ROUTE CONCEPT REPORT

ROUTE 85

APRIL 1986

TRANSPORTATION PLANNING
DEPARTMENT OF TRANSPORTATION

DISTRICT 4

FINAL

APR 22 1986

SUMMARY

ROUTE CONCEPT REPORT
ROUTE 85

SCL PM R0.00 to R23.87

This report defines the concept for development of Route 85 in District 4, for a 20-year planning period. (1985-2005)

Route Concept

Segment A: SCL R00.00 to R18.45 Jct Rte 101 northwesterly to Jct I-280.

Unconstructed; facility type to be determined by current study.
This segment also includes designated Route 85 (Saratoga-Sunnyvale Road/De Anza Blvd.)

Segment B: SCL R18.45 to R23.87 Jct I-280 north to Jct Rte 101.

Widen and upgrade existing 4/6-lane freeway. Ultimate facility type to be determined by current study.

Areas of Concern

At the present time, most of the routes located in the South Bay are at or near capacity. The construction of the southern portion of Route 85 will greatly relieve the congestion that is now experienced in Santa Clara County during peak periods.

Concept Rationale

The entire length of Route 85 was adopted and declared a freeway by the California Highway Commission in 1956-57. Santa Clara County has approved a local 1/2 cent sales tax increase, "Measure A" with the proceeds dedicated to the completion of Routes 85, 101 and 237 and their ultimate freeway development. Environmental and design studies now underway for these routes will determine the scope of development. All work is scheduled for completion by 1995.

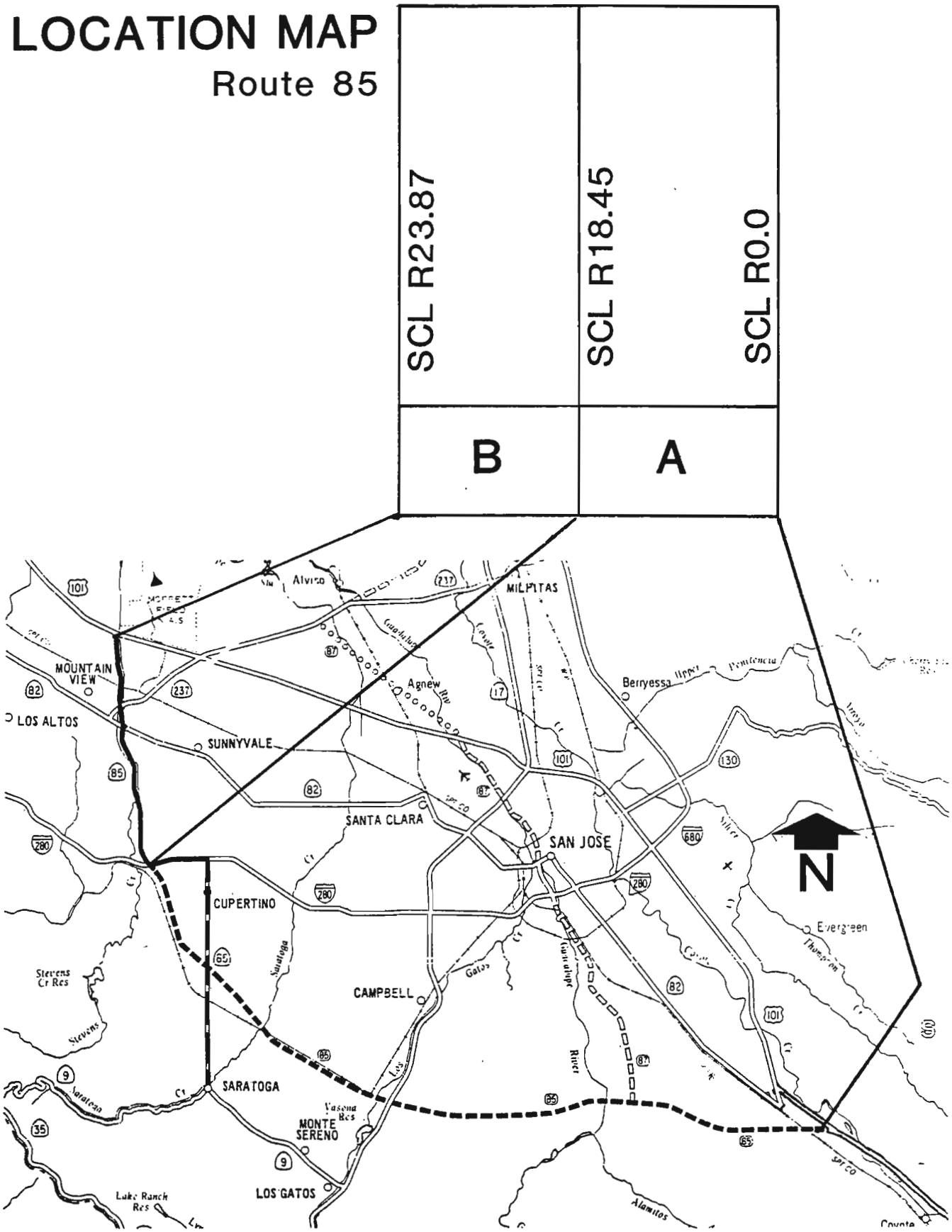
When Route 85 is entirely completed, the route will serve as a commuter and commercial route.

