FINAL

NOV 08 1985

SUMMARY

Route Concept Report District 4
Route 29
SOL 0.00 to NAP 48.582

This report defines the concept for development of Route 29 in Districts 4 and 10 for a 20-year planning period (1985-2005)

Route Concept

Segment A:	SOL 0.00 to 5.96	D-40	4-lane Conventional to 6-lane Expressway (PM 0.00-4.73)
		D-40 to E-35	4 to 6-lane Freeway (PM 4.73 to 5.96)
Segment B:	NAP 0.00 to 10.31	D-40 to E-30	4 to 6-lane Freeway
Segment C:	NAP 10.31 to 36.89	D-40 to E-30	4 to 6-lane Freeway (PM 10.31 to 19.03) 4-lane Divided (PM 19.03 to 36.89)
Segment D:	NAP 36.89 to 48.58	B-45	2-lane Conventional

Areas of Concern

Route 29 south of the City of Napa will experience a higher level of congestion due to increasing development between Vallejo and the City of Napa. A low level of growth is projected to take place in Napa County north of the City of Napa due to a limited growth policy in the area. In Segment C (PM 19.03 to 36.89) 20 year traffic forecasts indicate a need for a 4-lane facility. The Napa County General Plan limits the highway to 2-lanes. Further study is required to determine the feasibility of non-highway solutions to the potential future capacity problems.

Concept Rationale

Route 29 is a commuter and recreational route with considerable use on the weekends. Route 29 travels through the wine country in Napa and provides access to the popular recreation spot of Lake Berryessa.

Problem Locations (Post 1984 STIP)

SOL 29 **PM** 0.00-5.955 **AM & PM** congestion
NAP 29 **PM** 0.00-R9.881 AM & PM congestion
NAP 29 **PM** 36.89-48.582 Accident Rate 4.78 per MVM above Statewide average of 2.84 per MVM.

Improvements*

- Widen to provide a 4 to 6 lane freeway from the Route 37 I/C to California Drive (PM Sol 4.73 to NAP 19.03).
- Construct I/C at the junction Route 221 (PM 6.20)
- Construct IJC at the junction of Route 121 west (PM R8.66).
- Construct I/C at Trancas Street-Redwood Road (PM 13.5)
- Widen to provide a 4-lane divided facility from California Drive to the City of Calistoga (PM NAP 19.03 to NAP 36.89).
- Widen to provide 40' roadbed plus left turn channelization from Brannan Street to Tubbs Lane (PM 37.5 to 39.5)
- Realign curves where feasible from Silverado Trail Road to the Napa/Lake County line. (PM 37.90 to 48.58)

*Detailed studies will be made prior to implementation of any improvements.

ROUTE CONCEPT REPORT

ROUTE 29

SOL 0.00 to NAP 48.58

Prepared under the direction of:

10-7-85

CECIL L. SMITH, Chief Date
Transportation Planning
District 4

Recommended Approval:

10-16-85

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:

11/5/85

BURCH C. BACHTOLD Date
District Director of
Transportation

Approved:

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

Approved:

