FINAL

JUL 11 1985

SUMMARY

ROUTE CONCEPT REPORT
ROUTE 121

(04-Son-121 PM 0.00 to Nap 22.08)

This report defines the concept for development of Route 121 in District 4 for a 20 year planning period (1985-2005).

Segment A:	Son 0.00 to 6.69	4 Lane Conventional	B-50
Segment B:	Son 6.69 to 11.62	4 Lane Conventional	B-50
Segment C:	Nap 0.00 to 4.47	4 Lane Conventional	B-50
Break in Route:	See Route 29 Concept Report		
Segment D:	Nap 4.47 to 9.40	2-4 Lane Conventional	F-10
Segment E:	Nap 9.40 to 22.08	2 Lane Conventional	C-45

CONCEPT RATIONALE

Route 121 is a recreational, commercial and commuter route. It is part of the main transportation corridor between Lake Berryessa/Sonoma and the Bay Area. Route 121 is the only direct route between Napa and the City of Sonoma.

It also serves a portion of the commercial truck traffic from the wine country into Marin and San Francisco Counties.

AREAS OF CONCERN

The Cities of Napa and Sonoma are expected to increase their populations by 17.4% and 31% respectively by the year 2000. This will significantly increase the traffic flow between the two cities as well as the outbound commute. The section of Route 121 that is contained within the Napa City limits is presently at capacity during its peak hours.

IMPROVEMENTS

Widen from 2 to 4 lanes from Route 37 in Sonoma County to the Route 121/29 junction. Install a grade separated interchange at the southern 121/29 intersection.

ROUTE CONCEPT REPORT

ROUTE 121

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, Chief Date
Division of Highways and
Programming

Approved:

JACK KASSEL, Chief Date
Division of Project
Development

NAP 22.08 NAP 9.40	E
NAP 4.47	D
Refer to Route 29 Concept Report	
NAP 4.47 NAP 0.00	C
SON 11.62 SON 6.69	B
SON 0.00	A

LOCATION MAP
ROUTE 121

1. Route Description

Route 121 is approximately 34 miles long, and traverses two counties: Sonoma and Napa Counties. It begins at Route 37 near Sears Point in Sonoma County and runs northerly to the Route 116 junction. From there it turns easterly and continues to the Sonoma/Napa County line. Still leading east, Route 121 runs to the southern 29/121 junction where there is a break in the route. It resumes approximately 1.7 miles to the north at the northern 29/121 junction, and continues easterly to the 221/121 junction near Napa. From there it turns north and runs northeasterly to Route 128.

The legislative description is as follows:

Route 121 is from:
(a) Route 37 near Sears Point to Route 29 near Napa.
(b) Route 29 in Napa to Route 128.

Route 121 is part of the State Freeway and Expressway System in its entirety. It is also part of the State Scenic Highway System from Route 37 to Route 12 and from Route 221 to near the vicinity of Trancas Street in northeast Napa.

The break in Route 121 is discussed in the Route 29 Route Concept Report.

Route 121 is a part of the Federal Aid Primary System. It is functionally classified as a rural minor arterial with an extension into an urban area (Napa City).

2. Purpose of Route

Route 121 is broken into two sections, separated by approximately 1.7 miles of Route 29. The northern section is primarily a recreational route going to and from the Lake Berryessa Recreational Area, except for that part contained within the Napa city limits which is used heavily by local traffic.

The southern section is used by recreational, commuter, and commercial traffic.

3. Route Segments

A. Segment A

(04-Son-121, PM 0.00-6.69)

This segment of Route 121 begins at Route 37 near Sears Point and runs in a northerly direction through the foothills of the Sonoma Mountains to the Route 121/116 junction. The land to both sides of the route is used primarily for grazing and agriculture. The traffic is commuter/commercial during the week.

(1) Existing Facilities

a. Highway Facility

This segment has one lane in each direction, with 0-4 foot shoulders and no median. It consists of rolling terrain and a grade that varies from 0-3%.

b. 1984 STIP Projects

No projects have been planned.

c. Public Transit

There is no public transit along this segment.

d. Bicycle

This segment is part of the recommended bicycle route. This route is used mainly by recreational users. The shoulders should be wide enough to provide adequate widths for bicyclists.

e. Park and Ride

There is one state-owned facility located at the 121/116 intersection that has 47 spaces.

f. Rail

The Northwestern Pacific Railroad runs parallel to this segment. It is still in use as a commercial railroad. No plans for any passenger rail service have been proposed.

2. Current Operating Conditions

The 1982 AADT is 9,000 and the northbound-southbound AM peak hour traffic is 300 and 500 vehicles, respectively. The V/C and LOS are 0.42 and C-45. The LOS of C-45 is due to poor visibility caused by short radius curves.

