FINAL

JUL 30 1985

SUMMARY
Route Concept Report
Route 130
SCl 0.00 to 43.3

This report defines the development concept for Route 130 in District 4 for a 20-year planning period (1985-2005).

Route Concept

Segment A: Route 101 to Mt. Hamilton Road -
- SCl 0.00 to 3.66 F-5 2-4 lane conventional

Segment B: Mt. Hamilton Road to Lick Observatory -
- SCl 3.66 to 22.50 A-50 2-lane conventional

Segment C: Lick Observatory to SCl/STA Co. Line -
-SCl 22.50 to 43.30 Un-Constructed

Concept Rationale

Route 130 is a recreational and residential route, also commercial establishments are located along the route in Segment A.

Areas of Concern

There are a number of short radius curves between the Alum Rock/ Mt. Hamilton Road intersection and Lick Observatory located on the summit of Mt. Hamilton.

Improvements (Post 1984 STIP)

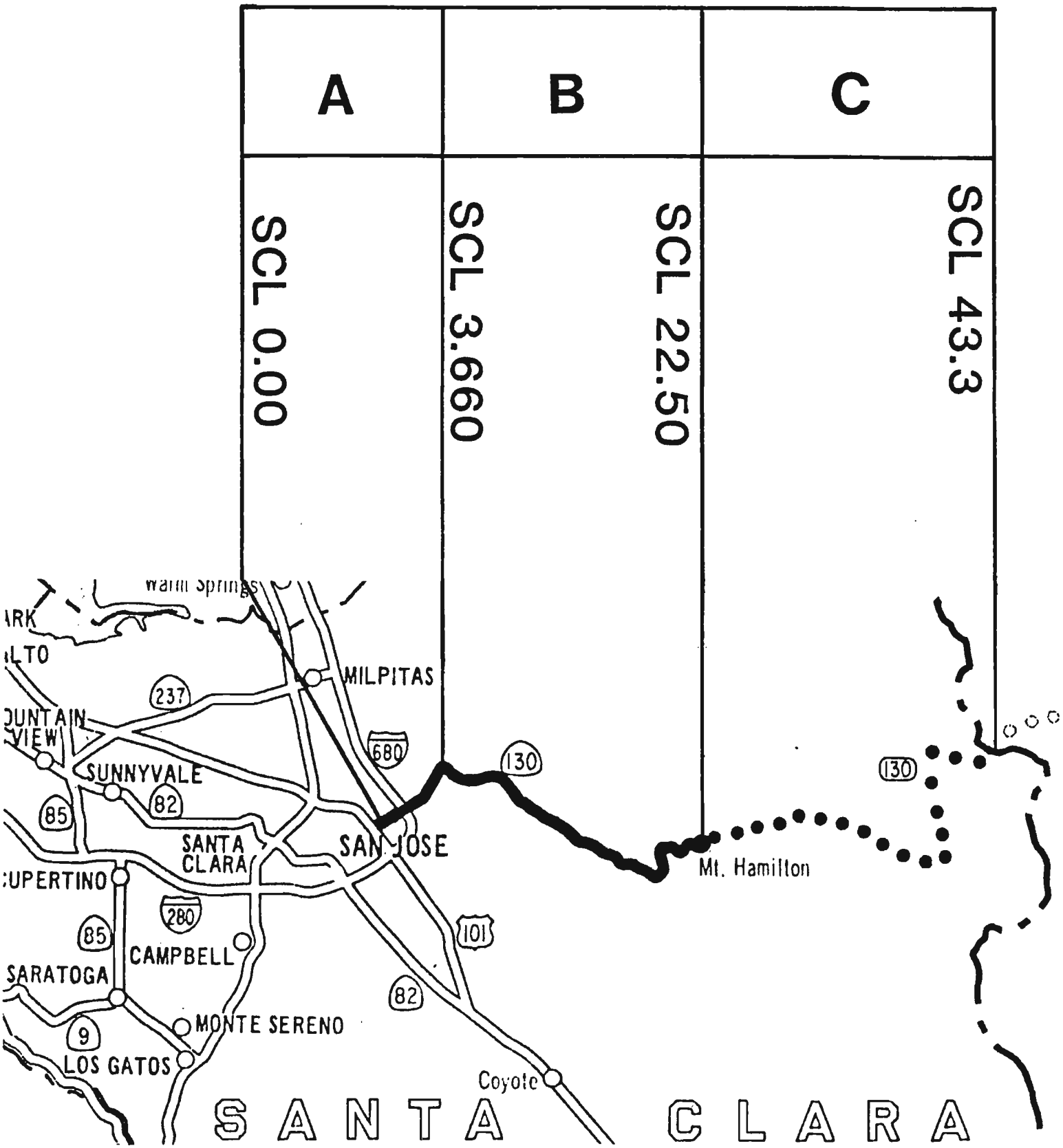
None

Route Description

Route 130 is located entirely within Santa Clara County, the constructed section is approximately 22 miles long and the un-constructed section is 20.8 miles long.