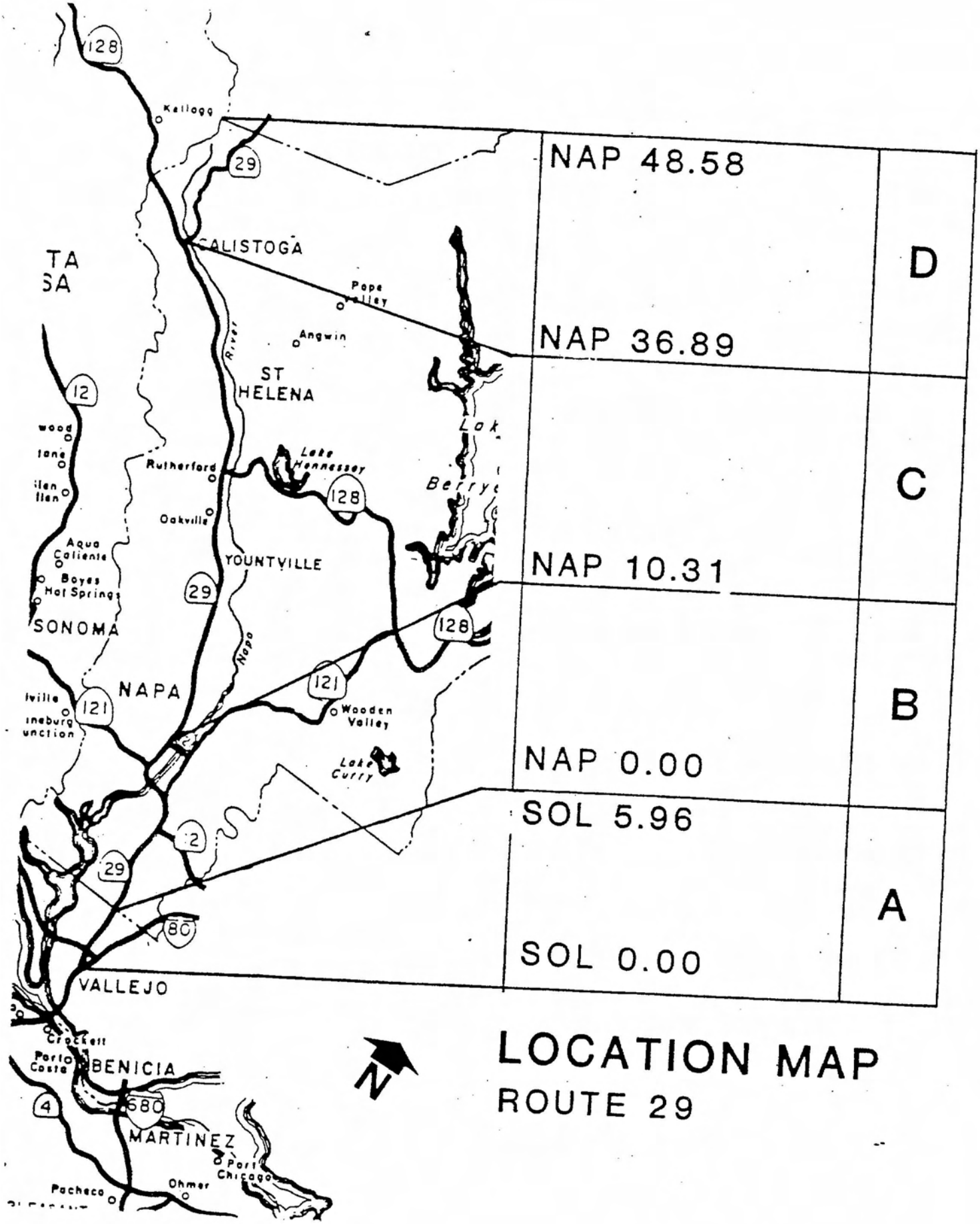
12/31/85

ALLAN HENDRIX, Chief Date
Division of Highways and
Programming

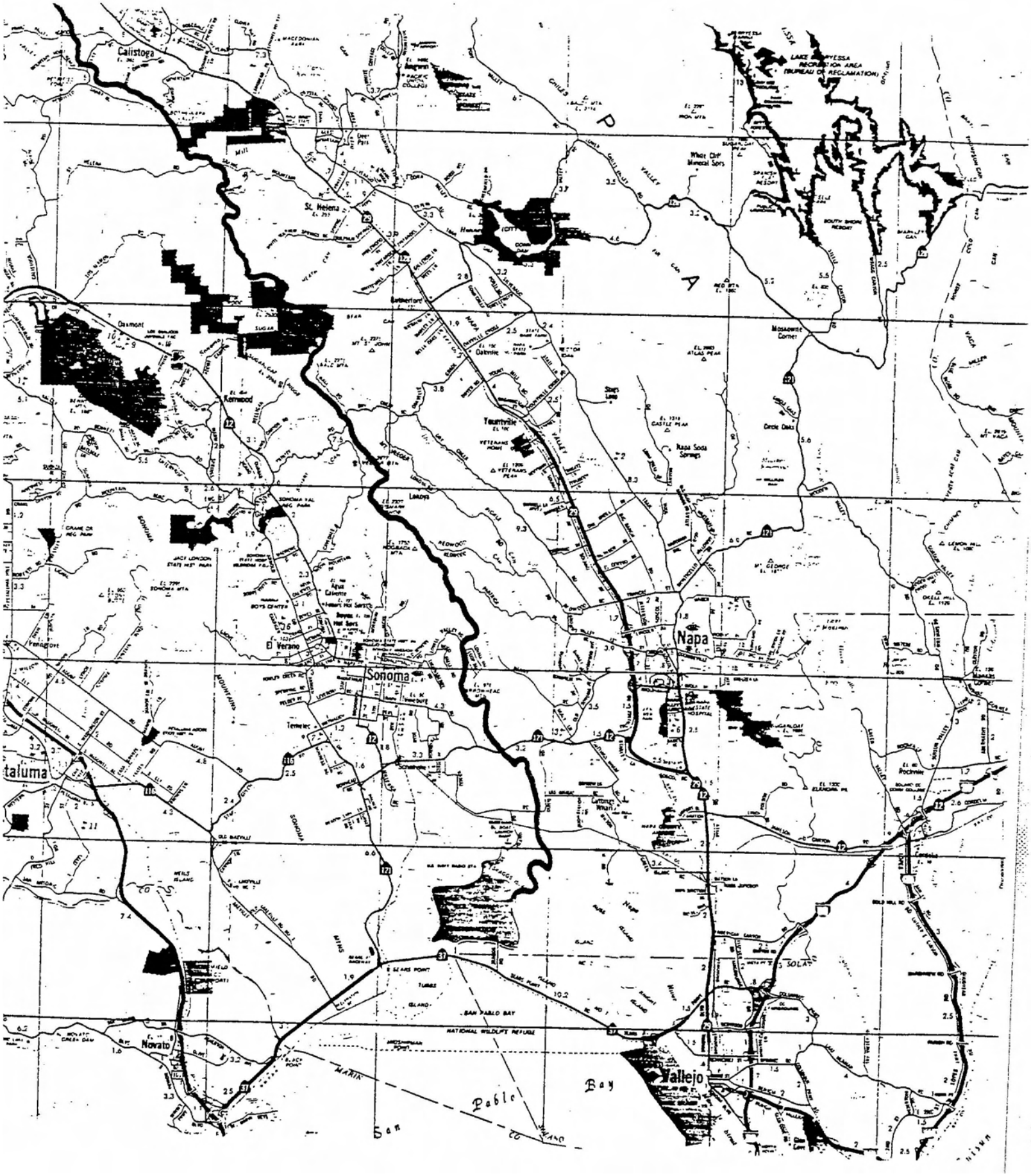
Approved:

12/17/85

VINCE PAUL, Chief Date
Division of Project
Development



LOCATION MAP
ROUTE 29


Calistoga
St. Helena
Oakmont
Kenwood
Yountville
Napa
Sonoma
El Verano
Petaluma
Novato
Vallejo
Rohnert
Mosaowite Corner
Napa Soda Springs
Circle Oaks
Glen Ellen
Temelec
Lakeville
Sears Point
SAN PABLO BAY
NATIONAL WILDLIFE REFUGE
San Pablo Bay
SOLANO
SONOMA
NAPA
MARIN
LAKE HENNESSEY RECREATION AREA (BUREAU OF RECLAMATION)
WHITE CLIFF MINERAL SPRS
SOUTH SHORE RESORT
JACK LONDON STATE HIST. PARK
SONOMA VAL. REG. PARK
CRANE CR. REG. PARK
SONOMA MTN.
MOUNTAIN
VALLEY
CREEK
CANYON
RIVER
LAKE
BAY
ISLAND
POINT
HILL
MILL
SUGAR
BEAR
NAPA
SONOMA
SOLANO
MARIN
CONTRA COSTA
ALAMEDA
SAN JOAQUIN
YOLO
LAKE
MENDOCINO
SACRAMENTO
SAN JOSE
SAN FRANCISCO
SAN MATEO
SAN MARIN
SAN PABLO
SAN PABLO BAY
SAN PABLO DAM
SAN PABLO RESERVOIR
SAN PABLO CREEK
SAN PABLO AVE.
SAN PABLO DR.
SAN PABLO PT.
SAN PABLO RD.
SAN PABLO TURNPIKE
SAN PABLO ISLAND

Route Description

The portion Route 29 that will be discussed in this report is approximately 54.5 miles long; it lies in Solano and Napa Counties. The route originates at Route 80, near Vallejo in District 10. Then the route proceeds north into Napa County (District 4). Route 29 travels through the world famous Napa Valley wine country and the towns of Napa, Yountville, St. Helena, and Calistoga. .Route 29 then proceeds into District 1 and terminates at Route 20 near the town of Upper Lake located in Lake County.