Improvements (Post 1984 STIP)

The entire route will be constructed or reconstructed as rapidly as design and Measure A funds become available.

LOCATION MAP

Route 85



LEGEND

- Constructed portion of Legislative Route 85
- Designated Route 85
- Unconstructed portion of Legislative Route 85

ROUTE CONCEPT REPORT

ROUTE 85

SCL R0.00 to SCL R23.87

Prepared under the direction of:

Cecil L. Smith 2/4/86

CECIL L. SMITH, Chief Date
Transportation Planning
District 4

Recommended Approval:

John Vostrez 2-6-86

~~GEORGE GRAY~~ 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 Bachtold 2/14/86

BURCH C. BACHTOLD Date
District Director
District 4

Approved:

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

Approved:

ALLAN HENDRIX, Chief Date
Division of Highways
and Programming

Approved:

VINCE PAUL, Chief Date
Division of Project
Development

ROUTE CONCEPT REPORT

ROUTE 85

SCL R0.00 to SCL R23.87

Route Description

Legislative Route 85 is a Federal-Aid Urban state highway and is functionally classified as a principal arterial in an urbanized area. The constructed portion of Legislative Route 85 is used primarily by commuters and commercial traffic, with congestion arising during the morning and evening commute periods.

Designated Route 85 includes both Saratoga-Sunnyvale Road and De Anza Blvd. these are municipal thoroughfares with traffic of a local nature.

Legislative Route 85 is approximately 23 miles long and lies entirely in Santa Clara County.

The Legislative description of Route 85 is as follows:

> "Route 85 is from Route 101 near Ford Road to Route 101 near Mountain View."

a. Segment A: This segment is presently unconstructed; it begins at the Route 101 interchange and Bernal Road in south San Jose. This unconstructed portion proceeds through San Jose, Monte Sereno, Campbell, Saratoga, Los Gatos and Cupertino. The segment ends at the junction with I-280 located in Cupertino.

The segment also includes designated Route 85; this section of Route 85 is commonly known as Saratoga-Sunnyvale Road from the junction with Route 9 to Bollinger Road in Cupertino. North of Bollinger Road Route 85 is known as De Anza Blvd. The remaining portion of the segment proceeds north on I-280 for approximately one mile where the constructed portion of Route 85 begins. Consult location map for further clarification.

b. Segment B: This segment of Route 85 begins at the Junction of I-280 in Cupertino and terminates at the Route 101 interchange near Moffett Field Naval Air Station in the City of Mountain View.

c. Designated Route 85: This portion of Route 85 extends from the junction of Route 9 near Saratoga to the junction of I-280 in Cupertino. Designated Route 85 is approximately five miles long, and traverses Saratoga-Sunnyvale Road and De Anza Blvd.

Upon completion of the presently unconstructed portion of Route 85, designated Route 85 will be relinquished to the appropriate local agencies, upon approval of all concerned parties. Thus, designated Route 85 will not be discussed within this report.

Background

The alignment of Route 85 was adopted by the California Highway Commission (now the California Transportation Commission) in 1956 and 1957. Freeway agreements were executed with local agencies in 1967. The acquisition of right of way was initiated by Caltrans, but was halted in 1972 due to fiscal constraints. Approximately 60% of the right of way has been acquired, the remaining right of way is presently being purchased.