The first 4 miles of the route, which is known as Alum Rock Avenue, is located in heavily developed east San Jose. The remainder of the route is a narrow mountainous road leading to Mount Hamilton (EL. 4,209 feet) and Lick Observatory, the observatory is operated by the University of California.

LOCATION MAP
Route 130



ROUTE CONCEPT REPORT

ROUTE 130

SCl 0.00 to SCl 43.3

Prepared under the direction of:

for CECIL L. SMITH, Chief Date
Transportation Planning
District 4

Recommended Approval:

JOHN VOSTREZ Date
Deputy District Director
Planning and Programming

I approve this Route Concept Report as the guide toward which today's decisions and/or recommendations should be directed.

Approved:

BURCH C. BACHTOLD Date
District Director of
Transportation

Approved:

D. L. WIEMAN, Chief Date
Division of Transportation
Planning

Approved:

DONALD L. WATSON Date
Division of Highways and
Programming

Approved:

JACK KASSEL Date
Division of Project
Development

STATEMENT OF PLANNING INTENT

The Route Concept Report (RCR) is a planning document which expresses the Department's judgment on what the characteristics of the state highway should be to respond to the projected travel demand over the 20-year planning period. The RCR contains the Department's goal for the development of each route in terms of level of service and broadly identifies the nature and extent of improvements needed to reach those goals. The RCR then provides the basis for the preparation of Route Development Plans (RDP) and the system analysis which indicates the level of service provided on the system at a given level of funding.

Route concept reports are prepared in the districts and represent the combined expertise of district staff. Facility dimensions (e.g., roadway widths or number of lanes on a multi-laned facility) discussed in the RCR represent an initial planning approach to scoping candidate improvements and determining estimated costs.

All information in the RCR is subject to change as conditions change and new information is obtained. Consequently, the nature and size of identified improvements may change as they move through the project development stages, with final determinations made at the time of project planning and design. If the nature and size of improvements change from that included in this report during later project development stages, this will be cause to review the RCR for this route.

Route 130 is a commercial and residential route. From Route 101 to Clayton Road (PM 0.00 to 6.06), the route is classified as a principal arterial, the remaining section of the route is located in a rural area and is classified as a minor collector.

Route 130 is not a SHELL route (Sub system of Highways for Extra Legal Loads).

The Legislative description of Route 130 is as follows:

> "Route 130 is from Route 101 near San Jose to Patterson via the vicinity of Mount Hamilton".

Segment A: SCL PM 0.00 to 3.66

This segment runs from Route 101 to the intersection at Alum Rock Avenue and Mount Hamilton Road. At present, this segment is a 2-4 lane conventional highway with 0 to 8 foot shoulders and a 0 to 16 foot median. The segment is located in a heavily developed commercial and residential area.

The Santa Clara County Transit operates bus lines in this segment. No park and ride lots are located along Route 130, and no rail facilities are in the area. Bicyclists use this segment as a commuter and recreational route.

The 1982 AADT volumes range from 7,000 west of Mount Hamilton Road to 34,000 between Junction Route 101 and King Road. A.M. Peak hour traffic volume were the basis of this report. The D/C ratio is 1.13 with a Level of Service F-10. TSM measures should be considered to improve the Level of Service. Alum Rock Avenue (Route 130) particularly lacks left-turn channelization and coordinated signalization.

The 1995 (2005) projected AADT volumes range from 10,000 (12,000) at Mt. Hamilton Road to 50,000 (59,000) east of King Road. The 1995 D/C ratio is 1.59 with a Level of Service F-5, 2005 D/C ratio is 1.97 and a LOS of F-5.

The Route 101/130 interchange is scheduled to be modified, this is programmed in the 1984 STIP with construction to take place F.Y. 1987-88.