Route 29 is a 4-lane conventional highway from the 1-80 I/C to Green Island Road south of Napa (Sol 0.00 to Nap 3.30). It is a 4-5 lane conventional highway from Green Island Road to north of Suscol Creek (NAP 3.30 to NAP 6.09). Route 29 is a 4-lane expressway north of Suscol Creek to south of junction Route 121 south (NAP 6.09 to 8.66). The freeway portion of Route 29 begins at the junction of Route 121 south to Lincoln Avenue (NAP 8.65 to 12.04). North of Lincoln to 'north of California Drive (NAP 12.04 to 19.74) is an expressway. The remainder of the route is a 2-lane rural road.

Route 29 is in the Freeway and Expressway System from Route 80 near Vallejo to Oak Knoll Avenue north of the City of Napa. The route is not a SHELL route (State Highway Extra Legal Load). Route 29 is in the FAP system (Federal-Aid Primary).

The Legislative description is as follows:

Route 29 is from Route 80 near Vallejo to Route 20 near Upper Lake via the vicinity of Napa, via Calistoga, via Lower Lake, passing south of Kelseyville and via Lakeport.

Although Segment A is located in District 10 due to its short length within the District, this segment will be discussed in this report.

Purpose of Route

Segment A: Sol-29 - PM 0.00 to 6.00

This segment serves as an urban arterial through the City of Vallejo.

Segment B: Napa-29 - PM 0.00 to 10.31

Segment B serves as a commuter route from the vicinity of Napa to the City of Vallejo and surrounding communities. The segment also serves as a recreational route.

Segments C and D: Nap-29 - PM 10.31 to 48.58

These two segments serve as a major touring and recreational route through the wine country of Napa County.

Route Segments

Segment A
(10-Sol-29, PM 0.0-5.955)

This segment begins at the Route 80 junction south of Vallejo and proceeds through the City of Vallejo to the Solano/Napa County line. There is heavy commute traffic in the mornings and evenings; heavy traffic continues through the day since Route 29 is routed through part of the downtown Vallejo business district. Mare Island Naval Shipyard is located within Vallejo city limits. Mare Island is the largest employer in the area.

(1) Existing Facilities

a. Highway Facilities

There are 2 lanes in each direction with 0 to 8 foot shoulders and 0 to 44 foot median, the terrain is rolling.

b. 1984 STIP Projects:

FY 86/87
Construct Route 37/29 Interchange

c. Public Transit

The City of Vallejo operates transit service within the City itself. Route 29 is utilized as part of this transit structure. Greyhound operates a line that originates in Calistoga and proceeds along Route 29 'through Vallejo and terminates in San Francisco. The Greyhound buses run at three different times: morning, afternoon, and evening.

d. Bicycle

Route 29 is an adopted bicycle route in both the Solano County bikeway plan and the City of Vallejo's bikeway master plan. This route, used in conjunction with other alternative Local routes has moderate bicycle commuter usage.

e. Park and Ride

A park and ride lot is located at 1-80 and Magazine Street in Vallejo, approximately 1/3 mile from Route 29.

An additional park and ride facility is located 1/2 mile from Route 29 at the intersection of Route 141 and Lemmon Street. The City of Vallejo is planning an additional park and ride facility at the same intersection.

f. Rail

There are no available passenger rail services nearby, but Southern Pacific maintains a freight line near Route 29.

(2) Current Operating Conditions

The 1982 AADT, as supplied from District 10, ranges from 11,000 at the junction of Route 80 to 27,000 north of Route 37. NB AM peak hour volumes range from 900 to 2,400. SB AM peak hour volumes range from 1,100 to 1,600. The V/C ratio is .80 with a Level of Service "C-30".

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

During this period, District 10's accident data state that there were 618 accidents on this segment with 410 injuries and 6 fatalities. The accidents are fairly evenly split between the two directions of travel and among the days of the week with a slight increase on Friday, Saturday and Monday. 34.5% of the accidents occurred between the hours of 3 p.m. to 6 p.m. The accident rate in Segment A is 4.93 MVM; this exceeds the Statewide average of 4.08 MVM for this type of facility.

(4) Future Operating Conditions

The 1995 (2005) projected AADT ranges from 24,900 (34,500) at the junction of Route 80 to 41,500 (56,200) north of Route 37. The northbound AM peak hour volume for 1995 is 700, the southbound AM peak hour volume is 2,500. The 2005 northbound AM peak hour volume is 850, the southbound AM volume is 3,400. The 1995 D/C ratio is 1.23 and a Level of Service "F-10". The 2005 D/C ratio is 1.85 with a Level of Service "F-5."

(5) Route Concept

The route concept for Segment A is to maintain the present 4 lane facility from the junction of Route 80 through the Vallejo CBD. North of the CBD, widen to a 6-lane Expressway to the junction of Route 37.

From the junction of Route 37, improve to a 4 to 6-lane freeway as right-of-way restrictions permit.

The Concept LOS for this segment ranges from D-40 to E-35.

(6) Route Improvements

Widen in areas stated in the Route Concept.

Due to the commercial development in the City of Vallejo that abuts Route 29 on part of this segment, it would be very difficult to institute any improvements within the City.

Segment B
(04-Nap-29, PM 0.00-10.31)

Segment B extends from the Solano/Napa County line to the northern junction of Route 121.

(1) Existing Facilities

a. Highway Facilities

The segment is 10.31 miles long. There are 2-3 lanes in each direction with an 8 foot shoulder and a 30 to 46 foot median. The terrain is flat to rolling.

b. 1984 STIP Projects:

There are no HB4 or HE projects (System Operation Improvements or New Facilities) programmed for this segment.

c. Public Transit

Regularly scheduled buses operate in the City of Napa only. Greyhound operates 3 buses that originate in Calistoga and end in San Francisco. There is also a county funded program that provides rides to elderly and handicapped people.

d. Bicycle

Bicyclists are not allowed on the expressway section (PM R6.20 to R8.60) nor the freeway section (PM R8.66 to 12.49). A suggested bicycle route is Route 121 and then west on Imola Avenue (Route 221) proceed north along the frontage road parallel to Route 29. The route is popular for touring the wine country.

e. Park and Ride

A 75 space park and ride facility is being constructed at this time near Imola Avenue.

f. Rail

There are no passenger rail transportation facilities that operate in this segment.

(2) Current Operating Conditions

The AADT for 1982 ranges from 20,000 north of the junction of Route 221 to 32,000 north of the junction of Route 12. The northbound AM peak hour traffic ranges from 500 to 800 and the southbound AM peak hour traffic ranges from 1,700 to 2,600. The V/C ratio is .66 with a Level of Service "C-45".

