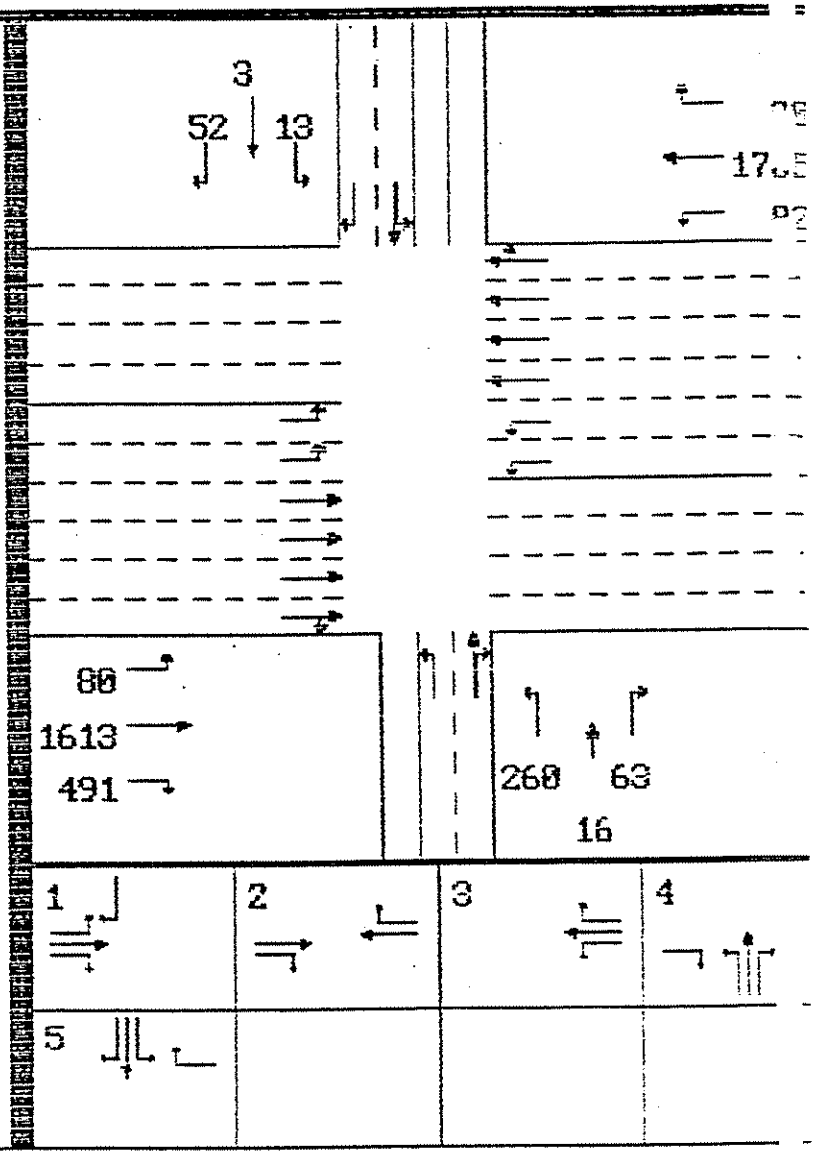
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.22	.13	L	.03	32.8	D	EB	16.5	C
	TR	.81	.46	TR	.37	15.9	C			
WB	L	.25	.12	L	.03	33.6	D	WB	14.0	B
	TR	.68	.45	TR	.31	13.1	B			
NB	L	.72	.24	L	.17	33.7	D	NB	31.0	D
	TR	.24	.24	TR	.06	22.0	C			
SB	LT	.14	.07	LT	.01	30.9	D	SB	25.3	D
	R	.19	.20	R	.04	23.7	C			

INTERSECT: DELAY = 16.5 SEC/VEH Xc = .69 LOS = C Sum(v/s)CR = .61

HCM Summary Results for Case: OLMB4A — OTAY LAKES R/MID-BLOCK AC

AM PEAK — W/SR 125 & E.L. RAMPS & D.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	L	.03	.22	32.8	D
	*TR	.37	.81	15.9	C
	All			16.5	C
WB	*L	.03	.25	33.6	D
	TR	.31	.68	13.1	B
	All			14.0	B
NB	*L	.17	.72	33.7	D
	TR	.06	.24	22.0	C
	All			31.0	D
SB	LT	.01	.14	30.9	D
	*R	.04	.19	23.7	C
	All			25.3	D
Intersect:		.61	.69	16.5	C



