Transportation Concept Report

California Department of Transportation
District 7
Office of Advance Planning
System Planning Unit

Caltrans

June, 2002

STATE OF CALIFORNIA
MEMORANDUM

Business, Transportation and Housing Agency

Date: July 17, 2002

To: **DOUGLAS R. FAILING**
District 7, Director

ROSE CASEY
Deputy District Director
Division of Planning, Public Transportation & Local Assistance

From: **DEPARTMENT OF TRANSPORTATION – District 7**
Office of Advance Planning
System Planning West, Branch

Subject: Approval of State Route 134 Transportation Concept Report

Submitted for your review and approval is the Transportation Concept Report for State Route 134.

This approved Transportation Concept Report will serve as the Department's basic guide to the development of this route.

Approved by:

ROSE CASEY
Deputy District Director
Division of Planning, Public Transportation & Local Assistance

DOUG FAILING
District Director

TRANSPORTATION CONCEPT REPORT
STATE ROUTE 134

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State Route 134
Transportation Concept Report

I. Disclaimer

This Transportation Concept Report (TCR) is a planning document prepared by the California Department of Transportation (Caltrans) based on the data available up to the date of its publication.

This TCR identifies the present geometric and operational characteristics of the transportation facility for which it was prepared, the anticipated demand in 20 years, and the suggested improvements to satisfy the future demand.

The future improvements to the transportation facility identified in this TCR are recommendations for study purposes and shall not be binding upon the State of California and/or Caltrans for implementation. Caltrans, in collaboration with local and regional transportation agencies, and upon conduct of further studies and availability of funds, may proceed with implementation of any or all of the identified future improvements or may select improvements in lieu of those identified in this document. Any identified improvements should not be construed as being 100% publicly funded.

II. DOCUMENT SUMMARY

While this Transportation Concept Report is divided into eleven major sections, three of the sections, III, VI and VII --are the heart of the document. They include detailed Segment Summaries (Section IV), lists of suggested Improvements (Section VII) and the Transportation Concept and Conclusions (Section XI.) All of the other sections provide a context for analyzing the State Route 134 corridor and document the data resources studied.

The basic aim of this document is to suggest a configuration for State Route 134 that will meet projected demands within a framework of common sense and regional policy. The concept selected--Alternative #1--generally conforms to regional plans and provides substantial congestion relief over the 20-year planning period.

III. DOCUMENT PURPOSE

This Transportation Concept Report (TCR) is an internal Caltrans planning tool intended to provide an initial look at developments within State Route 134 over the next twenty years. Its primary focus is on identifying "need"--defined as the difference between forecast demand and capacity. It analyzes this need in three primary ways: 1.) it documents current conditions; 2.) it contrasts projected future demand with planned facilities (capacity); and 3.) it proposes future development alternatives to address the shortfalls between demand and capacity.

The heart of this TCR is a series of proposed alternatives for development of State Route 134. The alternatives are included in the Segment Summaries, Section IV. The alternatives cover a wide range: Alternative #1 is based on existing plans--primarily the SCAG RTP, the LACMTA Long Range and HOV Plans, and the Caltrans District System Management Plan. Alternative #1 suggests 4 mixed flow + 1 HOV lanes in segments 1, 2 & 3. Alternative # 2 suggests 4 mixed flow + 2 HOV lanes in segments 1,2 & 3. The Attain LOS "D" alternative is based on the number of "lane equivalents" necessary to reach LOS "D"--by definition, the lowest adequate level of service rating.[1] To attain LOS "D" for route 134 the number of required lanes is: 7 mixed flow +1 HOV in segments 1 and 2, and 6 mixed flow + 2 HOV lanes in segment 3. The Ultimate Transportation Corridor (UTC) alternative is considered the maximum reasonable development of a highway facility within the corridor. The UTC is intended to identify potential right of way problems. For route 134 the UTC proposes 4 mixed flow + 2 HOV lanes for segment 1 and 5 mixed flow + 2 HOV lanes for segments 2 and 3.