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

53.9% of the accidents occurred on the days of Friday, Saturday, or Sunday. The majority of the accidents occurred between the hours of 4 p.m. to 5 p.m. There was a total of 294 accidents, there were five fatalities and 245 people were injured. The accidents were fairly evenly split between the two directions of travel. The accident rate for Segment B is 1.00 accidents per MVM, this is less then the Statewide average of 1.48 accidents per MVM.

(4) Future Operating Conditions

The AADT for 1995 ranges from 26,000 at the southern junction of Route 121 to 40,000 at the junction of Route 12 east. For the year 2005, the range is 30,000 to 46,000 at the same locations. Northbound AM peak hour traffic ranges from 600 to 900 for the year 1995; southbound AM peak hour traffic ranges from 2,500 to 4,000 for the same year. In 2005 northbound AM peak hour traffic ranges from 600 to 900, and southbound AM volumes range from 3,200 to 5,100.

The D/C ratio for the year 1995 is .96 with a Level of Service "E-20". For the year 2005, the D/C ratio is 1.22 with a Level of Service "F-15".

Route Concept

The route concept for this segment is to improve the present 4-lane facility to a 4 to 6 lane freeway, along the entire segment from the Solano/Napa County line to the northern junction of Route 121 (PM Nap 0.00 to 10.31).

The justification for improving Route 29 in this segment is the growing demand that will be placed on this route from the increasing population around the City of Napa.

The Route Concept LOS for this route ranges from D-40 to E-30.

Route Improvements

Upgrade to a 4 to 6 lane freeway in the area stated above.

Construct I/C at the junction of Route 121 west (PM 8.66).

Construct I/C at the junction of Route 221 (PM 6.20).

Napa County has proposed a re-alignment easterly of Route 29 that would connect to Route 80 northerly of the City of Vallejo. It would be re-routed in the general vicinity of American Canyon Road. Further studies on this proposal should be considered if requested by Napa or Solano Counties.

If this realignment proposal progresses 'into a viable alternative, the route concept for Segments A and B will be reassessed.

Segment C:
(04-Nap-29, PM 10.31 to 36.89)

Segment C extends from the northern junction of Route 121 and proceeds through sections in the City of Napa, the town of Yountville and the Cities of St. Helena, and Calistoga. The segment ends at the northern junction of 128 near Calistoga.

(1) Existing Facilities

a. Highway Facility

This segment is approximately 26.5 miles long with 1 to 2 lanes in each direction, 0 to 8 foot shoulders and 0 to 46 foot median. Both grade and terrain are flat to rolling.

b. 1984 STIP Projects

FY 86/87- Nap 29
PM 19.6/29.3, widen shoulders and channelize.

c. Public Transit

The City of Napa operates a transit service that runs only within the City itself.

Yountville subsidizes a taxi service that operates only in the town. Bus service is provided that originates at the Veterans Home near Yountville and ends at the City of Napa. Greyhound operates three buses with service from Calistoga to San Francisco.

d. Bicycle

Same as Segment B

e. Park and Ride

There are no park and ride lots located in this segment.

f. Rail

Southern Pacific is planning to abandon the line in this Segment within the year. A number of private concerns are planning to purchase the line for the purpose of operating a tourist steam train.

(2) Current Operating Conditions

The 1982 AADT ranges from 8,000 at Larkmead Lane to 37,000 north of the First Street interchange. Northbound AM peak hour traffic ranges from 400 at the Calistoga junction with 128 west, to 1,000 at the Lincoln Avenue interchange. Southbound AM peak hour traffic ranges from 800 to 3,000 at those same locations. The V/C is .73 and the LOS is C-45.

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

Saturday and Sunday were the days with the highest accident rates with 35% of the total. The hour of day with the highest accident rates are from 2 p.m. to 5 p.m. In this segment, there were 17 fatalities and 506 people injured with a total of 669 accidents. The accident rate on Segment C is 1.60 per MVM; this is lower than 1.73 per MVM which is the Statewide average for this type of facility.

(4) Future Operating Conditions

The projected AADT for 1995 ranges from 9,000 north of Larkmead Lane to 46,000 north of the First Street interchange. For the year 2005, the projected AADT range is 10,000 to 53,000 at those same locations. Northbound AM peak hour volume ranges from 400 to 1,000 in 1995 and from 500 to 1,000 in 2005. Southbound AM peak,hour volume ranges from 1,100 to 4,300 in 1995 and from 1,200 to 5,500 in 2005. The D/C ratio is .97 in 1995, with an LOS of E-25. The D/C ratio for 2005 is 1.09 with an LOS of F-15.

(5) Route Concept

The route concept for this segment is to upgrade the present 4-lane Freeway/Expressway to a 4 to 6 lane freeway from the northern junction of Route 121 to Califorina Drive (PM NAP 10.31 to NAP 19.03)

20-year traffic forecasts indicate the need to widen from the current 2-lane conventional to a 4-lane divided facility from California Drive to the City of Calistoga (PM NAP 19.03 to NAP 36.89).

Before implementation of this concept, further study is needed before any capacity or interchange improvements are included in the regional plan. Additional study is also needed to determine the best combination of trans ortation systems that will utilize the rail line that para lels Route 29.

The Route Concept LOS for this segment ranges from D-40 to E-30.

(6) Route Improvements

Widen Route 29 in the area stated above.

Construct I/C at Trancas Street - Redwood Road (PM 13.5).

The City of Napa has also suggested to include interchanges at Trower Avenue (PM 14.2), Salvador Avenue (PM 15.6), and overcrossings at Sierra Avenue (PM 13.91, and west of Salvador Avenue (PM 15.1). Further study will be required to determine the feasibility of this recommendation.

Segement D
(04-Nap-29, PM 36.89-48.58)

Segment D begins at the northern junction of Route 128 and proceeds through the City of Calistoga to the Napa/Lake County line. This segment is characterized by mountainous terrain and short radius curves.

(1) Existing Facilities

a. Highway Facility

Segment D is approximately 12 miles long. There is one lane in each direction, it has 0 to 8 foot shoulder and no median. The terrain is flat to mountainous.

b. 1984 STIP Projects

There are no HB 4 or HE projects (System Operation Improvements or New Facilities) programmed for this segment.

c. Public Transit

The City of Calistoga assists in a subsidized taxi service that operates only in the town itself. A private bus service operates lines between Calistoga and St. Helena with limited access to the City of Napa.

d. Bicycle

Bicycles are allowed on this segment, yet most bicyclists utilize Silverado Trail. Most bicycle riders do not ride along Route 29 past Tubbs Lane due to the mountainous terrain and narrow shoulders encountered.

e. Park and Ride

No park and ride lots are located in this segment.

f. Rail

There are no facilities located in this segment.