HCM/Cinema V1.28 LICENSEE: JHK & Associates
HCM SIGNALIZED INTERSECTION CASE: OLMB4P SUMMARY REPORT

****

INTERSECTION: OTAY LAKES R/MID-BLOCK AC TIME: PM PEAK
ANALYST: ME DATE: 03-04-92
COMMENT: W/SR 125 & E.L. RAMPS & O.L. FULL M AREA TYPE: NON-CBD

	VOLUMES					LANES	
	LEFT	THRU	RIGHT	RTOR	PEDS.	APPROACH	OUTBOUND
EB	328	1376	563	0	50	6	4
WB	94	2275	82	0	50	6	4
NB	298	19	73	0	50	2	1
SB	83	22	336	0	50	2	1

GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)

EB	L	12	L	12	T	12	T	12	T	12	TR	12
WB	L	12	L	12	T	12	T	12	T	12	TR	12
NB	L	12	TR	12								
SB	LT	12	R	12								

	GRADE (%)	HV (%)	ADJ. PARKING Y/N	PARKING Nm	BUSES Nb	PHF	PED. BUTTON Y/N	min T	ARRIVAL TYPE
EB	0	2	N	0	0	.90	Y	19.8	4
WB	0	2	N	0	0	.90	Y	19.8	4
NB	0	2	N	0	0	.90	Y	43.8	3
SB	0	2	N	0	0	.90	Y	43.8	3

SIGNAL SETTINGS: ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR	TR		R					
WB		TR	LTR		R				
NB				LTR					
SB	R				LTR				
GREEN	14	22	15	22	17	0	0	0	0
YELLOW	4	4	4	4	4	0	0	0	
RED	0	0	0	0	0	0	0	0	

LOST TIME PER PHASE: 3 SEC LOST TIME PER CYCLE: 12 SEC

CAPACITY ANALYSIS RESULTS (HCM PROCEDURE)

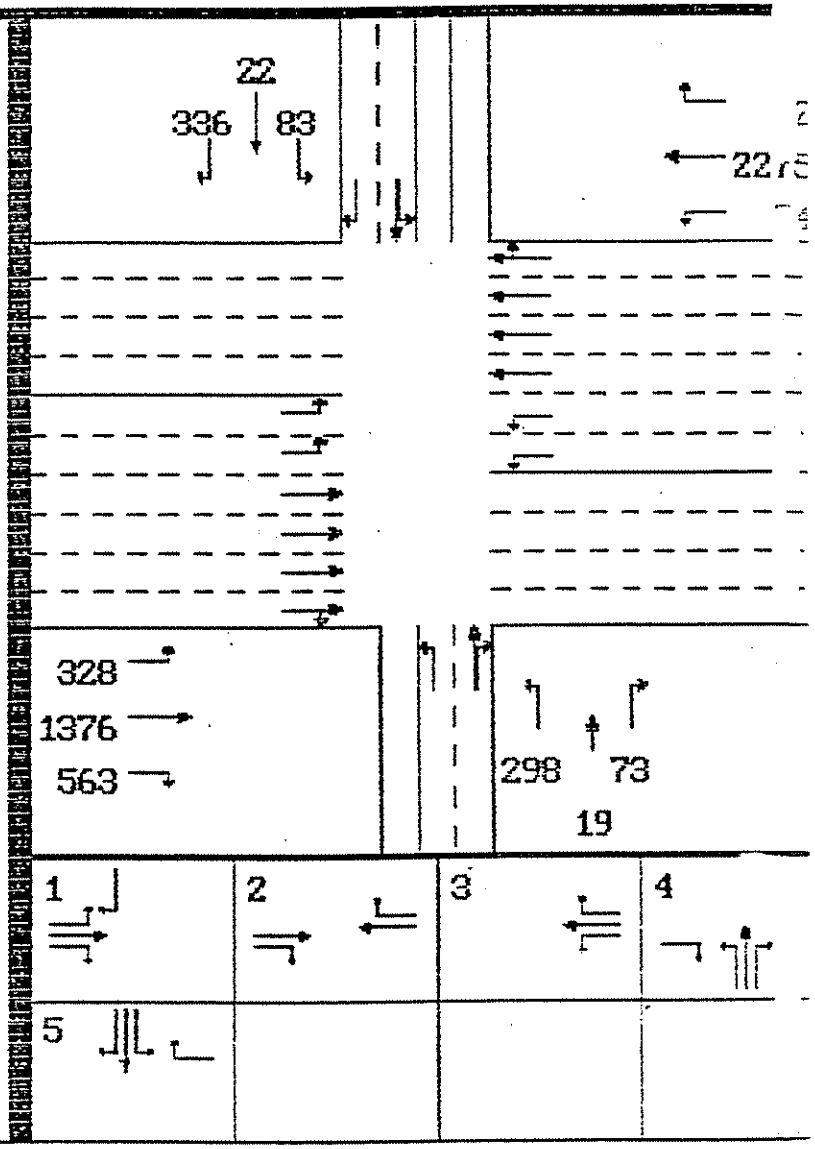
APP	LANE GRP.	v/c	g/C	LANE GRP.	v/s	DELAY	LOS	APPROACH:	DELAY	LOS
EB	L	.85	.14	L	.12	45.7	E	EB	26.8	D
	TR	.93	.37	TR	.35	23.8	C			
WB	L	.23	.15	L	.03	31.6	D	WB	45.0	E
	TR	1.06	.38	TR	.41	45.5	E			
NB	L	.94	.21	L	.20	55.3	E	NB	47.9	E
	TR	.31	.21	TR	.06	23.9	C			
SB	LT	.41	.16	LT	.07	27.2	D	SB	29.1	D
	R	.82	.30	R	.25	29.7	D			