From a period of January 1981 to December 1983, a total of 50 accidents, with 3 fatalities and 37 injuries occurred in Segment A. The accident rate is 1.49 accidents per MVM, which is below the statewide average of 3.16 accidents per MVM.

The Route Concept is to maintain the present number of lanes. Due to the commercial and residential development that lies adjacent to Route 130 no improvements are planned.

Segment B: SCL PM 3.66 to 22.50

This segment begins at the intersection of Alum Rock Avenue and Mount Hamilton Road. The segment proceeds up Mount Hamilton to Lick Observatory. Segment B is a conventional highway with 2 lanes and a 0 -2 foot shoulder. It is characterized by narrow mountain roads and short radius curves.

There is no bus or rail service available. Bicyclists use this segment for recreational purposes.

The 1982 AADT volumes range from 1,500 at Alum Rock Avenue/ Mount Hamilton Road to 400 at Quimby Road all the way to to Lick Observatory. The V/C ratio is .16 with a Level of Service A-40.

The 1995 (2005) projected AADT volumes range from 1,000 (1,000) at Clayton Road through the summit to 2,000 (2,500) at Alum Rock Avenue/Mount Hamilton Road. The 1995 D/C ratio is .23 with a Level of Service A-40, the 2005 D/C ratio is .24 and a LOS of A-40.

A total of 24 accidents occurred in Segment B from the period of December 31, 1981 to January 1, 1983, there were 23 injuries and no fatalities. The accident rate is 6.19 accidents per MVM which is above the statewide average of 4.14 accident per MVM.

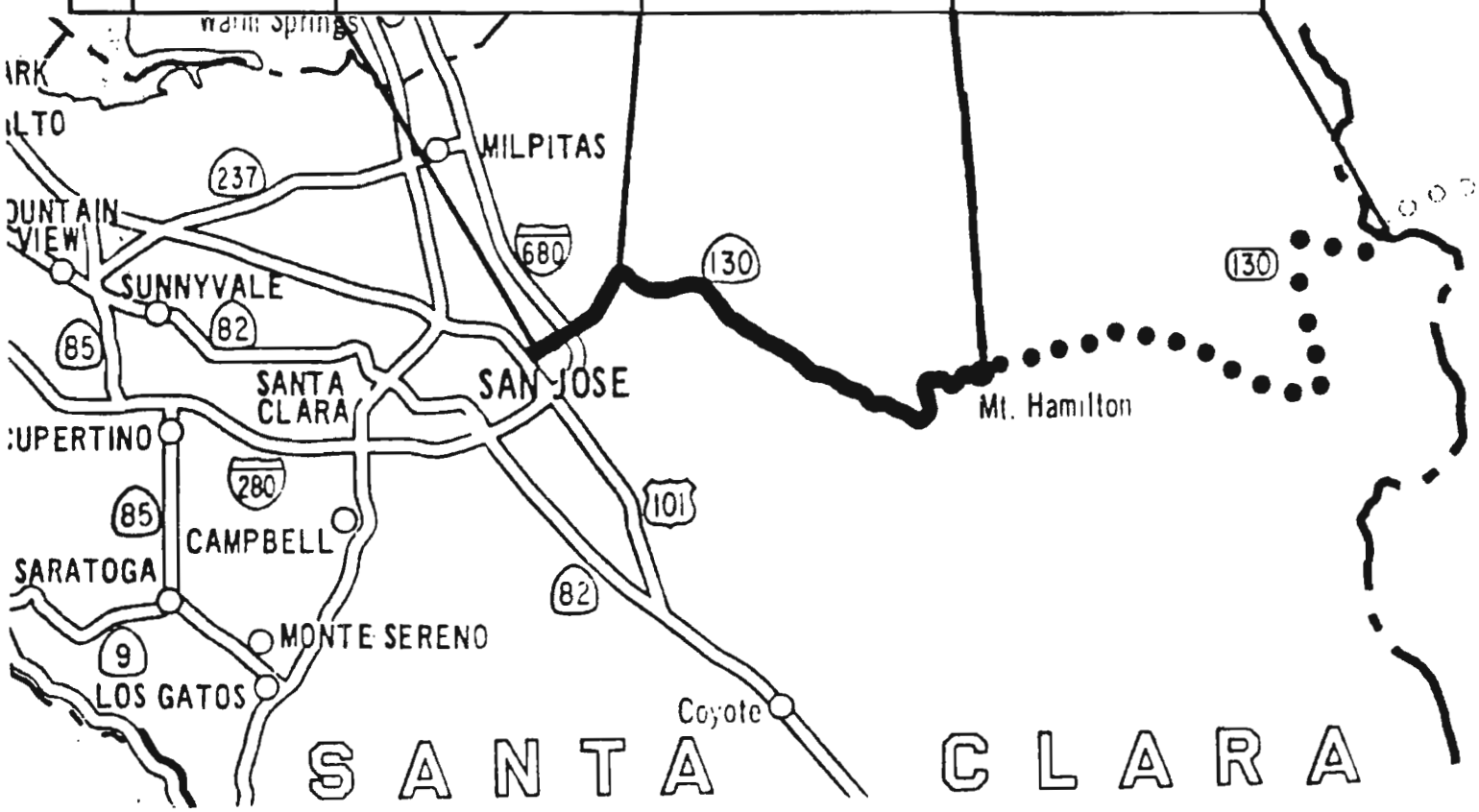
The Route Concept is to maintain the present number of lanes. No improvements are planned.