(2) Current Operating Conditions

The 1982 **AADT** ranges from 3,000 north of Silverado Trail to 5,000 north of the junction Route 128 west. Northbound AM peak hour volume ranges from 200 to 300, southbound AM peak hour volume ranges from 300 to 500. The V/C ratio is .23 with a Level of Service "A-50".

(3) Accident Rate

As with all the segments in this route the highest accident rates were on Friday, Saturday and Sunday. The hours of the day with the highest accident rates are from 2:00 p.m. to 5:00 p.m. This three-hour period has held constant for all the segments. There have been a total of 217 accidents. There were four fatalities and 157 injuries. Many of the accidents occurred north of Calistoga due to the mountainous terrain and short radius curves. The accident rate for Segment D is 4.78 per MVM; this is above the Statewide Average of 2.84 per MVM of accidents for this type of facility.

(4) Future Operating Conditions

The 1995 projected AADT ranges from 4,000 north of Silverado Trail to 6,000 at the junction Route 128 west, the range for 2005 is 4,000 to 7,000 at those same locations. Northbound AM peak hour volume for 1995 ranges from 200 to 300 which are the same for the year 2005. Southbound AM peak hour volume for both 1995 and 2005 is 500 to 800. Due to the low projected growth rate for this segment, the D/C ratio and the Level of Service are the same for both 1995 and 2005, a D/C of .42 and a LOS of "B-40".

(5) Route Concept

The route concept is to maintain the current 2-lane conventional highway throughout the entire segment.

No additional lanes are needed in this segment due to the low level of growth expected to take place in this rural area. The Route Concept LOS for this segment is B-45.

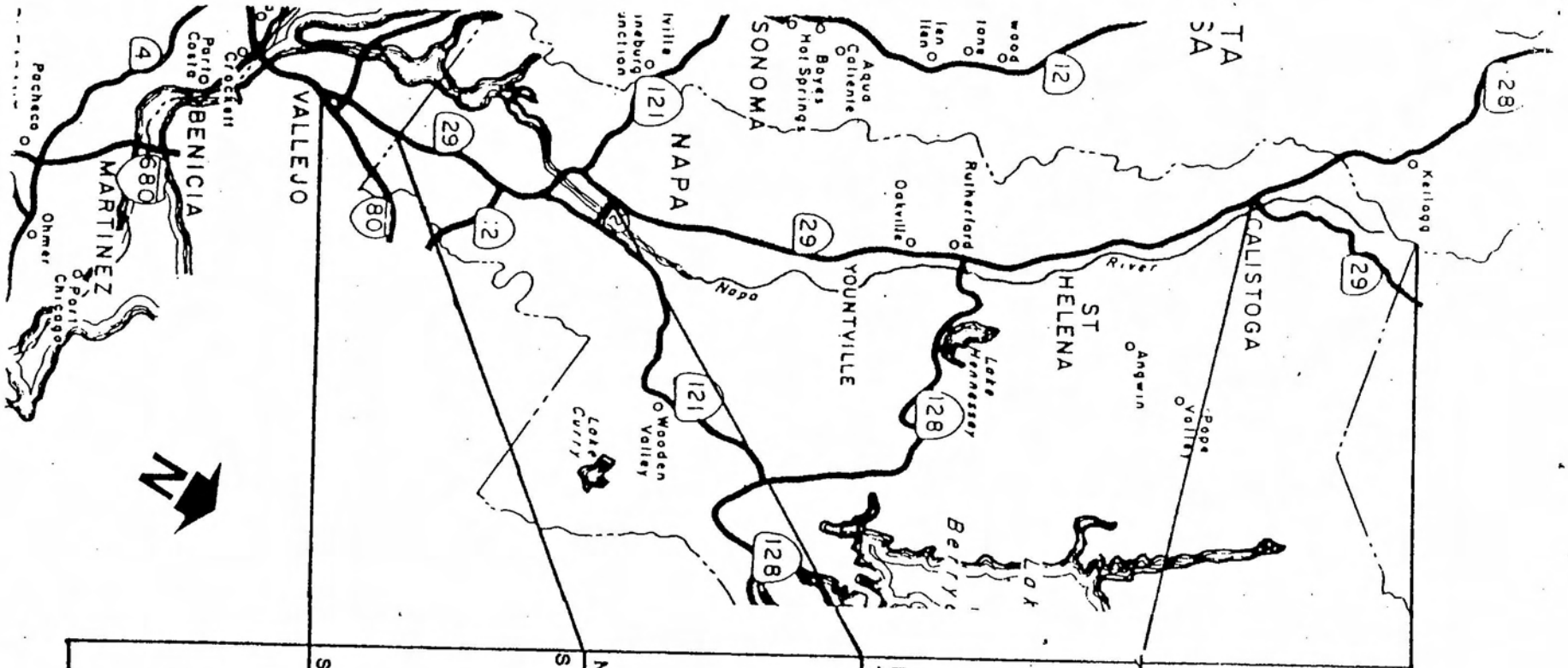
(6) Route Improvements

Realign curves where feasible from Silverado Trail Road to the Napa/Lake County line (PM 37.90 to 48.58).

Widen to provide 40 foot roadbed plus left turn channelization from Brannan Street to Tubbs Lane (PM 37.5 to 39.5).

SEGMENT		A	B	C	D
		SOL 0.00 – SOL 5.96	NAP 0.00 – NAP 10.31	NAP 10.31 – NAP 38.89	NAP 38.89 – NAP 48.68
AADT (,000)	1982	11–27	20–32	8–37	3–5
	1995	26–42	28–40	9–48	4–6
	2005	35–56	30–46	10–53	4–7
P.H.V. (00)	1982	19	22	15	4
	1995	28	32	21	6
	2005	37	41	28	6
AVE HWY SPEED		45	60	55	50
OPERATING SPEED		41	52	38	36
V/C	1982	.80	.66	.73	.23
	1995	1.23	.98	.97	.42
	2005	1.86	1.22	1.08	.42
YEAR CAPACITY WILL BE REACHED		2005	1997	1999	- - - -

EXHIBIT A



SEGMENT		A	B	C	D
		SOL 0.00 – SOL 5.96	NAP 0.00 – NAP 10.31	NAP 10.31 – NAP 36.89	NAP 36.89 – NAP 48.58
NO. OF LANES PROPOSED	PRESENT	4	4	2-4	2
	1995	4-6	4-6	2-4	2
	2005	4-6	4-6	2-4	2
LEVEL OF SERVICE PROPOSED	PRESENT	D-30	C-45	C-45	A-50
	1995	F-10	E-20	E-25	B-40
	2005	F-5	F-15	F-15	B-40
TERRAIN		ROLLING	ROLLING	F/R	MTN/F
GRADES		3-6%	3-6%	0-6%	0-6%
ACTUAL	Accidents Per MVM	4.93	1.00	1.60	4.78
	Fatalities Per MVM	.042	.014	.033	.124

EXHIBIT B

This chart indicates the relationship between 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 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 raodway varies inversely as some function of the traffic volume.