INTERSECT: DELAY = 36.5 SEC/VEH Xc = 1.08 LOS = D Sum(v/s)CR = .96

HCM Summary Results for Case: OLMB4P — OTAY LAKES R/MID-BLOCK AC

PM PEAK — W/SR 125 & E.L. RAMPS & O.L. FULL M

App	Lane Group	v/s Ratio	X v/c Ratio	Delay (sec/veh)	LOS
EB	*L	.12	.85	45.7	E
	TR	.35	.93	23.8	C
	All			26.8	D
WB	L	.03	.23	31.6	D
	*TR	.41	1.06	45.5	E
	All			45.0	E
NB	*L	.20	.94	55.3	E
	TR	.06	.31	23.9	C
	All			47.9	E
SB	LT	.07	.41	27.2	D
	*R	.25	.82	29.7	D
	All			29.1	D
Intersect:		.96	1.08	36.5	D



APPENDIX I

MEMORANDUM TO HAL ROSENBERG DATED APRIL 14, 1992

EASTLAKE EIR TRANSPORTATION ANALYSIS

QUEUEING ANALYSIS ON OTAY LAKES ROAD

MEMORANDUM

TO: Hal Rosenberg, City of Chula Vista

FROM: Daniel F. Marum, JHK & Associates
Marcos Esparza, JHK & Associates

DATE: April 14, 1992

RE: Queueing Analysis on Otay Lakes Road for Eastlake I SPA Amendment Traffic Study (JHK 2885)

In accordance with the task of studying the on-site circulation a queueing analysis was performed for the segment of Otay Lakes Road adjacent to the project site between the northbound SR 125 off-ramp and Eastlake Parkway. This analysis was undertaken in order to determine the recommended storage lengths for the left turn bays approaching the signalized intersections within the segment for two project site access altenatives.