Segment C: SCL PM 22.50 to 43.30

At the present time, this segment is un-constructed and not adopted. It runs from Lick Observatory on the summit of Mount Hamilton to the Santa Clara/ Stanisluas County line. No changes in the status of this segment is anticipated at this time.

EXHIBIT A

SEGMENT		SCL 0.00 A	SCL 3.880 B	SCL 22.50 C	SCL 43.3
NO. OF LANES	PRESENT	2-4	2	UNCONSTRUCTED	
	PROPOSED 1995	2-4	2		
	PROPOSED 2005	2-4	2		
LEVEL OF SERVICE	PRESENT	F-10	A-40		
	PROPOSED 1995	F-5	A-40		
	PROPOSED 2005	F-5	A-40		
TERRAIN		FLAT	MOUNTAINOUS		
GRADES		0-3%	6% or greater		
ACTUAL	Accidents Per MVM	1.49	6.19		
	Fatalities Per MVM	.089	.000		



EXPLANATION TO EXHIBIT A

LEVEL OF SERVICE

The Level of Service on a roadway is a measure of the speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, convenience, and operating cost. A roadway designed for a certain level of service will actually operate at different levels throughout the day. The level of service on a roadway varies inversely as some function of the traffic volume. The level of service indicated in Exhibit A represents the level of service during the AM peak hour.

TERRAIN

Terrain describes the adjacent topography as to its effect on construction cost. (F-Flat, R-Rolling, M-Mountainous) Flat reflects minor grading; rolling reflects moderate grading; mountainous reflects heavy grading as economic considerations. (Note that terrain is a measure of construction cost while grade is a measure of operating cost as used in this report.)

GRADES

Grade line, a generalization of the grades along the center line of the highway. Four types of codes are used. They are:

F - Flat grade, 0-3 percent upgrades and downgrades.

R - Rolling, 3-6 percent upgrades and downgrades and sustained grades less than 1/4 mile.

M - Moderate, grades greater than 6 percent for one-half or less of the segment length and sustained grades 1/4 to 3/4 mile in length.

S- Steep, grades greater than 6 percent for more than one-half the segment length and sustained grades greater than 3/4 mile in length.