ROUTE 29 ACCIDENT REPORT BETWEEN 1/81 to 12/83

Location P.M.	Segment	No of Accidents Total	Fatal	Inj.	F+I	Persons Killed	Persons Injured	Accident Rate * Fatal	F+I	Total	Statewide Rate * ⊤⊥ Fatal	F+I	Total
SOL 0.00 to 5.955	A	618	5	218	223	6	01	.042	1.90	4.93	.026	1.55	4.08
NAP 0.00 to 10.305	B	294	5	136	140	5	245	.014	.49	1.00	.032	64	1.48
NAP 10.305 to 36.89	C	669	14	295	309	17	506	.033	.74	1.60	.048	.80	1.73
NAP 36.89 to 48.58	D	217	4	90	94	4	157	.124	2.39	4.78	.079	1.52	2.84

* Rates per per MVM (Million Vehicle Miles)

⊤⊥ Statewaide Average for this type of facility

EXPLANATION TO TRAFFIC VOLUME TABLES

COLUMN	DESCRIPTION
SEGMENT	Description of the Route Segment
CO	County Abbreviations
MILE POST	Mile Post in County
AADT	Annual Average Dally Traffic Count
AM PK	Morning Peak Hour Traffic
AH	Volumes Ahead Direction
BK	Volumes Back Direction
NO L	Number of Lanes (Existing) One Direction
V/C	Volume/Capacity: Ratio Volume Traffic to Max. No. of Traffic/Hr.
LOS	Level of Service According to the Functional Classification of the Route Relative to the Terrain and Facility
LN	Number of Lanes Needed to Meet LOS "D" One Direction/Urban
	Number of Lanes Needed to Meet LOS "B" One Direction/Rural
% Truck AADT	Truck % of Average Annual Daily Traffic Count
% Truck PK HR	Truck % at Peak Hour

TRAFFIC PROJECTION

1983/4 ROUTE CONCEPT STUDY
ROUTE 29 SHEET 1 OF 2

SEGMENT	CO	ROUTE 29 POST MILE	DESCRIPTION	TRUCK % AA PK DT	HR	1982 AADT	AM AH	PK BK	NO L	V/C	LOS	LN	1995 AADT	AM AH	PK BK	NO L	V/C	LOS	LN	2005 AADT	AM AH	PK RK	NO L	V/C	LOS	LN
		0.00	SOL. NAP CO. LINE																							
				7	4	27	7	2 3	2	0.64	C	2	30	7	28	2	0.78	D	2	34	6	36	2	1.00	E	3
	NAP	0.69	AMERICAN CANYON ROAD																							
				1	4	28	7	2 3	2	0.64	C	2	38	8	35	2	0.99	E	3	44	8	45	2	1.25	F	3
		2.76	GREEN ISLAND ROAD																							
				7	4	26	7	2 1	2	0.58	C	2	34	7	33	2	0.92	E	3	39	7	42	2	1.17	F	3
		3.61	KELLY ROAD SOUTH																							
B				7	4	26	7	2 1	2	0.70	C	2	34	7	33	2	1.10	F	5	39	7	42	2	1.40	F	7
		4.71	JCT. RTE 12 EAST																							
				7	4	32	8	2 6	2	0.87	C	4	40	9	40	2	1.33	F	6	46	9	51	2	1.70	F	8
		R6.20	JCT. RTE 221 NORTH																							
				7	3	20	5	1 7	3	0.33	B	3	26	6	25	3	0.56	C	4	30	6	32	3	0.71	D	5
		R8.66	JCT. RTE 121 SOUTH																							
				6	4	24	7	2 4	2	0.80	D	4	31	7	32	2	1.07	F	5	36	7	40	2	1.33	F	6
		R10.39	JCT. RTE 121 NORTH																							
		10.31																								
				5	3	27	7	23	3/2	0.64	C	3/2	33	7	32	3/2	0.89	D	3/2	38	7	40	3/2	1.11	F	3
		11.55	FIRST ST. INTERCHANGE																							
				3	2	37	10	32	2	0.86	C	2	46	10	43	2	1.19	F	3	53	10	55	2	1.53	F	4
		12.04	LINCOLN AVENUE INTERCHANGE																							
C																										
		12.49	END FREEWAY																							
				7	4	30	8	25	2	0.69	C	2	35	8	33	2	0.92	E	3	40	7	42	2	1.17	F	3
		13.06	TRANCAS ROAD REDWOOD ROAD																							
				5	3	21	6	18	2	0.50	B	3	21	5	23	2	0.64	C	2	24	5	29	2	0.81	D	2