In November of 1984, the voters of Santa Clara county passed a 1/2 cent sales tax increase which was termed "Measure A". This measure will provide funding for improvement to three Routes: 101, 237 and 85. Over 1 billion dollars is expected to be generated over the ten year period that "Measure A" will be in effect. The Santa Clara County Traffic Authority was formed to administer the distribution of funds.

Future Growth

Population growth projections from the Association of Bay Area Governments (ABAG) released June 1983, concerning growth in Santa Clara county state the following:

1) From the year 1980 to the year 2000, ABAG projects the population of Morgan Hill to grow 380% and the population of Gilroy will increase by 317%.
These growth projections are the highest in the entire Bay Area.

2) Between 1980 and 2000, San Jose will add a total of 141,000 new jobs and its population will increase by 21%.

3) Santa Clara County's population will increase by 209,000 (16%) between 1980 and 2000, employment will increase by 343,000 jobs (49%).

4) The growth patterns indicate a major shift of growth in the county, from a predominance of growth in the northwest and northeast to rapid growth in the southern portion.

5) Of the 131,000 new units added to the housing supply of the county between 1980 and 2000, 75% of this growth will be located in San Jose, Morgan Hill and Gilroy.

Route Segments

Segment A
04-SCL-85, PM R0.00 to R18.45
Route 101 (San Jose) - Route 280 (Cupertino)

1. Existing Facilities

a) Highway Facility

This segment is unconstructed.

b) 1984 STIP Projects (Within the area of influence)

FY 84/85

PM 0.0 to T17.4	Route 87 to I-280, West Valley Transportation Corridor Right of Way Acquisition
PM 0.0 to 9.3	Route 85-101/87, Route 87-85/101, Route 101-87/Lawrence Expressway, Guadalupe Corridor Construct Expressway

FY 86/87

PM 1.2 to 4.9	Miyuki Drive to Pearl Avenue, Guadalupe Corridor Construct Expressway
PM 1.2 to 4.9	Miyuki Drive to Pearl Avenue, Guadalupe Corridor Construct Interchange

c) Public Transit

This segment is unconstructed.

d) Bicycles

This segment is unconstructed.

e) Park and Ride

This segment is unconstructed.

f) Rail Transit

This segment is unconstructed.

2. Current Operating Conditions

Segment A is unconstructed.

3. Accident Rate

Segment A is Unconstructed.

4. Future Operating Conditions

A traffic model has been prepared by Caltrans based on the Santa Clara County Guadalupe Corridor model to estimate the future traffic demand on the unconstructed portion of Route 85 by the year 1990. The facility type and the number of lanes needed will be determined by the current study.

5. Route Concept

The preferred alternative will be determined upon the completion of the EIR.

6. Route Improvements

The ultimate improvements will be determined by the current study.

7. Status and Future Development

The Draft Environmental Impact Statement (DEIS) has been completed by Caltrans. Construction on this segment is scheduled to commence in 1988 or 1989. It is anticipated that construction will take approximately five to six years.

Public hearings on the construction of segment A have already begun, the final Environmental Impact Statement is scheduled for completion in late 1986.

The following is a list of alternatives concerning the construction of segment A, the final selection will be made in mid 1986.

a. No Project Alternative - No transportation facility in the corridor other than those currently proposed in the 1984 STIP.

b. Transportation System Management - Low cost projects to improve and upgrade the existing transportation facilities, both roadway and transit.

c. Light Rail Transit - A grade separated light rail facility which would extend from the Route 85/87 (Guadalupe Corridor) interchange northerly to a terminus in the vicinity of Stevens Creek Blvd. in Cupertino to the northwest. This alternative would extend the Route 85 roadway element portion of the Guadalupe Corridor project from Miyuki Drive to Route 101 in south San Jose. The total 1985 cost is estimated to be $300 million dollars.

d. 4-Lane Freeway with LRT - A grade separated access controlled four lane freeway with LRT in the median. The 1985 estimated capital cost for this alternative is $480 million dollars.

e. 4-Lane Freeway with LRT and HOV Lanes - A grade separated access controlled four lane freeway with LRT in the median and a High Occupancy Vehicle (HOV) lane between the LRT and first mixed flow traffic lane. The 1985 estimated capital cost for this alternative is $530 million dollars.