ACCIDENTS PER MVM

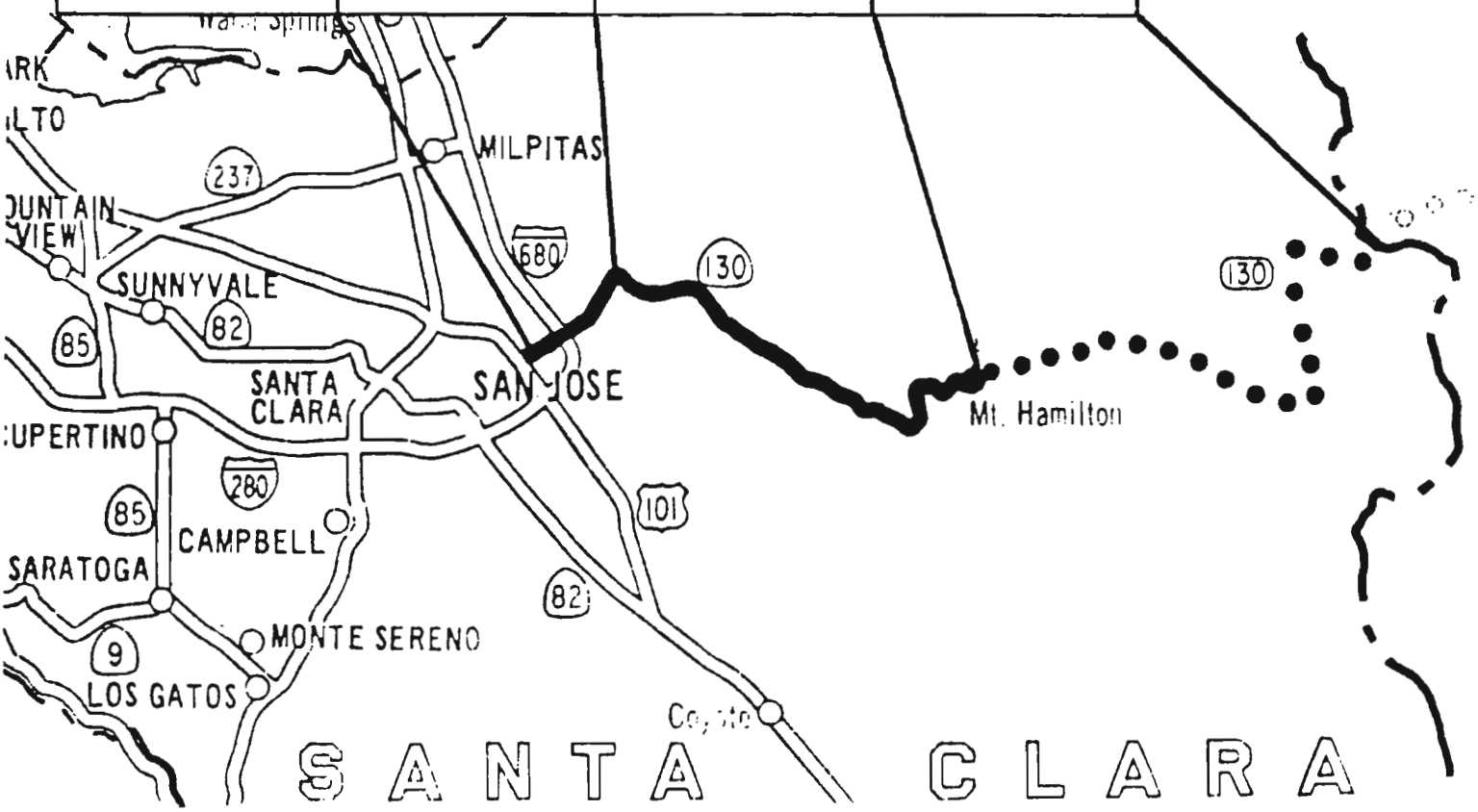
The number of accidents per million vehicle miles driven along the segment

FATALITIES PER MVM

The number of fatalities per million vehicle miles driven along the segment

EXHIBIT B

SEGMENT		SCL 0.00 A	SCL 3.880 B	SCL 22.50 C	SCL 43.3
P.H.V. AADT. (00) (.000)	1982	7-34	.4-1.5	UNCONSTRUCTED	
	1995	10-50	1-2		
	2005	12-59	1-2.5		
	1982	6-18	.6-3		
	1995	9-28	.7-3		
	2005	11-32	1-3		
AVE. HWY SPEED		45	40		
OPERATING SPEED		38	35		
V/C	1982	1.13	.16		
	1995	1.59	.23		
	2005	1.97	.24		
YEAR CAPACITY WILL BE REACHED		-------	-------		



EXPLANATION TO EXHIBIT B

AADT

Annual Average Daily Total (In Thousands) in both directions.

P.H.V.

Peak Hour Vehicles (In Hundreds). Number of vehicles in one direction during the A.M. Peak Hour.

AVE HWY SPEED

The Average Highway Speed is the weighted average of the design speeds within a highway section. (Design speed is a speed selected to establish specific minimum geometric design elements for a particular section of highway.) On non-engineered roads the average highway speed has been estimated.

OPERATING SPEED

A computed value based on the V/C ratio and the average highway speed. Basically, it represents the present operating speed during the present design hour volume of traffic on existing highway geometric. For segments of highway controlled by traffic signals, an "S" replaces the operating speed and generally represents speeds of 15 to 30 MPH.