1983/4 ROUTE CONCEPT STUDY
ROUTE 29 SHEET 2 OF 2

EGMENT	CO	ROUTE 29 POST MILE	DESCRIPTION	TRUCK % DT	HR	1982 AADT	AM AH	PK BK	NO L	V/C	LOS	LN	1995 AADT	AM AH	PK BK	NO L	V/C	LOS	LN	2005 AADT	AM AH	PK BK	NO L	V/C	LOS	LN
C (Continued)		15.58	OAK KNOLL AVENUE	4	3	15	6	12	2	0.40	B	2	18	6	17	2	0.57	C	3	20	7	18	2	0.60	C	3
		19.01 19.03	CALIFORNIA DRIVE INTERCHANGE	3	2	12	5	10	1	0.67	C	2	16	6	15	1	1.00	E	3	17	6	16	1	1.07	F	3
		22.52	OAKVILLE GRADE ROAD	3	3	12	6	13	1	0.87	D	2	16	6	17	1	1.13	F	3	17	7	18	1	1.20	F	3
		24.60	RUTHERFORD JCT. RTE. 128 EAST	3	2	13	6	14	1	0.93	E	2	16	7	18	1	1.20	F	3	17	7	19	1	1.27	F	3
		26.57	ZINFANDEL LANE	3	3	14	7	14	1	0.93	E	2	17	7	19	1	1.27	F	3	19	8	20	1	1.33	F	3
		28.75	ST. HELENA, ADAMS	4	3	14	7	15	1	1.00	E	3	17	7	19	1	1.27	F	3	18	8	20	1	1.33	F	3
	NAP	29.25	ST. HELENA PRATT	3	3	11	6	12	1	0.30	D	2	14	6	17	1	1.13	F	3	15	7	18	1	1.20	F	3
		30.66	LODI LANE	3	3	8	4	9	1	0.60	C	2	10	4	11	1	0.73	C	2	11	5	12	1	0.80	D	2
		33.47	LARKMEAD LANE	3	3	8	4	8	1	0.53	C	2	9	4	11	1	0.73	C	2	10	5	12	1	0.80	D	2
		36.89	CALISTOGA JCT. RTE. 128 WEST	3	2	5	3	5	1	0.33	B	1	6	3	8	1	0.53	C	2	7	3	8	1	0.53	C	2
D		37.90	CALISTOGA SILVERADO TRAIL	2	2	3	2	3	1	0.20	A	1	4	2	5	1	0.33	B	1	4	2	5	1	0.33	B	1
		39.50	TUBBS LANE	1	1	3	2	3	1	0.20	A	1	4	2	6	1	0.40	B	1	4	2	6	1	0.40	B	1
		48.58	NAP-LAKE CO. LINE																							

TRAVEL DEMAND PROJECTIONS METHODOLOGY (ABSTRACT)

1995 & 2005 Demand Person Trips Projections
34 x 34 ABAG/MTC Region Superdistricts Matrix
Conputer-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 methodoloyy 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 estimetions ("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 beiween 1980 and 2005:

1. Trip production rates, as functions of the nunber 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-ecbnomic densities vs. higher fleet efficirncies and/or real earnings would have compensatory effects on trip lengths.

Route 29

COMPARISON OF FUTURE LOS WITH ROUTE CONCEPT

SEGMENT	NO. LANES/LOS			ROUTE CONCEPT		NEEDS	
	1982	1995	2005	Proposed Lanes	LOS	Lanes	Target LOS
A							
0.0-4.73	4/D-30	4/F-10	4/F-5	4C-6E	D-40	8-16	D-35
4.73-5.96	4/D-30	4/F-10	4/F-5	4-6F	D-40/E-30	8-16	D-35
B							
0.0-10.31	4/C-45	4/E-20	4/F-15	4-6F	D-40	6-16	D-35
C							
10.31-15.58	4/C-45	4/E-30	4/E-10	4-6F	D-40/E-30	6-8	B-50
15.58-36.8	2/D-35	2/E-30	2/F-20	4 DIV.	D-40/E-30	4-6	B-50
D							
36.85-48.58	2/A-50	2/B-40	2/B-40	2C	B-45	2-4	B-50

'EXPLANATIONS TO: Existing Facilities (Bridges) Tables

1. Bridge number: Suffix, when used, is coded as follows:

J = Outer Outer Left
K = Left Outer Highway Structure
L = Left Structure or Left Inner Structure
C = Center Structure
R = Right Structure or Right Inner structure
S = Right Outer Highway Structure
T = Outer Outer Right
Y = Structure or Grade Xing on State-owned and Maintained connections not on main Hwy (mag be closed)
W = Drainage Pumping Plant
M = Buried Hazard or Miscellaneous Structure
Z = Access to Private Property or Closed w/no access
E = Connector Structure
F = Connector Structure
G = Connector Structure
H = Connector Structure

2. Name or description - mas contain miscellaneous information. Additional miscellaneous information may be found on the same line under the heading "Structure Type of PUC number or Pump Data".)

3. State Highway Route

4. Post. Mile (To 1/100 Mile)
Prefixes of R, M, and N Refer to realigned routes. C refers to commercial routing. L refers to section paralleling another route (non-add).

5. City (Caltrans "ALPHA" code)

6. Structure type or PUC number or pump. data

A. Structure type-Three types may be shown for multiple-type structures. Spacings are 3-column, 3-column and 3-column.

CODING 1ST 2 COLUMNS OF ALL 3 TYPES

LS - Log Stringer
TS - Timber Stringer
TT - Timber Truss
TA - Timber Arch
SP - Steel Pipe (Girder)
SS - Steel Stringer (Rolled Sections)
SG - Steel Plate Girder
TB - Timber Slab (Laminated)
SB - Steel Box Girder
ST - Steel Truss
SA - Steel Arch
CS - Concrete Slab
PS - Precast Concrete Slab
PB - Precast Concrete Box Girder
CA - Concrete Arch

CG - Concrete Girder
CP - Concrete Pipe.
CU - Concrete Arch Culvert
PG - Precast Concrete Girders

QB - Cast in place prestressed box Girder
QG - Cast in place prestressed Girder (Not Box)
QS - Cast in place prestressed slab
QX - Precast prestressed box girder
QI - Precast prestressed "I" girder
QJ - Precast prestressed Double "T" Girder
QK - Precast prestressed "T" Girder

CB - Concrete Box Girder
CC - Concrete Box Culvert
CG - Concrete Girder
CP - ,Concrete Pipe
CU - Concrete Arch Culvert
PG - Precast Concrete Girder

QT - Precast prestressed inverted "T" Girder
SA - Steel Arch
QU - Precast prestressed inverted "U" Girder
QW - Precast prestressed inverted "W" Girder
QA - Precast prestressed slab

SU - Suspension
MP - CMF or Multi Plate
TU - Tunnel
MA - Masonary Arch
CT - Combination Truss (Steel and timber)
TW - Timber retaining wall
CW - Concrete retaining wall
SW - Steel retaining wall
CD - Concrete Dam
ED - Earth Dam
SLS - Seal Slab
FER - Ferry Boat

6. structure type or PUC Number or Pump Data (cont'd) Third column is coded, where it applies, as follows:

A = Welded
B = Welded Continuous
T = Through
L = Through Continuous
D = Deck
H = Deck Continuous
P = Pony
O = Open Spandrel
F = Earth Fill
B = Box (Box Girder)
C = Continuous
E = Continuous with Std. Cantilevered Ends (No Abuts.)
W = Sidewalk
K = Pier or Tower Span

I - Continuous Over Inclined Bents
Q - Prestressed (Use other coding if possible)
S - Stayed
R - Orthotropic

B. Drainage Pumps - Spacings are 2-columns, 3-columns and I-column

The first two columns will show the number of pumps (pit pumps not included) and the type of pit.