The traffic described above is midweek peak hour traffic. The volume on the weekend can be higher, and is increasing steadily as more people are discovering the pleasures of wine tasting and the spectacular beauty of the Sonoma and Napa Valleys. Though this traffic is at its peak in the summer months, the weekend volumes are probably higher than midweek traffic for most of the year. Sears Point Raceway is located on Route 121 just north of the junction with Route 37. On weekends when an event is held, traffic on both Routes 121 and 37 is heavily congested at certain periods, often necessitating traffic control.

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

There was a total of 125 accidents, 5 causing fatalities and 65 causing injuries. This resulted in 7 people being killed and 96 injured. The accident rate was steady throughout the day (7am - 7pm). 57.6% of all accidents occurred in the northbound lane and 42.4% of all accidents happened on the weekend. Additionally, a little less than half the total number of accidents occurred at night where no lighting was present.

The fatality rate is 0.072/MVM, which is greater than the statewide average of 0.069/MVM for the same type of highway. The total accident rate is 1.81/MVM, which is less than the statewide average of 2.10/MVM.

(4) Future Operating Conditions

Santa Rosa is one of the fastest growing cities in Northern California, with an expected increase in population by the year 2000 of approximately 53,000 people. The cities of Vacaville, Fairfield and the rest of Solano County are also expected to increase their populations dramatically (an estimated 62%). This may lead to an additional demand in the corridor between the two regions.

The projected 1995 and (2005) AADT is 15,000 (18,000). Northbound AM peak hour traffic is 700 (700) and southbound AM peak hour traffic is 700 (900). The D/C and LOS are 0.56 (0.72) and C-45 (C-40). This segment is currently operating at C-45 and is expected to remain at or below this level. The concept LOS of B-50 is the expected LOS after buildout.

(5) Route Concept

A 4-lane conventional highway is needed throughout this segment.

(6) Route Improvements

Reconstruct existing 2 lanes into a 4-lane conventional highway. Provide shoulders wide enough to accomodate bicycles safely.

B Segment B (04-Son-121 PM 6.69-11.62)

This segment begins at the Route 121/116 junction and ends at the Sonoma/Napa County line. Adjacent land is used for agriculture, grazing and small business. Traffic is recreational, commuter, and commercial.

(1) Existing Facilities

a. Highway Facility

This segment has one lane in each direction with 0-6 foot shoulders and no median. The terrain is rolling and has a 3-6% grade with sustained grades 1/4 mile or less.

b. 1984 STIP Projects

No projects are in progress and none are being planned.

c. Public Transit

There are no transit systems that operate along this segment of Route 121.

d. Bicycle

There are no bicycle paths along this segment, though there is plenty of room for one. Since this is the only direct route between Napa and Sonoma, it carries all the bicycle traffic between the two cities. A proper bike lane may decrease accidents, and convince more commuters to bicycle to work.

e. Park and Ride

There are no facilities along this segment.

f. Rail

There is no rail of any kind at this time.

(2) Current Operating Conditions

The 1982 AADT ranges from 8,000 west of Napa Road to 12,000 east of Napa Road. The AM peak hour traffic ranges from 200 to 400 eastbound and from 200 to 400 westbound. The V/C and LOS are 0.30 and C-45. The route has short radius curves and hills; the poor visibility limits passing and results in the LOS of C-45.

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

There was a total of 133 accidents, 1 causing fatalities and 54 causing injuries. This resulted in 1 person being killed and 86 injured. The peak accident hours are from 8 AM to 5 PM and are fairly consistent throughout the week. Approximately 10% more accidents occur in the northbound lane with over 44% of all accidents occurring with wet road conditions. The fatality rate is 0.021/MVM and the total accident rate is 2.79/MVM. The latter exceeds the statewide average of 2.46/MVM.

(4) Future Operating Conditions

The projected 1995 (2005) AADT ranges from 10,000 (12,000) west of Napa Road to 15,000 (19,000) east of Napa Road. The AM peak hour traffic ranges from 300 (300) to 700 (700) eastbound, and from 200 (300) to 500 (900) westbound. The D/C and LOS are 0.41 (0.51) and C-45 (C-45). This segment is expected to continue to operate at or below C-45. The concept LOS of B-50 reflects the expected operation after buildout.

This route goes through somewhat hilly country between Sonoma and Napa. Increasing traffic combined with slow-moving trucks will likely cause conjestion along parts of this segment. The route in this segment should be increased to 4 lanes to facilitate traffic flow. TSM programs and transit services should also be investigated to help alleviate increasing congestion.

(5) Route Concept

A 4 lane conventional highway will be needed, full 8 foot shoulders wherever possible, with a minimum of 4 foot shoulders. The concept LOS is B-50, after improvements.

(6) Improvements

Add 1 lane in each direction throughout this segment; widen shoulders where possible to provide safe facilities for bicycles.

C. Segment C (04-Nap-121 PM 0.00-4.47)

This segment begins at the Sonoma/Napa County line and ends at the southern 121/29 junction. Adjacent land is used for agriculture, grazing and small business.