V/C

Ratio of Volume to Capacity. Volume represents the number of vehicles per hour that want to travel the highway as represented by the present design hour volume. Capacity represents the maximum number of vehicles per hour the highway can carry as indicated in the Highway Capacity Manual.

D/C

Ratio of Demand to Capacity. Demand represents the projected number of vehicles per peak hour that will want to travel the highway. Capacity represents the maximum number of vehicles per hour the highway can carry.
(Projected Peak Hour Demand/Design Capacity.)

ROUTE 130 TRAFFIC TABLE

SEG	CO	POST MILE	TRUCK% AA DT	TRUCK% PK HR	AA DT	AM-PK AH	AM-PK BK	1982 NO LN	1982 V/C	L O S	NO LN	CAP	AA DT	AM-PK AH	AM-PK BK	1995 NO LN	1995 D/C	L O S	NO LN	AA DT	AM-PK AH	AM-PK BK	2005 NO LN	2005 D/C	L O S	NO LN
A	SCL	0.00						SAN JOSE ROUTE 101																		
			3	2	34	18	18	2	1.13	F	3	900	47	26	26	2	1.59	F	4	56	31	31	2	1.91	F	5
A	SCL	0.41						KING ROAD																		
			4	2	30	17	17	2	1.06	F	3	850	42	25	25	2	1.59	F	4	50	30	30	2	1.88	F	5
A	SCL	1.71						CAPITOL AVE.																		
			4	2	28	13	19	2	1.19	F	3	950	38	19	28	2	1.74	F	4	46	22	33	2	2.07	F	5
A	SCL	2.19						WHITE ROAD																		
			4	2	23	10	19	2	1.19	F	3	950	32	14	26	2	1.65	F	4	38	17	32	2	1.97	F	5
B	SCL	4.66																								
			5	3	0.4	0.6	0.6	1	0.07	A	1	800	0.7	1.4	1.4	1	0.17	A	1	0.8	1.6	1.6	1	0.20	A	1
M	B	SCL						6.06																		
			3	2	0.4	0.6	0.6	1	0.07	A	1	800	0.6	0.6	0.6	1	0.08	A	1	0.8	0.8	0.8	1	0.09	A	1
B	SCL	11.23						QUIMBY ROAD																		
			3	2	0.4	0.4	0.5	1	0.06	A	1	800	0.6	0.6	0.6	1	0.08	A	1	0.8	0.8	0.8	1	0.09	A	1
B	SCL	17.24						KINCAID ROAD																		
			3	2	0.4	0.5	0.5	1	0.06	A	1	800	0.6	0.6	0.6	1	0.08	A	1	0.8	0.8	0.8	1	0.09	A	1
B	SCL	22.50						PEAK-MT. HAMILTON																		

EXPLANATION TO TRAFFIC VOLUME TABLES

COLUMN	DESCRIPTION
SEG	Route Segment
CO	County Abbreviations
POST MILE	Post Mile in County
AADT	Annual Average Daily Traffic (Thousands)
AM-PK	Morning Peak Hour Traffic
AH	Volume - Ahead Direction (Hundreds)
BK	Volume - Back Direction (Hundreds)
NO L	Number of Lanes (Existing) - One Direction
V/C	Volume/Capacity: Ratio of Peak Hour Volume to Maximum Number of Vehicles per Hour for Peak Direction During Peak Hour (Peak Hour Volume/Capacity)
D/C	Demand/Capacity: Ratio of Volume of Projected Demand to Maximum Number of Vehicles per Hour (Projected Peak Hour Demand/Design Capacity)
LOS	Level of Service According to Functional Classification of the Route Relative to the Terrain and Facility
LN	Number of Lanes Needed to Meet the Conceptual LOS
CAP	Capacity of Facility (Capacity per Lane)

Facility	Vehicles per Hour per Lane Expected Pk Hr Capacity
Freeway	2000
Expressway or Divided/ One-Way Arterial	1500
Other Type of Arterial	1350
Rural Road	1200
City Street or Mountainous Road	800

% TRUCK AADT	Truck Percent of the Average Annual Daily Traffic Count
% TRUCK PK HR	Truck Percent at Peak Hour