Code for Type of Pit: W - Wet Pit
U - Dry Pit
G - Gravity
S - Submerged

Second three columns will show information on auxiliary power supply, if such power is available. The following will be shown:

A. Number of Pumps that operate from auxiliary power supply
B. Type of motor for auxiliary power supply

Code for Type of Motor: G - Gasoline Motor
D - Diesel Motor
N - Natural Gas

C. The Type of Drive from the Auxiliary Power Supply to the Pumps
Code for type of Drive: M - Mechanical (Direct)
V - Electrical (Generator)

Third single column wili show the type of control device for the pumps.
Code for control device: E - Electrode
F - Floats
P - Pressure
C - Combination

C. PUC Number (For Railroad Grade Crossings)

D. Wid. or Ext. Type: Latest widening or extension. See code explanation in (6).

7. Total bridge length (ft) or grade crossing protection. Main Type of signal only coded as follows:

FLC - Flashing Lights on Cantilever Arms
FL - Flashing Light Signals
G - Manual Gates
H - Human Flagmen
K - Automatic Gates
M - Flashing Lights Signals with Rotating Stop Banner
O - Standard Overhead Sign
T - Traffic Signals Synchronized
W - Standard Wigwag
WM - Magnetic Wigwag Flagment or Other Type of Wigwag with Flashing Light Aspect
X - Standard Crossbuck
XR - Reflectorized Crossbuck

8. Bridge Width (Feet)

BRIDGE LIST AND LOG

BRIDGE NUMBER		NAME OR DESCRIPTION	POST MILE	DIST	CO	CITY.	STRUCTURE TYPE OR PUC NUMBER	LENGTH	WIDTH
23	87	RTE 80/29 Separation	0.01	10	SOL	VALL	CGC	156	102
23	33	SONOMA BLVD. GX	1.36	10	SOL	VALL	00AAB006840	2K	
23	26	NORTH VALLEJO GX	3.19	10	SOL	VALL	XXX	2SL	

BRIDGE LIST AND LOG

BRIDGE NUMBER	NAME OR DESCRIPTION	POST MILE	DIST	CO	CITY.	STRUCTURE TYPE OR PUC NUMBER	LENGTH	WIDTH
	NAPA			NAP				
	JCT RTE 29 AHD	00000	04	NAP		E ON 12		
	SOLANO CO LINE	00331	04	NAP				
	SOLANO CO LINE	00000	04	NAP				
21 40	AMERICAN CYN C	00056	04	NAP		CS	23	48
21 91 Y	COLLINS GXING	00075	04	NAP		AAB 63.10	3FL	28
21 43	LOMBARD GR XNG	00240 .	04	NAP		AA 61.70	4K	44
21 42	NAPA JCT GR XN	00280	04	NAP		AB 62.00	4K	50
	JCT RTE 12	00471	04	NAP				
21 71	SUSCOL CREEK	00615	04	NAP		MAFCAFCS	14	69
21 39	BASALT ROCK UC	00770	04	NAP	NAP	CSC	34	87
	JCT RTE 121 AH	00887	04	NAP		LT ON 29		
21 77	TULUCAY CREEK	00906	04	NAP		CSC	62	48
21 76	NAPA RIVER GX	00925	04	NAP	NAP	AB 68.30	2K	38
21 75	NAPA RIVER	00942	04	NAP	NAP	STTSS	414	26
	JCT RTE 121 LT	01031	04	NAP		RT ON 29		
21 86 R	IMOLA AVE SEP	01031	04	NAP		CGB	89	37
21 86 L	IMOLA AVE SEP	01031	04	NAP		CGB	88	41
21 90	OLD SON RD DRN	01066	04	NAP		CS	16	48
21 87	OLD SON RD OC	01070	04	NAP		CGQCS I		48
21 87	OLD SON RD OC	01070	04	NAP		CGQCS I	307	32
21 88	FIRST ST OC	01155	04	NAP		SGA		60
21 88	FIRST ST OC	01155	04	NAP		SGA	296	34
21 22 R	NAPA CREEK	01165	04	NAP		CSCCGC	108	58
21 22 L	NAPA CREEK	01165	04	NAP		CGC	108	37
21 89	LINCOLN AVE OC	01204	04	NAP	NAP	CGQCG I		50
21 89	LINCOLN AVE OC	01204	04	NAP	NAP	CGQCG I	269	56
21 32	SOLANO AVE GX	01315	04	NAP	NAP	AB 71.70	4K	62
21 48	CRAIG CREEK	01411	04	NAP	NAP	CS	26	63
21 13 Y	OAK KNOLL A GX	01580	04	NAP		AB 74.30	2K	60
21 14 R	DRY CREEK	01648	04	NAP		CGC	86	37
21 14 L	DRY CREEK	01648	04	NAP		MAFSS	91	36
21 51	PERFUME CREEK	01781	04	NAP		CS	22	48
21 47	CALIF DRIVE UC	01903	04	NAP	VNTV	CGC	114	87
21 53	LINCOLN CREEK	02190	04	NAP		MAFCAF	15	26
21 54	DOAK CREEK	02265	04	NAP		MAFCAF	17	27
21 34	OAKVILLE SPUR	02290	04	NAP		AB 81.30C	2X	22
	JCT RTE 128	02460	04	NAP				

BRIDGE LIST AND LOG

BRIDGE NUMBER	NAME OR DESCRIPTION	POST MILE	DIST	CO	CITY.	STRUCTURE TYPE OR PUC NUMBER	LENGTH	WIDTH
21 35	BEAULIEU SPUR	02470	04	NAP		AB R3.60C	2X	22
21 46	BALE SLOUGH OV	02530	04	NAP		MAFSS	19	33
21 15	BALE SLOUGH	02539	04	NAP		MAFSS	50	36
21 36	WHITEHALL GX	02636	04	NAP		AB 84.80	2X	32
21 16	SULPHUR CREEK	02843	04	NAP	SHLA	MAFCGW	70	28
21 17	YORK CREEK	02929	04	NAP'	SHLA	MAFCS	35	39
21 56	MILL CREEK	03205.	04	NAP		MAFCS	16	37
21 57	RITCHIE CREEK	03313	04	NAP		MAFCS	21	37
21 60	DIAMOND MTN CR	03573	04	NAP		MAFCAFMP	24	49
	JCT RTE 128 AH	03689	04	NAP	CSTG	RT ON 29		
21 18	NAPA RIVER	03703	34	NAP	CSTG	CG	62	59
21 5	GARNETT CREEK	03908	04	NAP		MAP	81	19
21 4	TROUTDLE CR	04711	04	NAP		CS	26	28
	LAKE CO LINE	04858	04	NAP				

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.