(1) Existing Facilities

a. Highway Facility

This segment has one lane in each direction except from PM 0.09 to Pm 0.58 which has a truck climbing lane in the westbound direction. The shoulders vary from 0 to 8 feet and there is no median. The terrain is rolling with grades of 3-6%.

b. 1984 STIP Projects

There are no future projects scheduled in this segment.

c. Public Transit

There are no transit systems in this segment.

d. Bicycles

See Segment B comments.

e. Park and Ride

There are no present park and ride lots along this segment; however, a state-owned facility is being planned as part of Caltran's proposed 5 year Park and Ride program. It will be located at Stanley Lane along Route 121 and should have 50 spaces. It is being planned for FY 87/88.

f. Rail

There is no rail system in this segment presently.

(2) Current Operating Conditions

The 1982 AADT ranges from 12,000 west of Cutting Wharf Road to 13,000 west of the Route 29/121 junction. The AM peak hour traffic ranges from 500 to 600 eastbound and from 300 to 400 westbound. The V/C and LOS are 0.44 and C-45, respectively. This LOS reflects the limits on speed and passing possibilities due to short radius curves, hills, and poor sight lines.

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

There was a total of 57 accidents, 3 causing fatalities and 30 causing injuries. This resulted in 3 people being killed and 50 injured. The peak accident hours were at 9 AM and between 1 PM and 5 PM, accounting for approximately 60% of all accidents. The highest number of accidents (17.5%-19.2%) were on Monday, Friday and Saturday with 56.1% of all accidents occurring in the northbound land.

The fatality rate was 0.049/MVM and the total accident rate was 0.93/MVM. These are both below their respective statewide averages of 0.058/MVM and 1.78/MVM.

(4) Future Operating Conditions (1995 and 2005)

The projected 1995 and (2005) AADT range from 15,000 (19,000) west of Cutting Wharf Road to 17,000 (20,000) west of the Route 29/121 junction. The AM peak hour traffic is 600 (700) eastbound and ranges from 500 (700) to 600 (900) westbound. The D/C and LOS are 0.55 (0.65) and C-45 (C-40).

This route goes through somewhat hilly country between Sonoma and Napa. Increasing traffic combined with slow-moving trucks will likely cause conjestion along parts of this segment. No capacity improvements are presently planned; slow-moving vehicle lanes in problem locations would facilitate traffic flow. TSM programs and transit services should also be investigated to help alleviate increasing congestion. Traffic is subject to delays at the traffic signal at the Route 121/29 intersection. Route 29 is heavily travelled and is expected to increase; to prevent a bottleneck, the intersection should be upgraded and a grade-separated interchange constructed. The segment is expected to operate at an LOS of C-40 if the improvements are not done; the concept LOS of B-50 assumes the completion of the improvements.

(5) Route Concept

A 4-lane conventional highway will be needed in this segment, full 8 foot shoulders wherever possible, and a minimum of four foot shoulders to accommodate bicycles. The concept LOS is B-50, after improvements.

(6) Improvements

Add 1 lane in each direction throughout this segment. Provide shoulders that are adequate for the safety of bicyclists.

Construct a grade-separated interchange at the southern 121/29 intersection.

D. Segment D (04-Nap-121 PM 4.47-9.40)

This segment of Route 121 begins at the northern 29/121 junction (Imola Ave.), runs through the City of Napa and ends at Trancas Street. Local traffic is very heavy throughout the week. Portions of this segment can be even more congested on the weekends when local and recreational traffic are combined.

(1) Existing Facilities

a. Highway Facility

This segment has one lane in each direction except from PM 5.86 to 6.55 (on Imola and Soscol Avenues) which is a 4 lane divided highway. The shoulders vary from 0 to 11 feet and the median ranges from 0 to 36 feet. The segment runs through the city over terrain that goes from flat to rolling and has a grade of 0-6% with less than 1/4 mile of sustained grade.

b. 1984 STIP Projects

FY 88/89
PM 6.69/9.4 Widen to 40 feet

c. Public Transit

Napa City has 3 buses that run on this segment every half hour between 7:00 AM and 7:00 PM.

d. Bicycle

Bicycle use is heavy along this segment. The sections that don't have shoulders will be widened so they will have them, which will facilitate bicycle travel along this segment.

e. Park and Ride

There are no existing Park and Ride lots on this segment, but a state-owned facility is being planned as part of the Caltrans proposed five year Park and Ride Program. The lot would be located at the Imola Avenue and Route 29 intersection and will have 74 spaces. There is an informal Park and Ride lot on the southwest corner of Soscol and Imola Avenues.

f. Rail

There is no nearby rail system that affects this segment, nor is any being planned.

(2) Current Operating Conditions

The 1982 AADT ranges from 10,000 south of Trancas Street to 25,000 north of the Route 221/121 junction. The AM peak hour traffic ranges from 300 to 800 northbound and from 400 to 1000 southbound. The V/C and LOS are 0.76 and D-30, respectively.