f. 4-Lane Freeway with Bus/HOV Transit-way - A grade separated access controlled four lane freeway with a Bus/HOV transit-way in the median. The 1985 estimated cost is $470 million dollars.

g. 6-Lane Freeway with Bus/HOV Transit-way - A grade separated access controlled six lane freeway with a Bus/HOV transit-way in the median. The 1985 estimated cost for this alternative is $490 million dollars.

h. 8-Lane Freeway - A grade separated access controlled eight lane freeway with a median wide enough for either a Bus/HOV transit-way, LRT system or future freeway widening which could be added at a later date. The 1985 estimated cost is $400 million dollars.

i. 8-Lane Freeway with LRT - A grade separated access controlled eight lane freeway with LRT in the median. The 1985 estimated cost is $530 million dollars.

Segment B
(04-SCL-85, PM R18.45 to R23.87)
Route 280 (Cupertino) - Route 101 (Mountain View)

1. Existing Facilities

a) Highway Facility

A six lane freeway (PM 18.45 to 19.48) begins at the junction of I-280 and proceeds to The Dalles Street Pedestrian O/C (Bridge #37-243). The shoulders are 10 to 13 feet wide with a 22-foot median. The remainder of Route 85 is a four lane freeway (PM 19.48 to 23.87) with an 8 foot wide shoulder and 46 foot wide median. The terrain is flat, grades range from 0 to 3%.

b) 1984 STIP Projects: (For fiscal year)

FY 86/87

PM R23.0 to R24.0	Stevens Creek Bridge to Route 101 Roadway Reconstruction

c) Public Transit

One express bus route operated by the Santa Clara County Transit runs along this segment between I-280 and Route 237. Number E117 express bus connects the residential areas in Campbell with the industrial areas near Moffett Field in Mountain View. Service is provided only during commute hours with 30 minute headways.

d) Bicycles

Bicycle riding is prohibited along this segment due to its freeway status. However, numerous city streets are available to bicyclists wishing to use a parallel route.

e) Park and Ride

There are no park and ride facilities located along this segment.

f) Rail Transit

The Route 85 corridor is not served by rail transit. Caltrain serves the Route 101 corridor.

2. Current Operating Conditions

The 1982 Annual Average Daily Traffic (AADT) for this segment ranges from 76,000 south of Fremont Avenue to 43,000 south of the Route 101 interchange. The northbound AM peak hour volumes range from 2,400 to 4,300, the southbound AM peak hour volumes range from 2,400 to 4,300.

The Volume to Capacity ratio (V/C) is .74 with a level of service (LOS) of C-40.

3. Accident Rate (1/81 to 12/83)

The total accident rate for the segment was .59/MVM (Million Vehicle Miles) the statewide average total accident rate for similar facilities was 1.21/MVM. The fatality rate was .005/MVM. The statewide average fatality rate was .016/MVM.

4. Future Operating Conditions

The projected 1995 (2005) AADT ranges from 81,000 (89,000) south of Fremont Avenue to 52,000 (56,000) at Route 101.

The 1995 AM peak hour volumes for the northbound direction range from 2,900 to 4,500 vehicles, the southbound AM peak hour volume for the southbound direction is the same as the northbound direction. The 2005 AM peak hour volumes for the northbound direction range from 3,100 to 4,900 vehicles, the southbound volumes are the same as the northbound.

