

**SUMMARY****ROUTE CONCEPT REPORT****ROUTE 242**

CC R0.000 to CC R3.398

This report defines the development concept for Route 242 in District 4, over a 20 year planning period (1985-2005).

**ROUTE CONCEPT**

Segment A:      CC R0.000 - R3.398                      D-35                      6 lane fwy  
                    Jct Rte 680 - Jct Rte 4

**CONCEPT RATIONALE**

Route 242 primarily serves intra-urban commuter traffic. The freeway serves as a connector for commuters traveling from residential communities in Pittsburg and Antioch to employment sites in Central Contra Costa and points south (i.e. Pleasanton-Dublin area).

**AREAS OF CONCERN**

Major increases in jobs are expected to occur in Central Contra Costa County, Livermore, Pleasanton, Dublin, and the San Ramon Valley. The job growth in the Route 4 corridor is not expected to keep pace with household growth, which will generate trips from residences in the Antioch/Pittsburg area to Central Contra Costa/Dublin-Pleasanton area jobs via Route 242 as a connector from Route 4 to Route 680.

**IMPROVEMENTS**  
(Post 1984 STIP)

CC R0.000 - R3.398

Widen freeway to 6 lanes by using existing median. Promote maximum use of public transportation, staggered work hours, alternative modes and other TSM measures, through education, and use of incentives/disincentives.



ROUTE CONCEPT REPORT

ROUTE 242

CC R0.000 to CC 3.398

Prepared under the direction of:

Recommended Approval:

*Cecil L. Smith* 12/2/85

CECIL L. SMITH, Chief Date  
Transportation Planning  
District 4

*John Vostrez* 12-4-85

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:

Approved:

*Burch C. Bachtold* 12/4/85

BURCH C. BACHTOLD Date  
District Director of  
Transportation

*D.L. Wieman* 9-30-87

D.L. WIEMAN, Chief Date  
Division of Transportation  
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Approved:

Approved:

*for Allan Hendrix* 8/20/87

ALLAN HENDRIX, Chief Date  
Division of Highways and  
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*Vince Paul* 12/2/86

VINCE PAUL, Chief 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 CONCEPT REPORT

## ROUTE 242

CC P.M. R0.000 - CC R3.398

### 1. ROUTE DESCRIPTION

Route 242 is approximately 3.4 miles long, and traverses the northern portion of Contra Costa County. The freeway begins at Route 680 in the City of Concord. It runs northeasterly through the City of Concord past the Buchanan Airport, and terminates at Route 4. The entire legislated Route 242 is currently signed as State Route 24.

The legislative description of Route 242 is as follows:  
Route 242 is from Route 680 to Route 4 north of Concord.

Route 242 is part of the California Freeway and Expressway System in its entirety. It is funded by and part of the Federal Aid Urban System. The entire route is functionally classified as an Urban Principal Arterial, located entirely within an urban area, with access control.

### 2. PURPOSE OF ROUTE

Route 242 primarily serves intra-urban commuter traffic. The morning peak period is heaviest in the southbound direction. Route 242 serves as a connector to routes I-680 and 4 for commuters traveling from residential communities in Pittsburg and Antioch to employment sites in Central Contra Costa and the Pleasanton-Dublin area.

### 3. REGIONAL CHARACTERISTICS

Recent ABAG data and MTC's I-680/I-580 Corridor Study, Initial Findings, Summary Report, predicted significant residential and employment growth in a study area which consists of Alameda and Contra Costa cities east of the East Bay Hills.

By year 2000, the study projects a growth in population from 578,000 to 793,000 reflecting a 37% increase. The rate of residential growth in the Antioch, Pittsburg, and Brentwood area is expected to increase from 109,000 people to 204,000 people (an 87% increase). Major increases in jobs are expected to occur in Central Contra Costa County (63,000 new jobs), the Livermore, Pleasanton, Dublin area (52,000 new jobs), and the San Ramon Valley (28,000 new jobs). The job growth in the Route 4 corridor is not expected to keep pace with household growth, which will

generate trips from residences in the Antioch/Pittsburg area to Central Contra Costa/Dublin-Pleasanton area jobs via Route 242 as a connector route from Route 4 to Route 680.