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

There was a total of 177 accidents, 3 causing fatalities and 124 causing injuries. This resulted in 4 people being killed and 176 injured. The peak accident hours are between 1 PM and 4 PM, while the daily accident rates are fairly constant throughout the week. The fatality rate is 0.034/MVM and the total accident rate is 2.03/MVM. This is below the statewide average of 0.041/MVM and 3.98/MVM respectively.

(4) Future Operating Conditions

The projected 1995 (2005) AADT ranges from 14,000 (17,000) south of Trancas Street to 34,000 (41,000) north of the Route 221/121 junction. The AM peak hour traffic ranges from 200 (300) to 900 (900) northbound and from 700 (800) to 1800 (2200) southbound. The D/C and LOS are 1.33 (1.58) and F-15 (F-10).

This segment of Route 121 currently has periods of congestion both on weekends and weekdays. The route is urban in this area and is the main road north/south on the east side of Napa. Route 121 is also the major east-west connector across the Napa River. The bridge across the river is only two lanes and creates a bottleneck. No improvements are anticipated to the bridge at this time. The route is built up along the entire segment; some areas have steep banks, and buildings close to the road, making any project to increase capacity difficult. Further widening of shoulders where needed should be investigated, and additional right and left turn lanes where feasible. TSM projects should be considered to ease traffic flow. Additional transit could help some commuter traffic. The department should work closely with local agencies to assist in finding methods of reducing congestion along this segment.

(5) Route Concept

Capacity improvements are not proposed on this segment: alternatives need to be investigated. The concept LOS is F-10.

(6) Improvements

No capacity improvements are planned. Further widening of shoulders, channelization, and TSM projects should be investigated and implemented where feasible.

E. Segment E (04-Nap-121 PM 9.40-22.08)

This segment of Route 121 begins at Trancas Street, winds through the mountains, and ends at Route 128. The traffic is mainly due to travelers going to and from Lake Berryessa, and is heaviest on the weekend.

(1) Existing Facilities

a. Highway Facility

This segment has one lane in each direction, with 0-6 foot shoulders and no median. It runs through the hills over rolling and mountainous terrain. The grade is from 3% to greater than 6% for 1/2 or less of the segment length. Sustained grades are no greater than 3/4 mile in length.

b. 1984 STIP Projects

FY 85/86
PM 11.9/13.5 Roadway reconstruction

FY 86/87
PM 17.9/22.0 AC overlay

c. Public Transit

There are no transit systems that service this segment.

d. Bicycle

There are no bike paths or lanes in this segment.

e. Park and Ride

There are no facilities at this time and none are being planned.

f. Rail

There is no rail system along this segment.

(2) Current Operating Conditions

The 1982 AADT ranges from 2,000 south of Route 128 to 8,000 north of Trancas Street. The AM peak hour traffic ranges from 100 to 200 northbound and from 100 to 300 southbound. The V/C and LOS are 0.16 and C-45 respectively. This LOS reflects the poor visibility caused by short radius curves and hills.

Lake Berryessa is not only a very popular recreational area during the summer, but for the rest of the year as well. The above traffic counts, which represent midweek peak hour commute times, may be conservative as they don't take into account this high weekend recreational traffic. As the destination is a lake, a lot of the traffic will be towing trailers with boats, which are sometimes very large. This can cause lengthy delays especially since there are numerous 15-25mph curves and no passing lanes.

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

There was a total of 138 accidents, 95 causing injuries. This resulted in 133 injuries and no fatalities. Peak accident hours are between 3 PM and 5 PM with 41% of the total accidents occurring on the weekend. As would be expected on a route where most of the traffic is due to a nearby lake, the summer months account for 60% of all accidents. The total accident rate is 3.36/MVM which is greater than the statewide average of 2.96/MVM.

(4) Future Operating Conditions

The projected 1995 (2005) AADT ranges from 3,000 (3,000) south of Route 128 to 10,000 (11,000) north of Trancas Street. The AM peak hour traffic is 100 (100) northbound and ranges from 200 (200) to 500 (600) southbound. The D/C and LOS are 0.31 (0.36) and C-45 (C-45). The LOS is expected to remain at or below C-45 due to the hilly conditions and short radius curves that reduce visibility and the ability to pass.