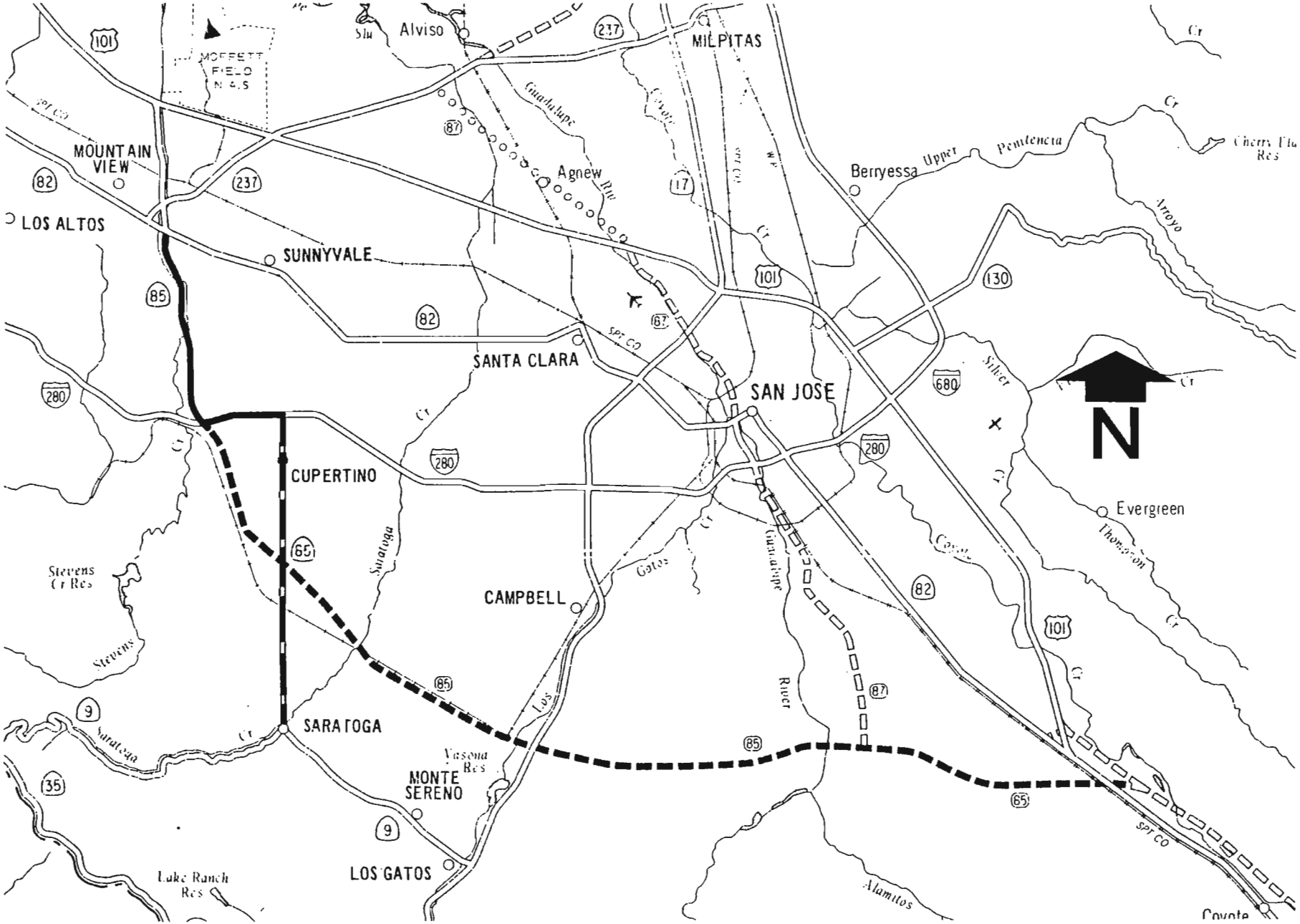
The Demand to Capacity ratio (D/C) for 1995 is .87 with a Level of Service of D-35. The D/C ratio for 2005 is .94 with an LOS of E-25.

5. Route Concept

The concept for this segment is to widen and upgrade from the present four to six lane freeway. The final concept will be determined upon completion of the current triangle study. The study is expected to be completed by March 1988. The ultimate concept will be determined by the triangle study. The lead agency for this study is Caltrans in association with local authorities. The study includes Route 85 from the Jct. of 85/280 to the Jct. of 85/101 (PM 17.7 to 23.9) the second route is Route 101, the limits are Fair Oaks Ave. to the Jct. of 101/237 (PM 44.9 to 46.8) the last route included in the study is Route 237, from the beginning of the route to Mathilda Ave. (PM R0.4 to 3.33).

6. Route Improvements

Widen existing facility. Ultimate improvements to be determined by current study.