However, plans for a major water-front development project, Delta Landing, were announced in January 1985 by U.S. Steel, for the northwestern corner of the City of Antioch. It is a 483 - acre project that will provide an estimated 7,000 jobs and housing for 9,600. This development may provide Eastern Contra Costa County the opportunity to begin to match the job-producing facilities with their growing residential population. Currently, according to a quote made in an Oakland Tribune article, up to 70% of the people in East County work somewhere else. Such a development may also precipitate an increase in the reverse commute direction, as well as off-set some of the out-commuting by East County residences.

The MTC I-680/I-580 Corridor Study forecasted the following future travel demands:

1. The largest projected increase in commute trips would be out of east Contra Costa County traveling southbound through to Central Contra Costa County, and Pleasanton, causing major impacts on Route 4, I-680, and Route 242.
2. Increased trips within Central Contra Costa County area may add to congestion problems on major city arterials and impact I-680. Commuters from the Pittsburg-Antioch area to the central county area are also likely to use arterials.

4. ROUTE SEGMENT A  
04-CC-242, P.M. R0.000 - R3.398

This segment of Route 242 includes the route in its entirety. Route 242 begins at Route 680 in the City of Concord, continues northeasterly through Concord and to the east of Buchanan Airport, terminating at Route 4. This segment is more heavily used by southbound (AM) commuters as a connector to employment sites in Central Contra Costa County and points south.

(1) Existing Facility

(a) Highway Facility

Route 242 generally has 2 lanes in each direction for through traffic, with an auxiliary lane in each direction between Solano Way I/C and Olivera Road I/C. The outside shoulders vary up to 10 feet in width. It has a divided median varying from separate structure to unpaved medians. The median width is predominantly 46 feet. Route 242 traverses flat terrain with less than 3% grades.

(b) 1984 STIP Projects

FY 83/84

Tier I, P.M. R0.4/R0.9

This project which is currently underway, will relocate ramps from the Willow Pass Rd. u.c. to Clayton Rd. at Market St.

FY 86/87

Tier I, P.M. R1.3/R1.5

This project will revise on and off ramps, and signal design for the Concord Avenue I/C.

(c) Public Transit

Communities within the I-680/242 corridor are served by the Central Contra Costa Transit Authority (County Connection), and the Guiton Contra Costa Commute Service. The Pittsburg/Antioch area is provided with connections to the Central County area by the BART Express Buses.

BART Express Bus lines P,PX,Pl,PlX,P2X connect Brentwood, Oakley, Antioch, Pittsburg, and West Pittsburg with the Concord BART station. All of these Express Bus lines travel via Rte. 4 and Port Chicago Rd. to the Concord BART station. BART Express Bus lines M, and MX connect Martinez to the Concord BART station.

Within the corridor, the County Connection serves the communities of Concord, Pleasant Hill, Walnut Creek, and Martinez.

The Guiton Commute Service runs buses weekdays from Central Contra Costa communities to San Francisco from 6:00 am to 7:30 am, with return trips from 4:20 pm to 5:50 pm.

(d) Bicycle

Route 242 is closed to bicyclists along the freeway. There is a parallel bicycle route in the EBMUD right-of-way along the westerly freeway fence. It is completed between the Solano Way u.c. and south of the Olivera Rd. o.c.

(e) Rideshare and Park and Ride

Rides for Bay Area Commuters provides carpool and vanpool services to commuters in the area. There are currently no existing State-owned park and ride facilities with direct access to Route 242. However, a 45 space park and ride lot is programmed to be constructed near Willow Pass Road. (CC-242-R0.9).

(f) Rail

Route 242 is served by the Daly City/Concord line of the Bay Area Rapid Transit District (BART). According to MTC's I-680/580 Corridor Study, BART's Extension policy (revised Feb. 2, 1984) calls for extensions in three stages. During Stage I, BART proposes two-station extensions in the Pittsburg/Antioch corridors, with three additional stations during Stage II. MTC passed a resolution (MTC Resolution #1367), that included a proposal which MTC will support for planning grants so they can be further developed and made eligible for additional funding as it becomes available. The proposal is the extension of BART northward from the Concord Station to a station at the intersection of Rte 4 and Port Chicago Hwy, then easterly in the Rte 4 median to a station in the vicinity of Rte 4/Baily Rd. I/C in West Pittsburg. Such a BART extension should relieve traffic on Rte. 242.

Contra Costa County is currently conducting a transportation study of the San Ramon Branchline. The Southern Pacific San Ramon Branchline right of way is an existing transportation corridor which extends from the City of Martinez to Radum Wye (adjacent northerly to Stanley Blvd. in the City of Pleasanton) with a total distance of 24.5 miles. A portion of the corridor passes to the west of Rte 242, crosses under the route near Richard Ave. (north of Concord Avenue) and proceeds south paralleling Route 242. The purpose of the study is to identify and evaluate publicly acceptable alternative transportation uses of the 24.5 mile San Ramon Branchline right-of-way.