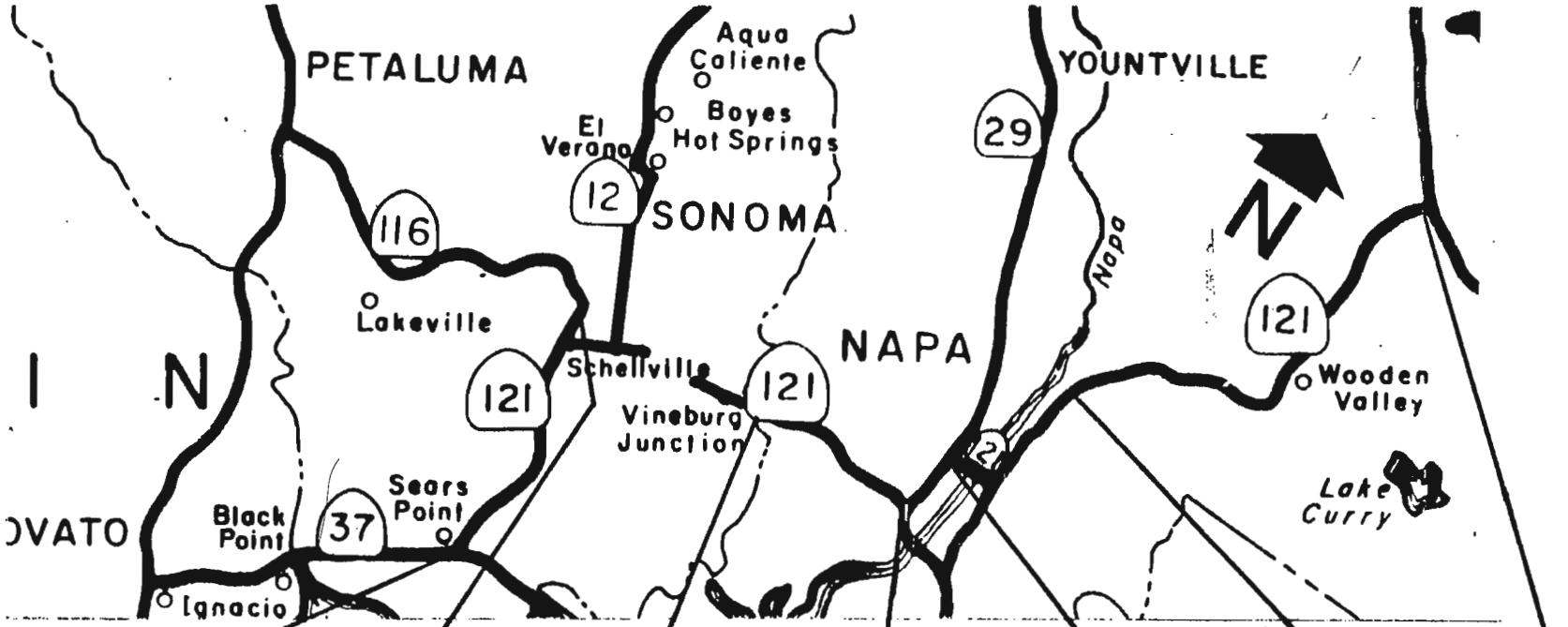
Although projected weekday traffic would result in an LOS of A-50, weekend traffic is likely to cause congestion. As much of the traffic consists of cars or trucks with trailers, slow-moving vehicle lanes should be investigated to facilitate passing.

(5) Route Concept

2-lane conventional highway. The concept LOS is C-45.