RELATIONSHIP OF LEVEL OF SERVICE TO OPERATING SPEED

Level of Service	Facility Type	Minimum Operating Speed	Assigned Operating Level of Service
B	Freeways, Expressways, or Multi-Lane Divided Conventional Highways	55 MPH	B-55
B	Two-Lane Conventional Highways	50 MPH	B-50
C	Freeways or Expressways	50 MPH	C-50
C	Multi-Lane Conventional Highways	45 MPH	C-45
C	Two-Lane Conventional Highways	45 MPH	C-45
C	Two-Lane Conventional Highways	40 MPH	C-40
D	Freeways or Expressways	40 MPH	D-40
D	Conventional Highways	35 MPH	D-35
D	Conventional Highways with controlling traffic signals	15-30 MPH	D-35

The operating level of service on a roadway is a measure of the speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, convenience, and operating cost. A roadway designed for a certain level of service will actually operate at different levels throughout the day. The level of service on a roadway varies inversely as some function of the traffic volume.

In the Route Concept Report, the level of service is followed by the minimum operating speed.

* Not all conditions are represented by this chart.

ROADWAY LEVEL OF SERVICE

EXPLANATION

LEVEL OF SERVICE A VOLUME/CAPACITY RATIO = .00 - .40

Free flow conditions
Low volumes
High operating speed
Uninterrupted flow
No restriction on maneuverability
Drivers maintain desired speeds
Little or no delays

LEVEL OF SERVICE B VOLUME/CAPACITY RATIO = .41 - .58

Stable flow conditions
Operating speeds beginning to be restricted

LEVEL OF SERVICE C VOLUME/CAPACITY RATIO = .59 - .80

Stable flow but speed and maneuverability
restricted by higher traffic volumes
Satisfactory operating speed for urban conditions
Delays at signals

LEVEL OF SERVICE D VOLUME/CAPACITY RATIO = .81 - .90

Approaching unstable flow
Low speeds
Major delays at signals
Little freedom to maneuver

LEVEL OF SERVICE E VOLUME/CAPACITY RATIO = .91 - 1.00

Lower operating speeds
Volumes at or near capacity
Unstable flow
Major delays and stoppages

LEVEL OF SERVICE F VOLUME/CAPACITY RATIO = 1.01 OR MORE

Forced flow conditions
Low speeds
Volumes below capacity, may be zero
Stoppages for long periods because of
downstream congestion

TRAVEL DEMAND PROJECTIONS METHODOLOGY (ABSTRACT)

1995 & 2005 Demand Person Trips Projections
34 x 34 ABAG/MTC Region Superdistricts Matrix
Computer-Assisted Four-Step Conventional Gravity
Model. (Housing & Employment based on ABAG's "Projections 83")

December 1983

INTRODUCTION: This medeling procedure developed traffic volume expansion factors and applied them to "census" volumes ("1980 Traffic Volumes on California State Highways") of State Highway segments at ABAG/MTC superdistrict (SD) borders (screenlines).

These projected 1995 and 2005 volumes were the basis for projecting volumes on all mainline segments for the 1983/84 "Route Concept Reports."

In essence, this methodology is consistent with the elments of the conventional "four-step" procedure for travel demand forecasting as summarized in the FHWA/UMTA outline for UTPS models and as described in the NCHRP guide for urban travel estimations ("Quick Response").

SUMMARY: Criteria and methods used in each one of the four "steps":

1. Trip Generation: Based on ABAG projections per 34 MTC "superdistrict." Productions per MTC-observed person trips produced and households; attractions per employment (and housing), adjusted to observed attractions.

2. Trip Distribution: Based on zonal trips produced and attracted, distribution factors based on travel times, and calibration factors derived from MTC-observed vs. simulated 1980 trip interchanges.

3. Assignment: Based on zonal trip interchanges, "fastest path" criteria and experience of travel patterns.

4. Modal Split: Implies; it was assumed that, on the segments evaluated, modal percentages and occupacy rates would remain essentially unchanged.

ASSUMPTIONS: The following parameters would remain essentially unchanged between 1980 and 2005:

1. Trip production rates, as functions of the number of households and their superdistrict of location.

2. Trip attraction rates and adjustment factors, as functions of jobs, housing units and superdistrict of location.

3. Speeds: Change in corridor speeds may be proportional to regionwide speed changes, or may differ without significantly affecting distribution or assignment.

4. Time vs. Distribution Factor Functions, and Calibration Factors. Increased socio-economic densities vs. higher fleet efficiencies and/or real earnings would have compensatory effects on trip lengths.