(2) Current Operating Conditions

The 1982 AADT for Route 242 ranges from 56,000 north of the Concord Ave. I/C to 33,000 south of Jct Rte 4. The morning peak period traffic ranges from a low of 1,300 vph north of Willow Pass Rd. I/C to a high of 2,500 vph north of Concord Ave. I/C in the northbound direction; and from high of 3,700 vph north of Concord Ave. I/C to a low of 2,200 vph south of Jct Rte 4 in the southbound direction. The V/C ratio is 0.73 with a LOS of C-50.

(3) Accident Rates (1/81 - 12/83)

During the period of January 1981 and December 1983, there were a total of 179 accidents. Of these accidents, 59 involved injuries and 1 accident involved a fatality. The total accident rate for Route 242 is 1.06/MVM as compared to the statewide average of 1.02/MVM for this type of facility in similar terrain. The fatality rate is 0.005/MVM, as compared to a higher statewide average of 0.013/MVM.

(4) Future Operating Conditions (1995 and 2005)

Projected AADT for 1995 ranges from 78,000 north of Concord I/C to 45,000 south of Jct Rte 4. The AM projected peak period demand varies from a low of 1,800 vph north of Willow Pass Rd I/C to a high of 3,500 north of Concord Avenue I/C in the northbound direction; and from a high of 5,200 vph north of Concord Blvd I/C to a low of 3,000 vph south of Jct Rte 4 in the southbound direction. The D/C ratio for 1995 is 1.02 with a LOS of F-25.

The projections for 2005 AADT ranges from 58,000 north of Willow Pass Rd I/C to 94,000 north of Concord Ave I/C. The AM peak period demand in the northbound direction varies from 2,300 vph to 4,400 vph at the above locations. In the southbound direction, AM peak period demand ranges from a high of 6,600 vph north of Concord Ave I/C to a low of 4,200 south of Jct Rte 4. The D/C ratio for 2005 is 1.33 with a LOS of F-15.

(5) Route Concept

The route concept for Route 242 is to widen to a 6 lane freeway by utilizing the existing median. The 2005 projected traffic demand indicate a need for 6-8 lanes to achieve the target LOS of D-40. The route concept proposed for I-680 south of I-680/242 I/C is to widen to a 10 lane freeway. Between I-680/242 I/C and Rte 4, the route concept for I-680 is an eight lane freeway. There is currently a STIP project to widen I-680 to 6 lanes (PM 19.1/24.3). It is anticipated that with the improvements proposed for I-680 along this corridor, coupled with promotion of public transit, alternative modes, and other TSM techniques, the conceptual LOS for Route 242 will be D-35.

(6) Improvements (Post 1984 STIP)

Widen Route 242 to 6 through lanes by utilizing the existing median.