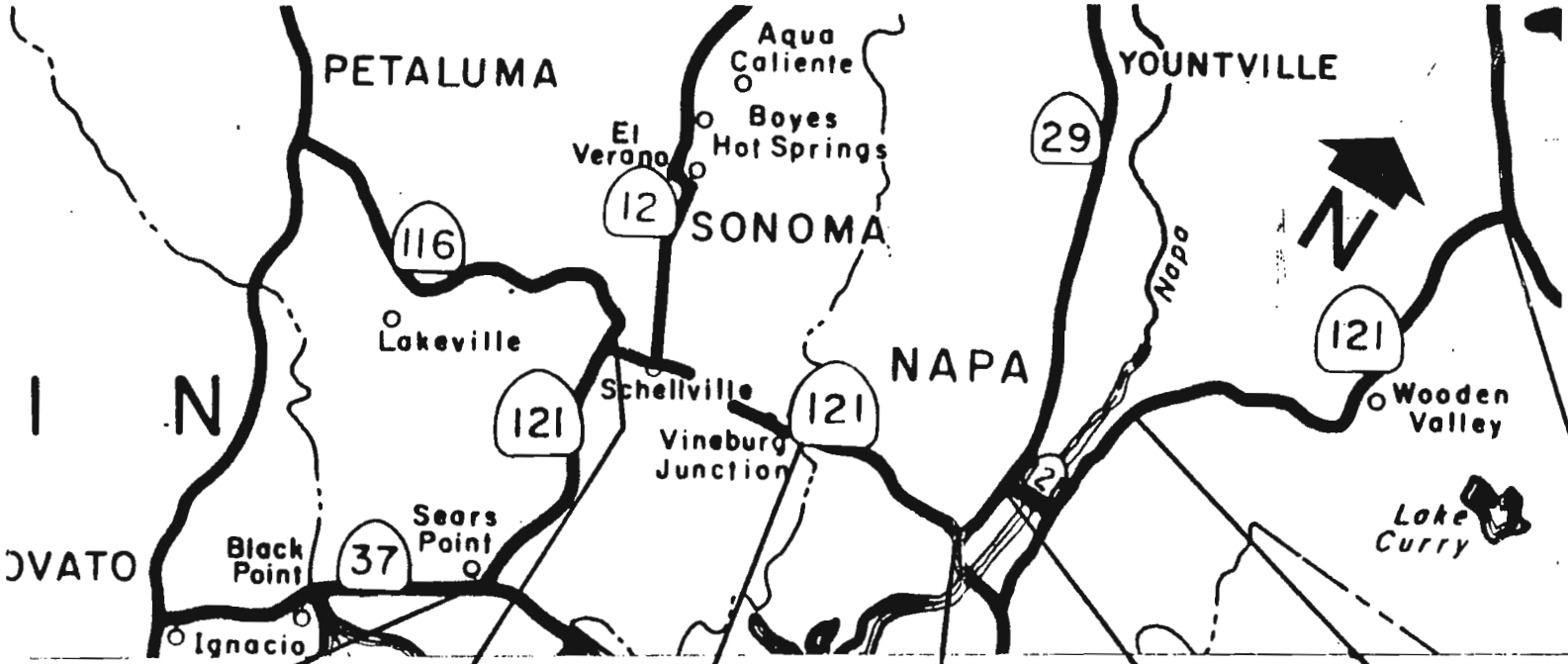
(6) Route Improvements

No capacity improvements are planned. Passing lanes should be considered.



SEGMENT		A (SON 0.00 – SON 6.69)	B (SON 11.62)	C (NAP 0.00 – NAP 4.47)	Refer to Route 29 Concept Report	D (NAP 4.47 – NAP 8.40)	E (NAP 22.06)
CONCEPT NO. OF LANES PROPOSED	PRESENT	2	2	2		2-4	2
	1995	2	2	2		2-4	2
	2005	4	4	4		2-4	2
CONCEPT LEVEL OF SERVICE PROPOSED	PRESENT	C-45	C-45	C-45		D-30	C-45
	1995	C-45	C-45	C-45		E-15	C-45
	2005	B-50	B-50	B-50		F-10	C-45
TERRAIN		ROLLING	ROLLING	ROLLING		FLAT	R/MTN
GRADES		0-3% FLAT	3-6%	3-6%		0-3%	3-6% Rolling/ Moderate
ACTUAL	Accidents Per MVM	1.81	2.79	0.93		2.03	3.36
	Fatalities Per MVM	0.072	0.021	0.049		0.034	0.000

EXHIBIT A



SEGMENT		A (SON 0.00 – SON 6.69)	B (SON 11.82 – NAP 0.00)	C (NAP 4.47)		D (NAP 4.47 – NAP 9.40)	E (NAP 22.08)
A.A.D.T. (.000)	1982	9	8-12	12-13	Refer to Route 29 Concept Report	10-25	2-8
	1995	15	10-15	15-17		14-34	3-10
	2005	18	12-19	19-20		17-41	3-11
P.H.V. (00)	1982	3-5	2-4	3-6		3-10	1-3
	1995	5-7	3-7	5-6		2-18	10
	2005	6-9	3-9	6-9		3-22	2-4
AVE. HWY SPEED		50	55	65		45-65	45-50
OPERATING SPEED		35	36	30		27-40	27-50
V/C	1982	0.42	0.30	0.44		0.76	0.16
	1995	0.56	0.41	0.55		1.33	0.31
	2005	0.72	0.51	0.65		1.58	0.36
YEAR CAPACITY WILL BE REACHED		—	—	—		1998	—

EXHIBIT B

EXISTING FACILITY (HIGHWAY)

Route Segment	County	From PM	To PM	Segment Length (Miles)	Traveled Way Width (Feet)	Number of Lanes	Shoulder Width (Feet)	Median Width (Feet)
A	Son	0.00	6.69	6.69	10-21	2C	0 To 4	0
B	Son	6.69	11.62	4.93	11-12	2C	0 To 6	0
C	Napa	0.00	4.47	4.47	10-24	2E	0 To 8	0
	Napa	See Route 29		Route	Concept Report			
D	Napa	4.47	6.01	1.54	12-36	2C	0	0 To 18
	Napa	6.01	6.55	0.54	20-31	4D	0 To 11	0 To 36
	Napa	6.55	9.40	2.85	9-17	2C	0 To 8	0
E	Napa	9.40	22.08	12.68	9 -13	2C	0 To 6	0

Route 121 Accident Report Between 1/81 and 12/83

Location PM	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
Son 0.00 To 6.69	A	125	5	65	70	7	96	0.072	1.01	1.81	0.069	1.04	2.10
Son 6.69 To 11.62	B	133	1	54	55	1	86	0.021	1.15	2.79	0.068	1.27	2.46
Nap 0.00 To 4.47	C	57	3	30	33	3	50	0.049	0.54	0.93	0.058	0.90	1.78
Nap 4.47 To 9.40	D	177	3	124	127	4	176	0.034	1.45	2.03	0.041	1.56	3.98
Nap 9.40 To 22.08	E	138	0	95	95	0	133	0.00	2.31	3.36	0.076	1.55	2.96

*Rates are Per MVM (Million Vehicle Miles)

°Statewide Average for this type of facility in comparable terrain.