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[1]. Please note: The Attain LOS "D" alternatives is provided as a way to illustrate future congestion and capacity needs and **not as a suggestion for programming**.

IV. REGIONAL THRESHOLD CRITERIA AND POLICIES

I. CALTRANS: California Transportation Plan:

1) Provide safety and security
2) Maintain system/investment
3) Manage network as a seamless intermodal system
4) Develop airport ground access

II. CALTRANS: District System Management Plan:

1) District 7 has established **LOS F0** with freeway speeds of approximately 25 mph lasting from 15 minutes to 1 hour as the minimum acceptable LOS for the Freeway System.[1]
2) HOV Criteria for implementing HOV lanes:[2]
   a. High Demand Congested Corridors not served by urban or commuter rail
   b. System connectivity
   c. Cost effectiveness
   d. Safety
   e. Public agency input
3) SR-60 TOS/TOPS System
4) Goods Movement:[3]
   a. Primary Goods Movement Corridor: I-710 to I-15 (San Bernardino County)
   b. Secondary Goods Movement Corridor: LACBD to I-710
5) Truck Lanes: Trucks-Only: Under investigation on I-710, Ports to Commerce and in the I-5 and SR-60 corridors[4]

III. SCAG: Regional Transportation Plan:

1) Truck Lanes on SR-60, I-5, to 126 (1 lane in each direction, if free access; 2 lanes in each direction if tolled)[5]

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1 District System Management Plan, California Department of Transportation, District 7, August 5, 1996, page 4

2 Op. cit., page 16

3 Op. cit., page 36

4 Op. cit., page 37

2) HOV Connectors on I-5 at: SR-170, SR-14 (to possible toll lanes) and SR-134[6]

3) Add mixed flow lanes to increase capacity (with restrictions), close gaps and for connectivity[7]

4) High Speed Rail: On I-5 from Union Station to SR-14 and on SR-14 to Lancaster/Palmdale[8]

5) Operations and maintenance: Pay now or pay later[9]

6.) RTP 20-Year Budget:[11]

Category	Budget ($Billions)	Percentage
Smart Shuttle	$3.9	17%
Freeways (Mixed Flow and HOV)	$3.4	15%
Transitways	$3.1	14%
Maintenance	$3.0	13%
Local Roadways (Including Airport Access)	$2.5	11%
Red Line MOS-4	$1.8	8%
Truck Facilities	$1.8	8%
Commuter Rail	$1.4	6%
Grade Separations	$0.6	3%
Signal Synchronization	$0.4	2%
Transit Centers / Park and Ride	$0.3	1%
Rideshare	$0.2	1%
TOTAL	$22.4	**100%**

7.) 76% Freight increase through the ports and 200% freight increase at the airports.

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5 Community Link 21, Draft 1998 Regional Transportation Plan, Southern California Association of Governments, November 6, 1997, page I-24

6 Op. cit., page I-19

7 Op. cit., page I-20

8 Op. cit., page I-26

9 Op. cit., page 4-7

11 Op. cit., page I-34

IV. LA Metropolitan Transportation Authority: MTA HOV Plan

Primary Corridor Criteria:[12]

1) Travel time Savings: Only build where building a lane would provide a travel time savings of 0.3 minutes per mile on the proposed facility compared to adjacent general purposed lanes.

2) Lane Volume:
   a. 600 vpm minimum
   b. 1500 vehicles (at 2+) *to take an existing freeway lane*

3) Person Movement:
   a. Minimum person movement of 2000 persons per hour is needed to satisfy criteria for *add-a-lane projects*
   b. Minimum of 3000 people in 2+ HOV are necessary to consider projects what would take a lane from existing facilities

4) Transit System Integration: Goal of: operation time reductions between HOV and adjacent general purpose lane.