(7) Areas of Concern

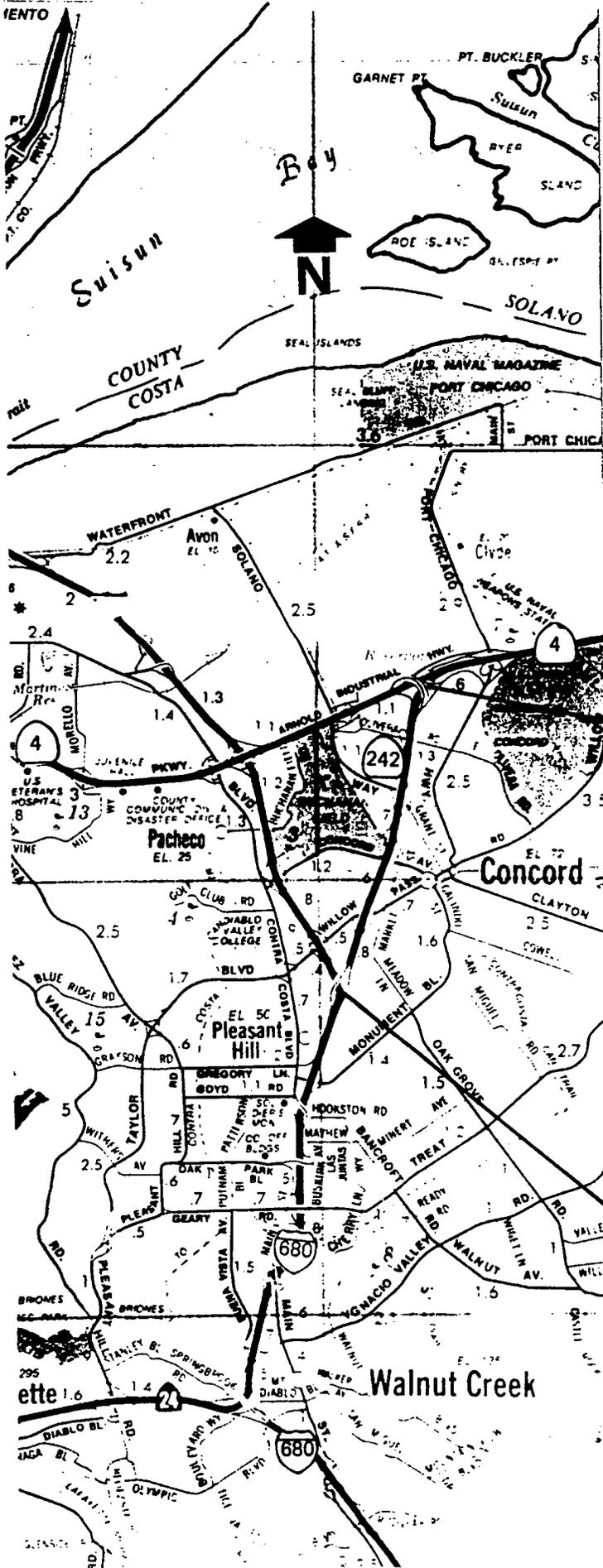
The City of Concord has suggested the following interchange modifications and grade separated crossings:

1. Connection to the SB on-ramp south of Willow Pass Road from Franquette Ave.; extend Clayton Rd. under the freeway WB to Franquette Ave.
2. New on-loop movement from Concord Ave. and Market St. for NB traffic.
3. New off-ramp for NB traffic to Market St. and Concord Ave. area.
4. New on-ramp movement from Concord Ave. and Commerce Ave. area for SB traffic.

Proposed grade separated crossings are:

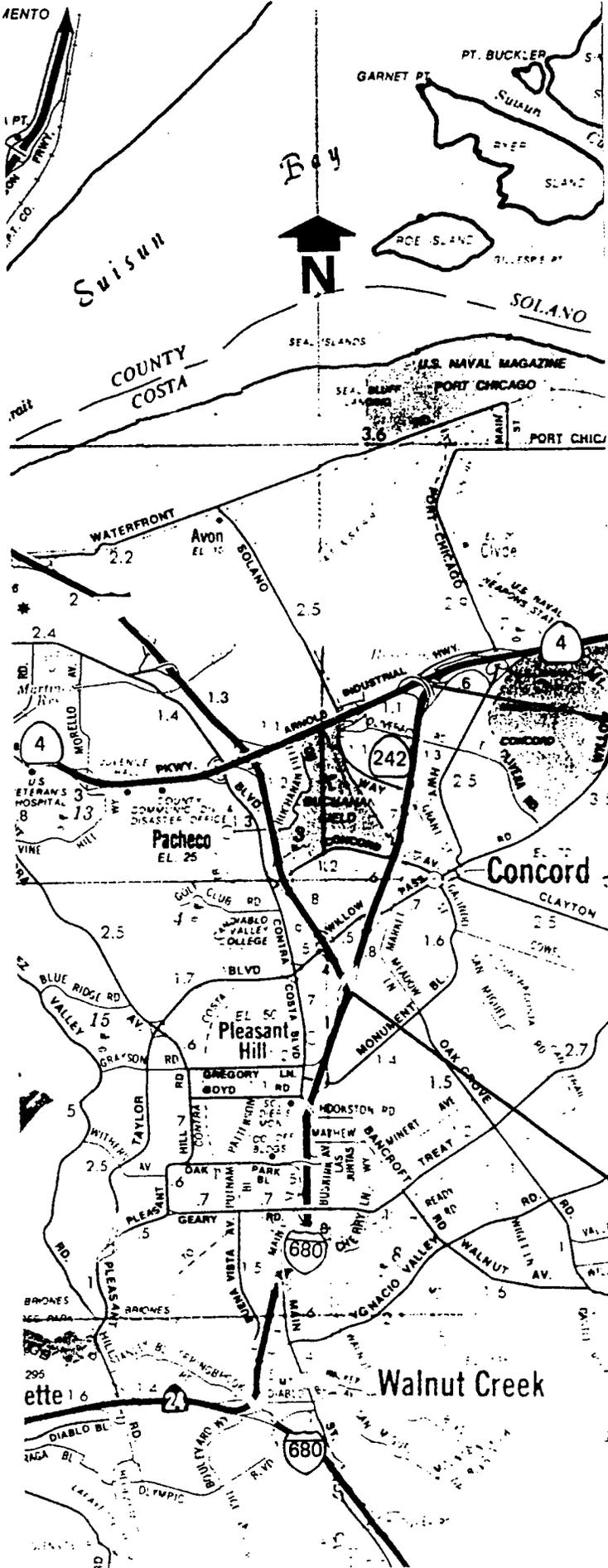
1. Connect Galaxy Way to Sutter St. and Market St. with freeway grade changes as necessary.
2. Connect Diamond Blvd. to Meadow Lane.