EXHIBIT E

ROUTE 121 TRAFFIC TABLE

SEG	CO	POST MILE	TRUCK% AA DT	TRUCK% PK HR	AA DT	AM-PK AH BK	1982 NO LN	V/C	LOS	NO LN	CAP	AA DT	AM-PK AH BK	1995 NO LN	D/C	LOS	NO LN	AA DT	AM-PK AH BK	2005 NO LN	D/C	LOS	NO LN
A	SON	0.00					JCT RTE 37																
			4	3	9	3	5	0.42	B	1	1200	15	7	5	0.56	B	1	18	7	9	0.72	C	2
A	SON	6.69					JCT RTE 116/WEST ARNOLD DRIVE																
			6	4	9	3	5	0.42	B	1	1200	14	7	5	0.56	B	1	16	7	9	0.72	C	2
B	SON	7.44					JCT RTE 12 NORTH																
			8	6	9	3	4	0.33	A	1	1200	12	6	5	0.49	B	1	14	6	8	0.63	C	2
B	SON	8.12					EIGHTH STREET																
			8	6	9	3	3	0.25	A	1	1200	10	4	3	0.36	A	1	12	4	5	0.43	B	1
B	SON	9.54					RAMAL ROAD																
			8	6	8	2	2	0.17	A	1	1200	10	3	2	0.24	A	1	12	3	3	0.29	A	1
B	SON	10.88					NAPA ROAD																
			8	6	12	4	3	0.33	A	1	1200	15	5	4	0.42	B	1	19	5	6	0.50	B	1
B	SON	11.62					COUNTY LINE																
			8	6	12	5	3	0.42	B	1	1200	15	6	5	0.49	B	1	19	6	7	0.58	B	1
C	NAP	1.99					DUHIG ROAD																
			8	6	13	5	4	0.42	B	1	1200	17	7	5	0.55	B	1	20	7	8	0.65	C	2
C	NAP	2.18					OLD SONOMA ROAD																
			8	6	12	6	4	0.50	B	1	1200	15	7	6	0.61	C	2	19	7	9	0.72	C	2
C	NAP	3.04					CUTTING WHARF ROAD																
			7	4	14	7	5	0.58	C	2	1200	18	9	7	0.73	C	2	22	9	10	0.86	D	2
D	NAP	4.47					JCT RTE 29 EAST																
			5	3	15	8	4	1.00	E	2	800	21	3	12	1.52	F	2	25	5	14	1.80	F	2
D	NAP	4.84					JEFFERSON STREET																
			5	3	17	8	6	1.00	E	2	800	24	4	14	1.77	F	2	29	6	17	2.10	F	3
D	NAP	5.01					SOUTH COOMBS STREET																
			3	3	20	8	8	1.00	E	2	800	28	5	16	2.03	F	3	34	6	19	2.40	F	3
D	NAP	5.89					JCT RTE 221 SOUTH																
			5	4	25	8	10	0.37	A	2	1350	34	5	18	0.68	C	2	41	7	22	0.80	C	2
D	NAP	6.55					SOSCOL AVENUE																
			5	4	15	5	5	0.63	C	1	800	20	3	10	1.27	F	2	24	4	12	1.50	F	2
D	NAP	7.37					THIRD STREET																
			5	4	18	6	8	1.00	E	2	800	24	4	14	1.77	F	2	29	6	17	2.10	F	3
D	NAP	8.25					LINCOLN AVENUE																
			2	2	10	3	4	0.50	B	1	800	14	2	7	0.89	D	1	17	3	8	1.05	F	2

ROUTE 121 TRAFFIC TABLE

S E G	CO	POST MILE	TRUCK% AA DT	TRUCK% PK HR	AA DT	AM-PK AH	AM-PK BK	1982 NO LN	V/C	L O S	NO LN	CAP	1995 AA DT	1995 AM-PK AH	1995 AM-PK BK	1995 NO LN	D/C	L O S	NO LN	2005 AA DT	2005 AM-PK AH	2005 AM-PK BK	2005 NO LN	D/C	L O S	NO LN
D	NAP	9.40						TRANCAS STREET																		
			4	4	8	2		3	1	0.25	A	1	1200	10	1	5	1	0.42	B	1	11	2	6	1	0.47	B	1
E	NAP	10.55						ATLAS PEAK ROAD																		
			4	3	4	2		2	1	0.17	A	1	1200	7	1	4	1	0.34	A	1	8	2	5	1	0.38	A	1
E	NAP	10.68						VICHY AVENUE																		
			4	3	3	2		2	1	0.17	A	1	1200	4	1	4	1	0.34	A	1	5	2	5	1	0.38	A	1
E	NAP	16.08						WOODEN VALLEY ROAD																		
			4	3	2.0	1.0	1.0	1	0.08	A	1	1200	2.8	0.6	2.0	1	0.17	A	1	3.0	0.8	2.3	1	0.19	A	1
E	NAP	22.08						JCT RTE 128																		

Ready
>

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 Daily 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

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.