The methodology followed was based on recommendations for storage lengths found in the American Association of State Highway Transportation Officials (AASHTO) 1990 edition of A Policy on Geometric Design of Highways and Streets. This document states that the storage length depends on the signal cycle length, phasing and progression. The storage length is also a function of the volume of traffic using the section, as well as the percentage of heavy vehicles in the traffic flow. The general equation used in calculating storage length for an approach is:

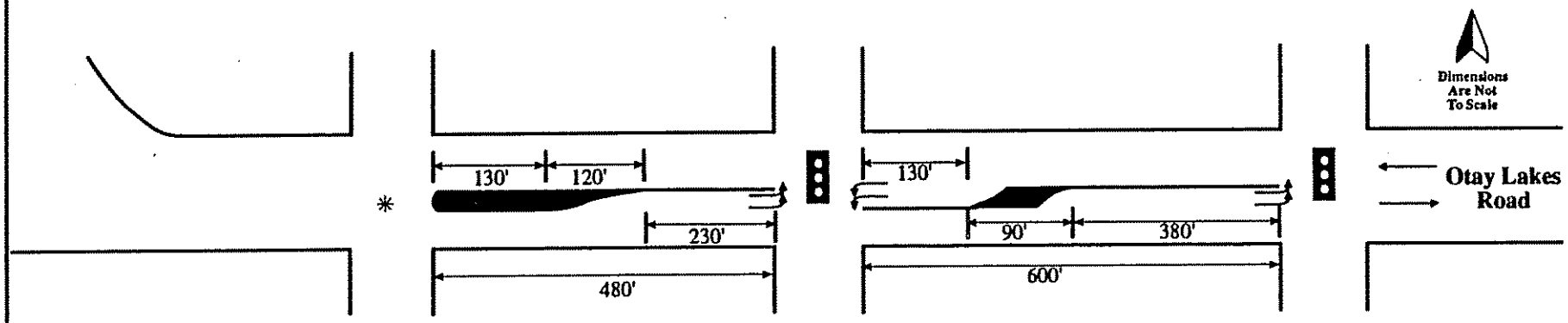
$$\text{Left Turn Storage} = \frac{2 \times \text{left turn volume} \times 1.02 \times (1 - \text{left turn green time/cycle length}) \times 25 \text{ feet/vehicle}}{(3600/1 \text{ hr}) \times \text{cycle length}}$$

The storage length was calculated as such:

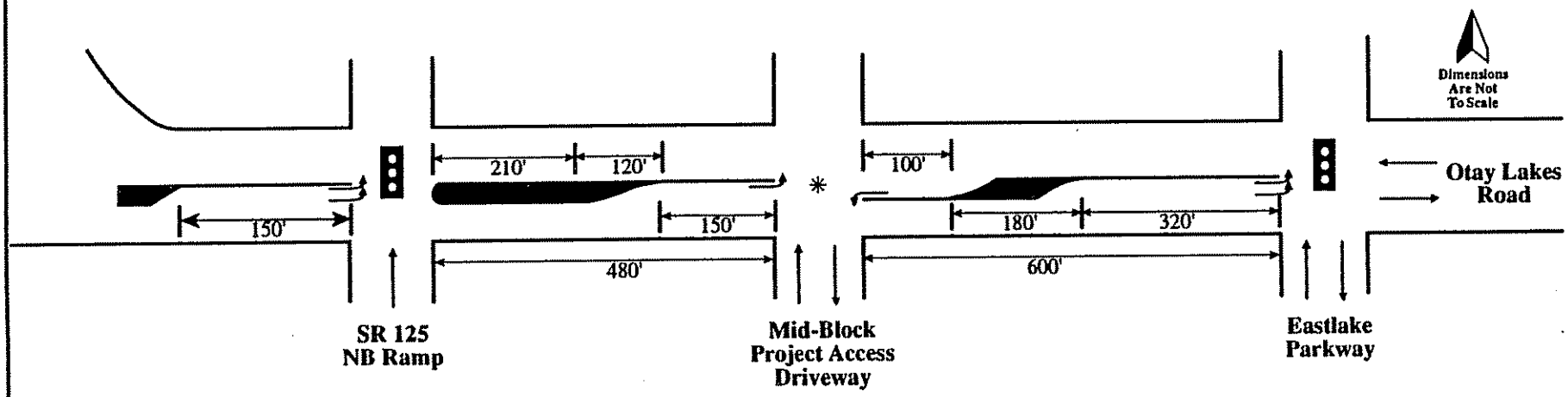
Storage Length = Left turn storage/#left turn lanes

A summary of the recommended left turn bay length for signalized intersection approaches is listed in Table 1 and graphically shown in Figure 1.

Project with Assumed Site Area Roadway Improvements and Optional Mitigation



Project with Assumed Site Area Roadway Improvements and Recommended Mitigation



* Queuing Analysis not done at this intersection.