Secondary Corridor Criteria[13]

1) 20 mph for bus round trips: **Minimum LOS E**
2) Implementation of an HOV facility should not adversely impact general purpose lane operations or capacity. Criteria is met as long as mainline general purpose capacity is not reduced.
3) HOV enforcement is necessary requiring dedicated enforcement areas or wide enough shoulders to monitor and apprehend violators; this criteria will not be satisfied with reduced standard shoulders and no facilities for enforcement areas.
4) Transit Station/Park and Ride Lot integration with HOV facility: primary objective is to maximize the number of HOV's that can use a facility. This criteria will be

[12] A Recommended HOV System for Los Angeles County, (Report was for in information purposes and never adopted by the MTA board) LACMTA, October 23, 1996, page 13
[13] Op. cit., page 13

satisfied with direct access or bypass HOV lane on general purpose ramps entering the freeway.

System Criteria/Goals[14]

1) Primary means of linking HOV facility is by gap closure and freeway to freeway HOV connectors
2) Inter-county connectivity at county lines
3) System-wide time savings
4) Regional mobility
5) VMT--should reduce VMT for the entire freeway system
6) Mode shift impact
7) Transit system integration

HOV I/C Criteria/Goal[15]

1) Travel time savings
2) Threshold ramp volume
3) Threshold person movement
4) Recommend: HOV Connectors at I-605 and SR-57 South

System Development: I-605—HOV Projects 2001/2005

Orange County Line to South Street

HOV Lane Projects: Projects Recommended for Development 2011 to 2015[17]

HOV connector at 10/605 I/C from east to south

Implementation Approach:

Re-stripe and widen for addition of one lane (§6.7.2, page 91)

V. 1997 Final Proposed Congestion Management Plan

LOS "E" unless base year is lower

VI. TEA 21--Generally:

1) Maintain TDM
2) Provide for intelligent transportation systems (ITS)
3) Expands funding to include intermodal terminals at seaports

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[14] Op. cit., page 18
[15] Op. cit., page 20
[17] Op. cit., page 70

V. ROUTE DESCRIPTION

Route 134, also known as the Ventura Freeway, is an interregional freeway located entirely within the Los Angeles County. It originates at the Route 134/170/101 interchange (P.M. 0.00) and runs a distance of 13.3 miles, terminating at the Route 134/210/710 interchange (P.M. R13.34). The topography along this route is primarily under three percent grades. The District 7 Highway Inventory classifies this route as typically "flat".

Route 134 traverses the incorporated cities of Burbank, Los Angeles, and Pasadena. It provides access to Universal City, Burbank Media Center, Griffith Park, Forest Lawn Memorial Park, Lakeside Country Club, Glendale Fashion Center, Glendale Galleria, Occidental College, the Rose Bowl, Brookside Country Club and Burbank Airport.

PURPOSE OF ROUTE

Route 134 serves primarily as an interregional commute corridor. It provides a connection between the San Fernando Valley and the San Gabriel Valley.

Functional Classification

Route 134 is classified as a P1P, an urban principal arterial. It is designated as a Super Truck Route (STR). It is also part of the national network created by the federal Surface Transportation Assistance Act (STAA) to provide freeway access for oversized trucks.