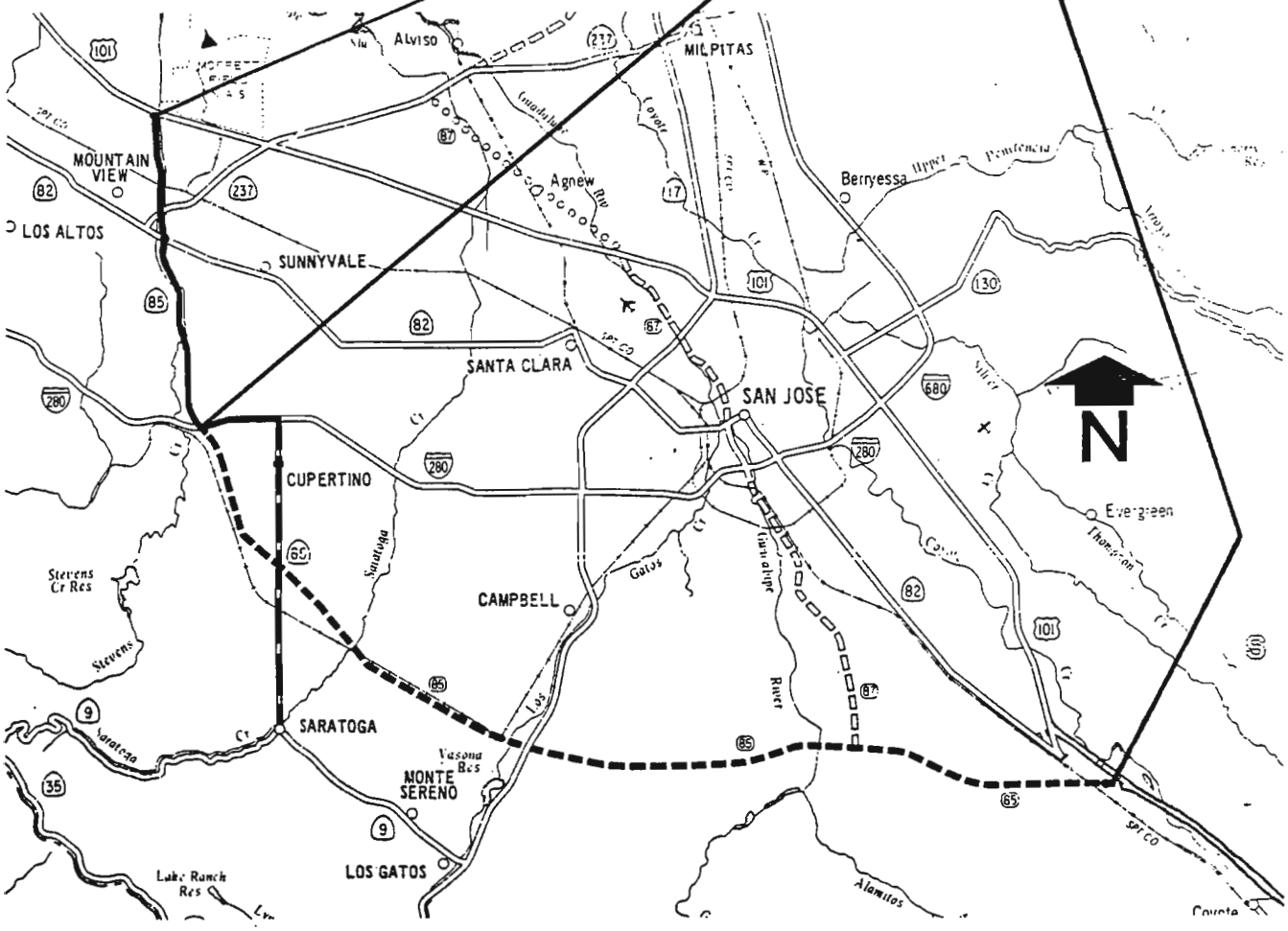


LEGEND

- Constructed portion of Legislative Route 85
- Unconstructed portion of Legislative Route 85
- Designated Route 85

EXHIBIT A

SEGMENT		SCL R23.87 B	SCL R18.45 A SCL R0.0
P.H.V. AADT. (00) (.000)	1982	43-76	UNCONSTRUCTED
	1995	52-81	
	2005	56-89	
	1982	38	
	1995	42	
	2005	45	
AVE. HWY SPEED		55	
OPERATING SPEED		46	
V/C	1982	.74	
	1995	.87	
	2005	.94	
YEAR CAPACITY WILL BE REACHED		-----	