Figure 13-2

REQUIRED LEFT TURN BAY LENGTHS FOR INTERSECTION APPROACHES ON OTAY LAKES ROAD FOR TWO BUILDOUT "WITH PROPOSED PROJECT" LAND USE ALTERNATIVE

EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

jhk & associates

TABLE 1

RECOMMENDED LEFT TURN STORAGE LENGTHS FOR INTERSECTION APPROACHES ON OTAY LAKES ROAD FOR TWO BUILDOUT PROJECT SITE ACCESS ALTERNATIVES

Signalized Intersection Turn Movements	w/Assumed Site Area Roadway Improvements and Optional Mitigation [1]	w/Assumed Site Area Roadway Improvements and Recommended Mitigation [2]
NB SR 125/Otay Lakes Road-EB Left	N/A [3]	**150'** [4]
Otay Lakes Road/Mid-Block Project Access-EB Left	**230'**	150'
Otay Lakes Road/Mid-Block Project Access-WB Left	**130'**	100'
Otay Lakes Road/Eastlake Parkway-EB Left	**380'**	**320'**

Notes:

1. Optional mitigation includes the provision of access to the project site from a mid-block traffic signal along Otay Lakes Road between Eastlake Parkway and SR 125 and the provision of ramps to and from SR 125 to the north at Eastlake Parkway.
2. Recommended mitigation includes direct access from the site to the Otay Lakes Road/SR 125 interchange and the provision of ramps to and from SR 125 to the north.
3. N/A = Not Applicable, no direct access to project site on this approach.
4. Bold numbers reflect double left turn bays at signalized intersection approaches. Unbold numbers reflect single lane left turn bays at unsignalized intersection approaches.

APPENDIX J

MEMORANDUM TO HAL ROSENBERG DATED APRIL 14, 1992

EASTLAKE EIR TRANSPORTATION ANALYSIS

SIGNAL TIMING PROGRESSION ANALYSIS ON OTAY LAKES

MEMORANDUM

TO: Hal Rosenberg, City of Chula Vista

FROM: Daniel F. Marum, JHK & Associates
Marcos Esparza, JHK & Associates

DATE: April 14, 1992

RE: Signal Timing Progression Analysis on Otay Lakes Road for Eastlake I SPA Amendment Traffic Study (JHK 2885)

Attached is a portion of a chapter entitled "Additional Traffic Engineering Analyses" to be included in the "Eastlake I SPA Amendment Traffic Analysis Final Report". This portion pertains to a signal timing progression analysis performed along Otay Lakes Road for two signal placement alternatives under the General Plan Buildout plus Proposed Project land use.

SIGNAL TIMING PROGRESSION ANALYSIS

A signal timing progression analysis was conducted along Otay Lakes Road for the following signal placement alternatives under the General Plan Buildout plus Proposed Project land use:

Alternative No. 1. - Construct a new mid-block signal at the main entrance intersection between future SR 125 and Eastlake Parkway as proposed on the Project Site Plan.

Alternative No. 2. - Eliminate the mid-block signal and restrict out-bound left turn movements from the site at this location. Modify the Project Site Plan interna circulation system to provide for a new main entrance and right-turn only out-bound at th terminus of the SR 125 Northbound off-ramp at Otay Lakes Road.

Figure 9-1 graphically illustrates these alternatives. For this analysis, JHK utili the PASSER II-90 software package to determine the optimal signalization scheme for

Otay Lakes Road arterial segment within the study area under each of the alternatives shown in Figure 9-1 and described above.

Methodology

PASSER II-90, an acronym for the Progression Analysis and Signal System Evaluation Routine, was developed by the Texas Transportation Institute. The software package provides recommended signal timing reports for both under- and over-saturated arterial traffic operation. The program allows for various methods of left-turn analysis and advanced capacity evaluation. PASSER II-90 was used to determine the optimal signal timing for the best progression that could be implemented on the Otay Lakes Road signal system under each of the alternative signal configurations shown on Figure 9-1.