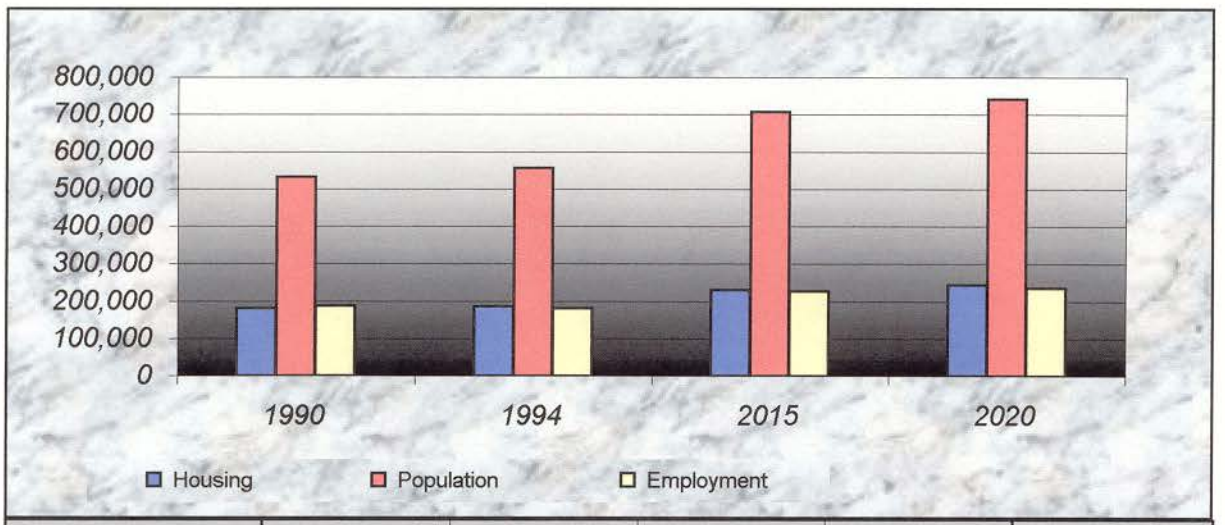
For the purpose of analysis Route 134 will be examined in three segments. It is uniform in the number of lanes, terrain, functional classification and the presence or absence of deficiencies (unacceptable traffic congestion, as measured by volume to capacity ratios). The criteria used to determine segment limits is the intersection of the route by other state highways. This segmentation also coincides with the most significant changes in average daily traffic (ADT).

Segment	Post mile	Description	Rte Purpose	Facility Type
1-3	0.00-R13.34	Freeway	Interstate / Interregional commute corridor	Freeway

VI. Socio-Economics

State Route 134 traverses three of the Southern California Association of Government (SCAG)Regional Statistical Areas (RSA). Following are graphs illustrating projected growth in these areas between 1990 and 2020. Included are data on housing, population and employment. These graphs are provided to give perspective to socio-economics conditions along the State Route134 corridor. Glendale Regional Statistical area has the highest population growth (39%).

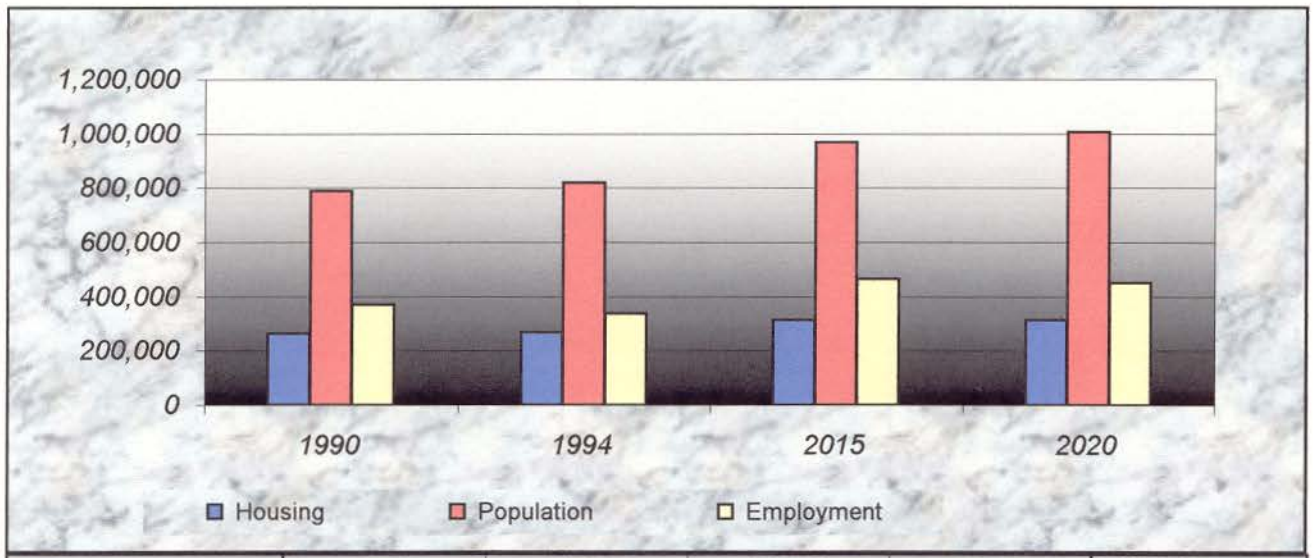
Glendale Regional Statistical Area (RSA) Demographics