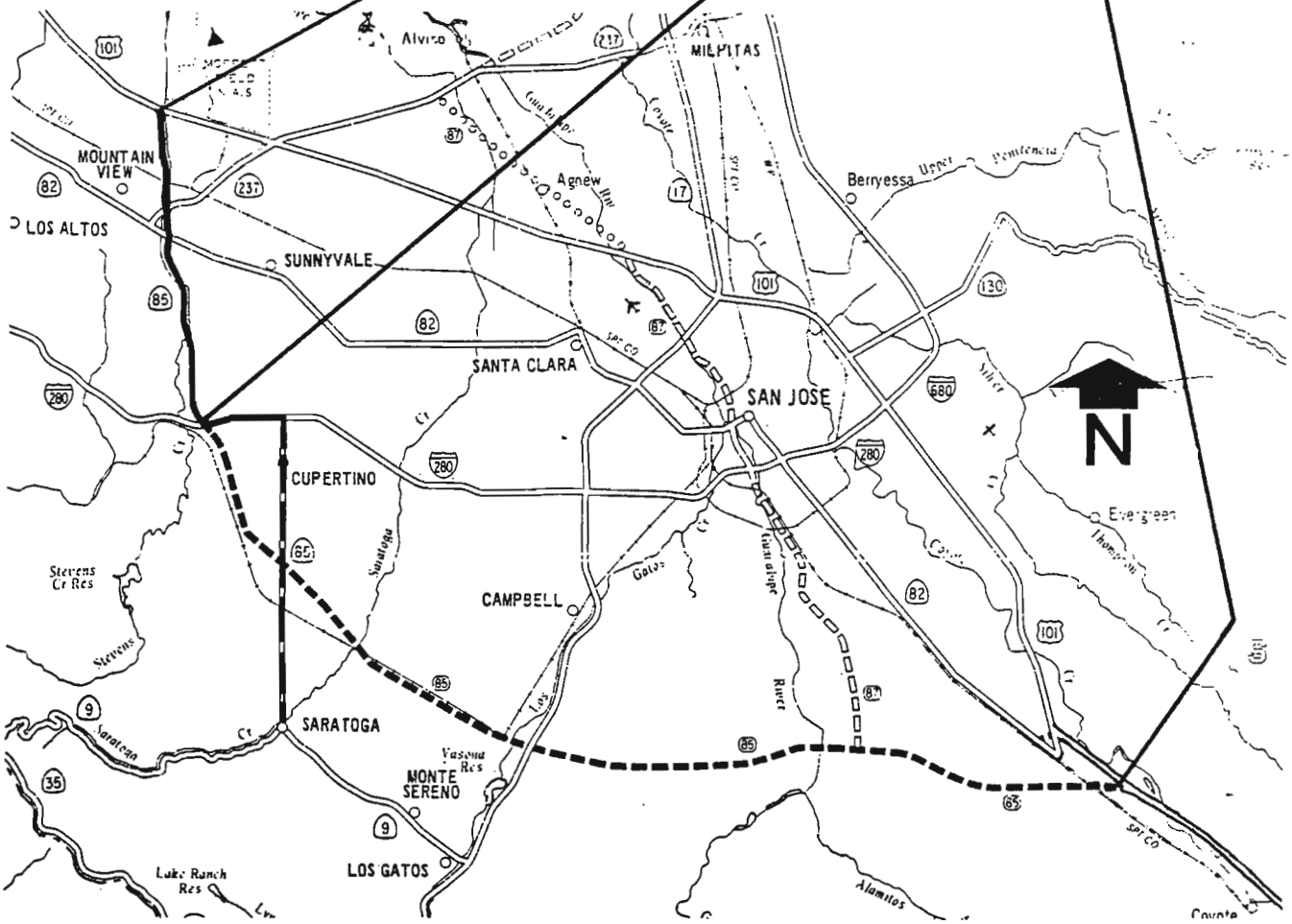


LEGEND

- Constructed portion of Legislative Route 85
- Designated Route 85
- Unconstructed portion of Legislative Route 85

EXHIBIT B

SEGMENT		SCL R23.87 B	SCL R18.45 A SCL R0.0
NO. OF LANES	PRESENT	4-6F	UNCONSTRUCTED
	1995	4-6F	
	2005	4-6F	
LEVEL OF SERVICE	PRESENT	C-40	
	1995	D-35	
	2005	E-25	
TERRAIN		F	
GRADES		F	
ACTUAL	Accidents Per MVM	.59	
	Fatalities Per MVM	.005	



LEGEND

- Constructed portion of Legislative Route 85
- Designated Route 85
- Unconstructed portion of Legislative Route 85