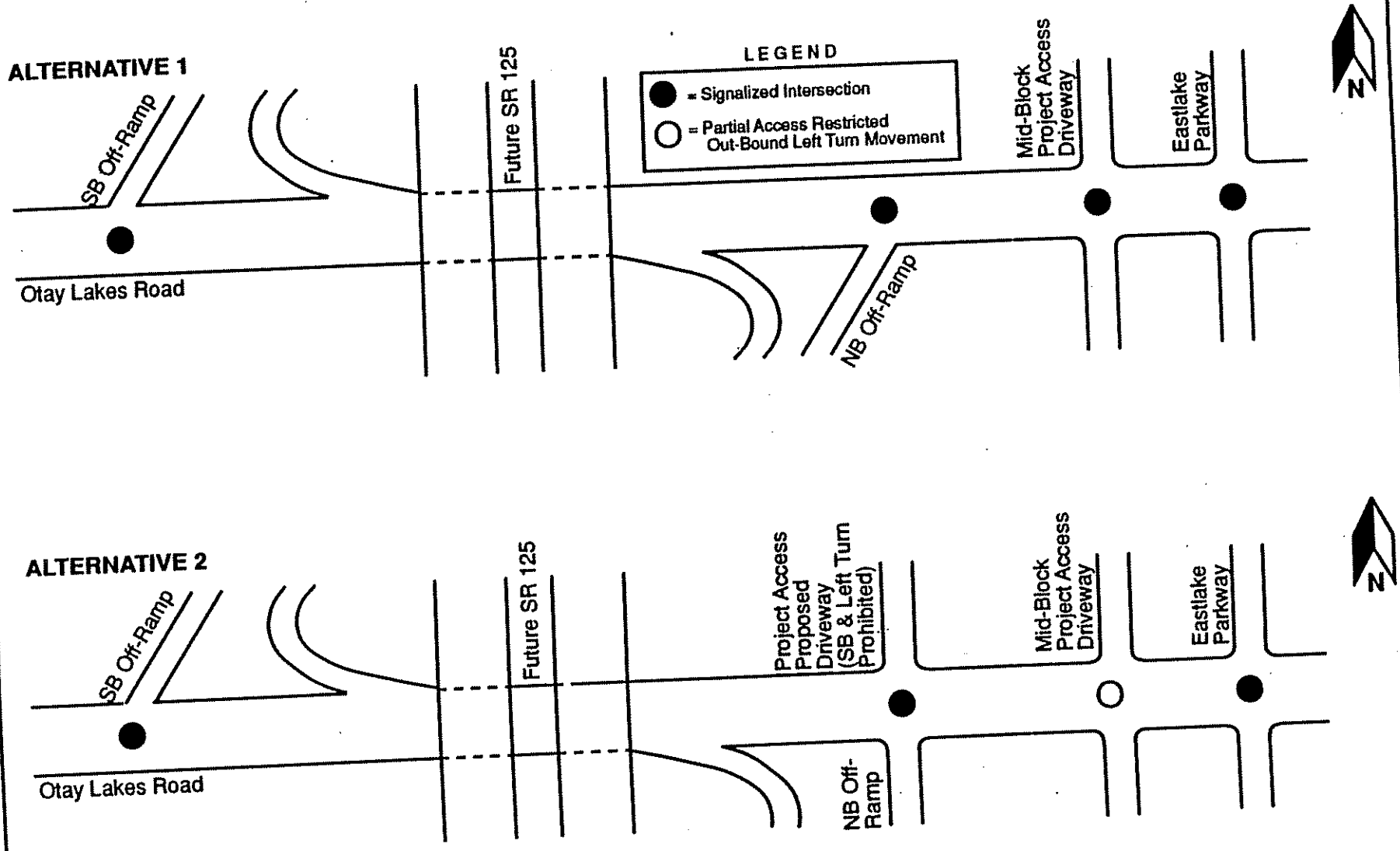
Findings

The following Tables 9-1 and 9-2 present summaries of the PASSER II-90 results. Also, the following technical observations were derived from reviewing the outputs:

- Both alternatives retain good progression in both AM and PM peak hours.
- Alternative No. 1. results in a greater total system delay than Alternative No. 2 for both peak hours (11% greater than Alternative 2). In the PM peak hour, the difference is particularly substantial (17.5% greater than Alternative 2).
- Alternative No. 1 results in a greater number of total system stops than Alternative No. 2 for both peak hours (14.3% greater than Alternative No. 2). In the PM peak hour, the difference is particularly substantial (18.6% greater than Alternative No. 2).