	1990	1994	2015	2020	% Change
Housing	*179,787*	*184,736*	*230,660*	*243,102*	*35%*
Population	*532,541*	*555,622*	*707,951*	*741,082*	*39%*
Employment	*187,495*	*180,331*	*226,215*	*235,426*	*26%*

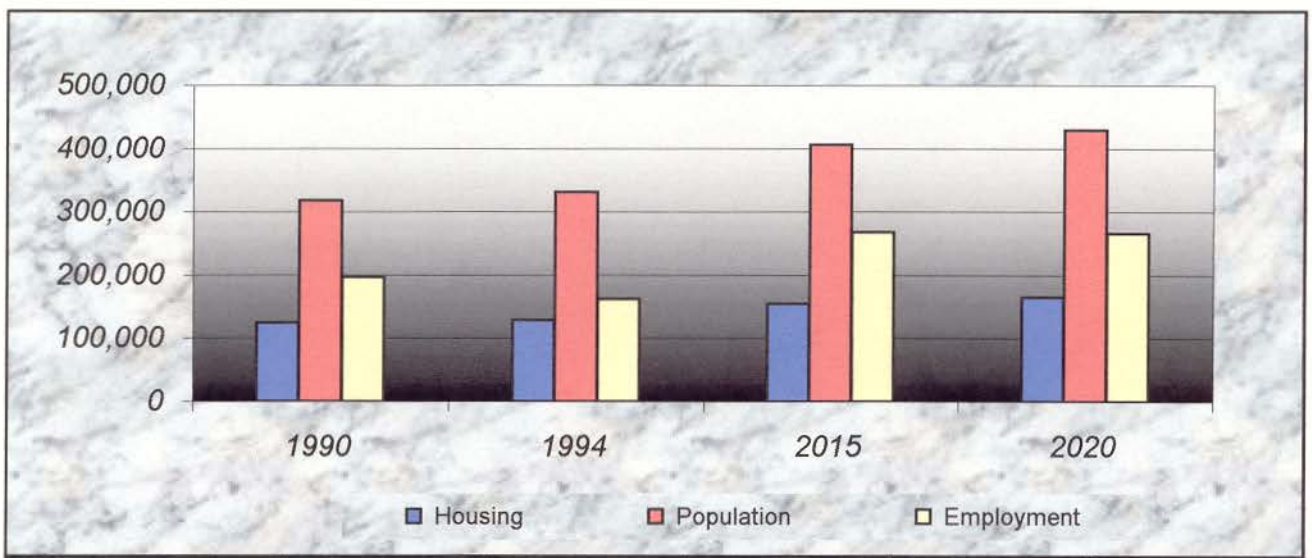
STATE ROUTE - 134 SOCIO-ECONOMIC DATA

Pasadena Regional Statistical Area (RSA) Demographics



	1990	1994	2015	2020	% Change
Housing	262,692	267,967	313,683	313,797	19%
Population	789,375	819,944	968,475	1,007,060	28%
Employment	371,842	337,837	466,360	451,898	22%

Burbank Regional Statistical Area (RSA) Demographics



	1990	1994	2015	2020	% Change
Housing	124,910	128,797	155,581	165,657	33%
Population	317,289	331,003	405,181	429,386	35%
Employment	196,899	162,103	268,175	265,537	35%

VII. ACCIDENT RATES AND SAFETY INTRODUCTION

Accident Data

District traffic safety and accident data are based on the Traffic Accident Surveillance and Analysis System (TASAS). This data base provides accident rates using a three-year average along selected routes. The TASAS data, that is displayed graphically on the following pages, covers the period of January 1, 1998 through December 31, 2000.