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.

Route 121 EXHIBIT F

COMPARISON OF FUTURE LOS WITH ROUTE CONCEPT

SEGMENT	NO. LANES/LOS			ROUTE CONCEPT		NEEDS	
	1982	1995	2005	Proposed Lanes	LOS	Lanes	Target LOS
A Son 0.00 to 6.69	2 / C-45	2 / C-45	2 / C-40	4	B-50	4	B-50
B Son 6.69 to 11.62	2 / C-45	2 / C-45	2 / C-45	4	B-50	2-4	B-50
C Nap 0.00 to 4.47	2 / C-45	2 / C-45	2 / C-40	4	B-50	4	B-50
	SEE	ROUTE 29	ROUTE	CONCEPT	REPORT		
D Nap 4.47 to 9.40	2-4 / D-30	2-4 / E-20	2-4 / F-10	2-4	F-10	4-6	D-35
E Nap 9.40 to 22.08	2 / C-45	2 / C-45	2 / C-45	2	C-45	2	C-45

EXHIBIT G

EXISTING FACILITIES (BRIDGES)

Route Segment	BRIDGE NUMBER		NAME OR DESCRIPTION	County		POST MILE	CITY	LENGTH (PROT)	WIDTH	SIDEWALKS OR CURBS LT	RT
			JCT RTE 37	Son		000					
	20	20	TOLAY CREEK	Son		153		45	26	2.0	2.0
A	20	135	GRIZZLY CTLP	Son		489		14	29		
	20	21	YELLOW CREEK	Son		652		22	27		
			JCT RTE 116 AH	Son		669					
	20	22	SONOMA CREEK	Son	R	730		231	40	5.0	
			JCT RTE 12 LT	Son		745					
			JCT RTE 12 LT	Son		765					
	20	55	SCHELVILLE GR	Son		826		2K			
B	20	23	ARROYO SECO	Son		843		82	24		
	20	56	E SCHELVILLE GX	Son		849		2K			
	20	121	BR ARROYO SECO	Son		851		22	27		
	20	152	STORNETTA CTLP	Son		1059		14	29		
			NAPA CO LINE	Son		1162					
			SONOMA CO LINE	Nap		000					
	21	70	GRADE CTLP	Nap		055		12	32		
	21	01	HUICHICA CREEK	Nap		075		27			
C	21	02	CARNEROS CREEK	Nap		240		95	36		
	21	84	STANLEY CREEK	Nap		395		14			
	21	86L	IMOLA AVE SEP	Nap	R	447	NAP	88	41	2.0	
	21	86R	IMOLA AVE SEP	Nap	R	447	NAP	89	37		
	21	75	NAPA RIVER	Nap	R	528	NAP	414	26	4.9	4.9
	21	76	NSPA R GR XING	Nap	R	553	NAP	2K			
	21	77	TULUCAY CREEK	Nap	R	571		62	48		
D			JCT RTE 221	Nap		600					
			JCT RTE 221	Nap		601					
	21	03	TULUCAY CREEK	Nap		642	NAP	45	59	1.5	6.0
	21	08	SARCO CREEK	Nap		930		35	32		
E	21	64	CAPELL CREEK	Nap		1859		14	30		
	21	09	CAPELL CREEK	Nap		2029		55	30		
			JCT RTE 128	Nap		2208					

XPLANATIONS TO: Existing Facilities (Bridges) Tables

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

= Outer Outer Left
= Left Outer Highway Structure
= Left Structure or Left Inner Structure
= Center Structure
= Right Structure or Right Inner structure
= Right Outer Highway Structure
= Outer Outer Right
= Structure or Grade Xing on State-owned and Maintained connections not on main Hwy (may be closed)
= Drainage Pumping Plant
= Buried Hazard or Miscellaneous Structure
= Access to Private Property or Closed w/no access
= Connector Structure
= Connector Structure
= Connector Structure
= Connector Structure

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

. State Highway Route

. 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).

. City (Caltrans "ALPHA" code)

. 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

S - Log Stringer
S - Timber Stringer
T - Timber Truss
A - Timber Arch
P - Steel Pipe (Girder)
S - Steel Stringer (Rolled Sections)
G - Steel Plate Girder
B - Timber Slab (Laminated)
B - Steel Box Girder
T - Steel Truss
A - Steel Arch
S - Concrete Slab
S - Precast Concrete Slab
B - Precast Concrete Box Girder
A - 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 - CMP 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 will 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)