ANALYSIS OF FUTURE ARTERIAL LEVELS OF SERVICE

An analysis of Otay Lakes Road was conducted using the Urban and Suburban Arterials procedures (Chapter 11) of the Highway Capacity Manual. This analysis provides an indication of future levels of service along Otay Lakes Road by direction (east-west). The arterial levels of service are based on the average travel speed for the segments under consideration. For this analysis, the section of Otay Lakes Road between the SR 125 Southbound Off-ramp and Eastlake Parkway was considered. The average travel speed of all through vehicles is computed from the running time on the arterial segment



EASTLAKE I SPA AMENDMENT

Traffic Analysis Project

Figure 13-1

ARTERIAL PERFORMANCE ANALYSIS SIGNAL PLACEMENT ALTERNATIVES

jhk & associates

Table 13-2

PASSER II-90 RESULTS - ALTERNATIVE NO. 1
GENERAL PLAN BUILDOUT WITH PROPOSED PROJECT

Intersection	Delay (sec/veh) AM	Delay (sec/veh) PM	V/C AM	V/C PM	LOS AM	LOS PM
Otay Lakes Rd/SR 125 SB Ramp	12.8	13.9	0.85	0.74	B	B
Otay Lakes Rd/SR 125 NB Ramp	8.4	8.6	0.73	0.76	B	B
Otay Lakes Rd/Project Access Driveway	9.5	26.9	0.76	1.12	B	D
Otay Lakes Rd/Eastlake Parkway	22.8	24.2	0.91	0.98	C	C

	AM	PM
Band Width EB =	40 sec.	32 sec.
WB =	31 sec.	33 sec.
Average Progression Speed =	42 mph	38 mph
Progression Efficiency =	0.32	0.30
Average Intersection Delay =	13.4 sec/veh	19.4 sec/veh
Total System Delay =	73.4 veh-hr/hr	112.9 veh-hr/hr

Note: Future delays as calculated by PASSER II-90 software may not agree with calculations of individual intersection levels of service by the CINEMA software version of the 1985 Highway Capacity Manual Operational Analysis Methodology.

Table 13-3

PASSER II-90 RESULTS - ALTERNATIVE NO. 2
GENERAL PLAN BUILDOUT WITH PROPOSED PROJECT

Intersection	Delay (sec/veh) AM	Delay (sec/veh) PM	V/C AM	V/C PM	LOS AM	LOS PM
Otay Lakes Rd/SR 125 SB Ramp	13.7	14.2	0.85	0.74	B	B
Otay Lakes Rd/SR 125 NB Ramp	9.9	18.8	1.74	1.02	B	C
Otay Lakes Rd/Eastlake Parkway	25.7	29.6	1.00	1.03	D	D

	AM	PM
Band Width EB =	39 sec.	25 sec.
WB =	33 sec.	28 sec.
Average Progression Speed =	41 mph	38 mph
Progression Efficiency =	0.33	0.24
Average Intersection Delay =	17.1 sec/veh	21.8 sec/veh
Total System Delay =	71.6 veh-hr/hr	96.1 veh-hr/hr

Note: Future delays as calculated by PASSER II-90 software may not agree with calculations of individual intersection levels of service by the CINEMA software version of the 1985 Highway Capacity Manual Operational Analysis Methodology.

and the intersection approach delay. Average travel speed is influenced by the number of signals and the average intersection delay. Table 9-3 illustrates the criteria for judging arterial level of service.

For the analysis of the Otay Lakes Road facility, Otay Lakes Road was assumed to be a Class I arterial. Table 9-4 summarizes the arterial levels of service for both eastbound and westbound directions for the General Plan Buildout condition for Alternatives 1 and 2. Also, the following technical observations were derived from reviewing the results:

- Alternative No. 2 achieves a better or equal travel speed when compared to Alternative No. 1 for all the cases (i.e. both directions and both peak hours).
- The differences in travel speeds is greater for the eastbound direction. In the eastbound direction, Alternative No. 2 has a better LOS than Alternative No. 1 for both peak hours.