ROUTE 85 ACCIDENT REPORT BETWEEN 1/81 to 12/83

P.M.	Segment	Total	No of Accidents Fatal	Inj.	F+I	Persons Killed	Persons Injured	Accident Rate Fatal	F+I	Total	Statewide Rate Fatal	F+I	Total
0.0 to 18.44	A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18.44 to 23.86	B	238	2	113	115	2	133	.005	.28	.59	.016	.48	1.21

ROUTE 85 TRAFFIC TABLE

SEG	CO	POST MILE	TRUCK% AA DT	TRUCK% PK HR	1982 AA DT	1982 AM-PK AH	1982 AM-PK BK	1982 NO LN	1982 V/C	1982 LOS	1982 NO LN	CAP	1995 AA DT	1995 AM-PK AH	1995 AM-PK BK	1995 NO LN	1995 D/C	1995 LOS	1995 NO LN	2005 AA DT	2005 AM-PK AH	2005 AM-PK BK	2005 NO LN	2005 D/C	2005 LOS	2005 NO LN
B	SCL	R18.4						JCT RTE 280																		
			3	2	70	40	40	3	0.67	C	3	2000	76	43	43	3	0.71	C	3	83	47	47	3	0.78	C	3
B	SCL	R18.8						HOMESTEAD RD																		
			3	4	76	43	43	3	0.72	C	3	2000	81	45	45	3	0.75	C	3	89	49	49	3	0.82	D	3
B	SCL	R19.8						FREMONT AVE																		
			3	5	75	42	42	2	1.05	F	3	2100	80	45	45	2	1.13	F	3	88	49	49	2	1.23	F	3
B	SCL	R21.7						JCT RTE 82																		
			5	6	67	38	38	2	0.95	E	3	2000	73	41	41	2	1.02	F	3	79	44	44	2	1.11	F	3
B	SCL	R22.1						JCT RTE 237																		
			7	6	55	31	31	2	0.77	C	2	2000	65	36	36	2	0.90	D	2	70	39	39	2	0.97	E	3
B	SCL	R22.6						EVELYN AVE																		
			8	5	53	30	30	2	0.75	C	2	2000	62	35	35	2	0.87	D	2	68	38	38	2	0.94	E	3
B	SCL	R23.4						MOFFETT BLVD																		
			8	5	43	24	24	2	0.60	C	2	2000	52	29	29	2	0.72	C	2	56	31	31	2	0.78	C	2
B	SCL	R23.8						JCT RTE 101																		

EXPLANATION TO TRAFFIC VOLUME TABLES

COLUMN	DESCRIPTION
SEGMENT	Route Segment
CO	County Abbreviations
POST MILE	Post Mile in County
DESCRIPTION	Description of the route segment
AADT	Annual Average Daily Traffic (Thousands)
AM PK	Morning Peak Hour Traffic
AH	Volumes Ahead Direction (Hundreds)
BK	Volumes Back Direction (Hundreds)
NO L	Number of Lanes (Existing) One Direction
V/C	Volume/Capacity: Ratio Volume to Max. No. of Vehicles/Hr. for Peak Direction During Peak Period
D/C	Demand/Capacity: Ratio Volume of Projected Demand to Max. No. of Vehicles/Hr.
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
% TRUCK AADT	Truck % of the Average Annual Daily Traffic Count
% TRUCK PK HR	Truck % at Peak Hour

Route 85

COMPARISON OF FUTURE LOS WITH ROUTE CONCEPT

SEGMENT	NO. LANES/LOS			ROUTE CONCEPT		NEEDS	
	1982	1995	2005	Proposed Lanes	LOS	Lanes	Target LOS
A SC1 R0.00 to R18.45	UNCONSTRUCTED			TO BE DETERMINED BY CURRENT STUDY			
B SC1 R18.45 to R23.87	4-6F/ C-40	4-6F/ D-35	4-6F/ E-25	TO BE DETERMINED BY CURRENT STUDY			

This chart indicates the relationship between the Level of Service and minimum operating speed for a given facility type.

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

* This condition is shown on the tabulation of route segments under the "LOS" headings as D-35.

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.

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 modeling 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 elements 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: Implied; it was assumed that, on the segments evaluated, modal percentages and occupancy rates would remain essentially unchanged.

ASSUMPTION: 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.

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.