# EXHIBIT A



<b>SEGMENT</b>	CC R3.398			CC R0.00			<b>TERRAIN</b>	<b>GRADES</b>	Actuals	Per MVM	Per MVM		
	<b>PRESENT</b>	<b>1995</b>	<b>2005</b>	<b>PRESENT</b>	<b>1995</b>	<b>2005</b>						Accidents Per MVM	Fatalities Per MVM
<b>A</b>	4	4	4	C-50	F-25	F-15	FLAT	0-3%	1.06	0.005			

# EXHIBIT B



SEGMENT	A			CC R3.398
	1982	1995	2005	CC R0.00
(000) A.D.T.	33-56	45-78	58-94	
(00) H.V. P.	37	52	66	
AVE. HWY SPEED	65-70	41-46	0.73	
OPERATING SPEED	1982	1995	2005	
V/C	1.02	1.33	1994	
D/C	no build			
YEAR CAPACITY WILL BE REACHED				

# COMPARISON OF FUTURE LOS WITH ROUTE CONCEPT

SEGMENT	NO. LANES/LOS			ROUTE CONCEPT		NEEDS	
	1982	1995	2005	Proposed Lanes	LOS	Lanes	Target Los
A CC R0.000 to R3.398	4/C-50	4/F-25	4/F-15	6	D-40	6-8	D-40

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

<u>Assigned Level of Service</u>	<u>Facility Type</u>	<u>Minimum Operating Speed</u>
B	Freeways, expressways, or multilane conventional highways	55 MPH
B	Two-lane conventional highways	50 MPH
C	Freeways or expressways	50 MPH
C	Multilane conventional highways	45 MPH
C-45	Two-lane conventional highways	45 MPH
C	Two-lane conventional highway	40 MPH
D	Freeway 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 D35.

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.

EXPLANATION TO TRAFFIC VOLUME TABLES

<u>COLUMN</u>	<u>DESCRIPTION</u>
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

TRAVEL DEMAND PROJECTIONS METHODOLOGY (ABSTRACT)

1995 & 2005 Demand Person Trips Projects  
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.

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.

ROUTE 242 TRAFFIC TABLE

S E G	CC	POST MILE	TRUCK%		1982 L		CAP		1995 L		2005 L												
			AA DT	PK HR	AA DT	NO LN																	
A	CC	R0.00	5	3	48	18	34	2	2000	68	26	48	2	1.19	F	3	81	33	61	2	1.51	F	4
A	CC	R0.87	5	3	34	13	24	2	2000	48	18	34	2	0.85	D	2	58	23	43	2	1.08	F	3
A	CC	R1.47	5	3	56	25	37	2	2000	78	35	52	2	1.30	F	3	94	44	66	2	1.65	F	4
A	CC	R2.15	6	4	44	19	29	2	2000	62	28	41	2	1.03	F	3	82	37	55	2	1.38	F	4
A	CC	R2.79	7	5	33	14	22	2	2000	45	20	30	2	0.74	C	2	66	28	42	2	1.04	F	3
A	CC	R3.40																					

Ready  
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EXHIBIT F

RTE SEG	CTY	FROM PM	TO PM	LENGTH (mi.)	TRAVEL WAY WIDTH (1 dir. ft)	# LANES 2 direc	OUTSIDE SHOULDER (ft)	MEDIAN WIDTH (ft)
A	CC	R0.000-		3.398	24 - 57	4F	≤ 10	46->100