MINIMAL PROJECT OBJECTIVES

The two alternative signalization scenarios were evaluated in terms of measure of performance and the extent to which they met the following minimal project objectives:

- To maintain high quality traffic flow and arterial performance on the major circulation element facility of Otay Lakes Road.
- To provide high quality and safe access to and from the proposed commercial development centers to the north and south of Otay Lakes Road.
- To conform to the minimum signal spacing criteria for a Prime Arterial (one-half mile intervals) identified in the City of Chula Vista Element and Street Design Standards Policy.

EVALUATION RESULTS

Based on the analyses performed, Otay Lakes Road performs better without the mid-block signal. Both PASSER II and Arterial LOS analyses indicate more efficient traffic flow without the mid-block signal. Specifically, mid-block signal increases the

number of stops which occur within the system, and also increases total delay anticipated within the system, particularly during PM peak hours. This increase in total delay confirms the conclusions reached in the analysis of Arterial Performance which indicated that the average travel speed on Otay Lakes Road is lower with the mid-block signal than without it.

CONCLUSIONS

The intersection analysis conducted as part of the Eastlake EIR analysis concluded that either of these options would improve the LOS at Eastlake Parkway and Otay Lakes Road to an acceptable condition (LOS D). However, the alternative of providing a mid-block signal on Otay Lakes Road at the main entrance to the Village Center is not appropriate under the City's General Plan designation for a Six Lane Prime Arterial and the City's Street Design Standards for that classification. Based on the requirements to carry a high volume of traffic (50,000 vehicles per day), the General Plan designated this segment of Otay Lakes Road as a Six Lane Prime Arterial. The City's Street Design Standards Policy states that "The prime arterials are designed to move traffic between major major generators. Typically, major signalized intersections shall be spaced at one-half mile intervals.... Access to and from prime arterials from minor streets or abutting properties shall typically be restricted. Should a property have frontage only on the prime arterial facility, driveway or minor street access shall be permitted at locations deemed appropriate by the City Engineer. These access points shall be limited only to right turns in and right turns out. Also, these access points shall require additional roadway width to provide for acceleration and deceleration lanes".

City Staff believed that with the very high level of traffic, a mid-block signal would further lower the level of service for this critical segment of Otay Lakes Road between future SR 125 and Eastlake Parkway. With the mid-block signal, there would be less than 750 feet to the signal at Eastlake Parkway to the east and less than 900 feet to the future signal at the northbound off ramp from SR 125 to the west. Because for the poor spacing for the proposed mid-block signal relative to the signals at each end of the segment, and the additional signal which would serve as an interruption to orderly traffic flow, City staff believed that this option would be less traffic efficient to Otay Lakes Road overall, even though it improved the LOS at the Eastlake Parkway intersection. Therefore, the analysis of the impact of the potential mid-block signal confirmed that the mid-block signal would cause less desirable traffic operations along Otay Lakes Road as compared to the recommended mitigation alternative. This would also result in more delay to motorists, greater use of energy and a greater impact to the air quality due to the vehicle delay, plus additional on-going annual maintenance and operational costs for the City.

Table 13-4

LEVEL OF SERVICE CRITERIA FOR ARTERIALS
HCM METHOD

Arterial Class	**I**	**II**	**III**
Range of Free Flow Speeds (mph)	45 to 35	35 to 30	35 to 25
Typical Free Flow Speed (mph)	40 mph	33 mph	27 mph
Level of Service	**Average Travel Speed (mph)**		
A	>=35	>=30	>=25
B	>=28	>=24	>=19
C	>=22	>=18	>=13
D	>=17	>=14	>=9
E	>=13	>=10	>=7
F	<13	<10	<7

Source: HCM, Chapter 11, "Urban And Suburban Arterials".

Table 13-5

ARTERIAL LEVEL OF SERVICE
HCM METHOD
PEAK HOUR CONDITIONS

	Eastbound				Westbound			
	Average Travel Speed (MPH)		Level of Service (LOS)		Average Travel Speed (MPH)		Level of Service (LOS)	
	AM	PM	AM	PM	AM	PM	AM	PM
Alternative 1	21.8	21.5	D	D	15.2	11.9	E	F
Alternative 2	25.1	25.6	C	C	15.2	13.6	E	E

Source: HCM, Chapter 11, "Urban and Suburban Arterials".