First Graph: Fatal Plus Injury Per Million Vehicle Miles

The first graph, "Fatal Plus Injury Per Million Vehicle Miles" (F+I/MVM), shows the rate of fatal and non-fatal injuries on State Route 134 during the coverage period. This graph has two graph lines, "Average" and "Actual". The "Actual" is based on specific data for accidents on State Route 134. The "Average" line represents a Statewide Average Accident Rate (SWA) for highway segments of the same type with similar characteristics in the state.

Second Graph: Total Accidents Per Million Vehicles Miles

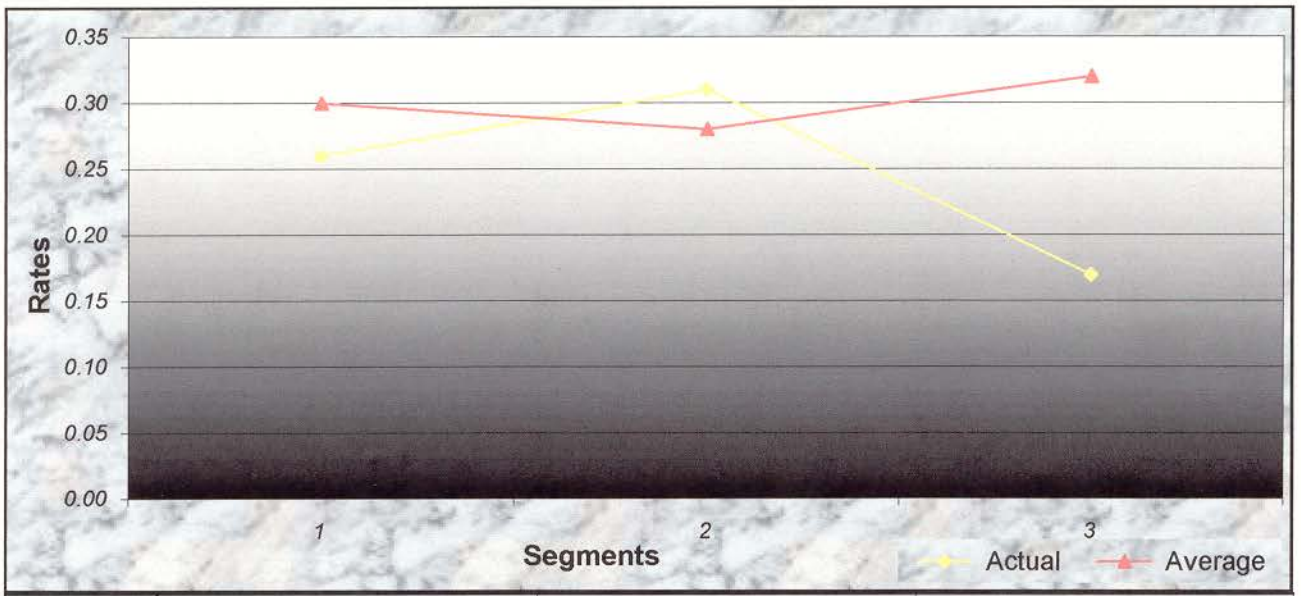
The second graph, "Total Accidents Per Million Vehicle Miles" (Total/MVM) includes all accidents (fatal, non-fatal injury and accidents without injuries) within the coverage period. As in the first graph, the "Actual" is based on specific State Route 134 data and "Average" represents a statewide average for comparable road segments.

Safety

The accident data provided in this TCR is intended to support informed and responsible decision-making by transportation planners and programmers. Research into the connection between congestion and safety is being performed by Caltrans and within the national and international transportation communities. Future TCR's will document the state of that research.

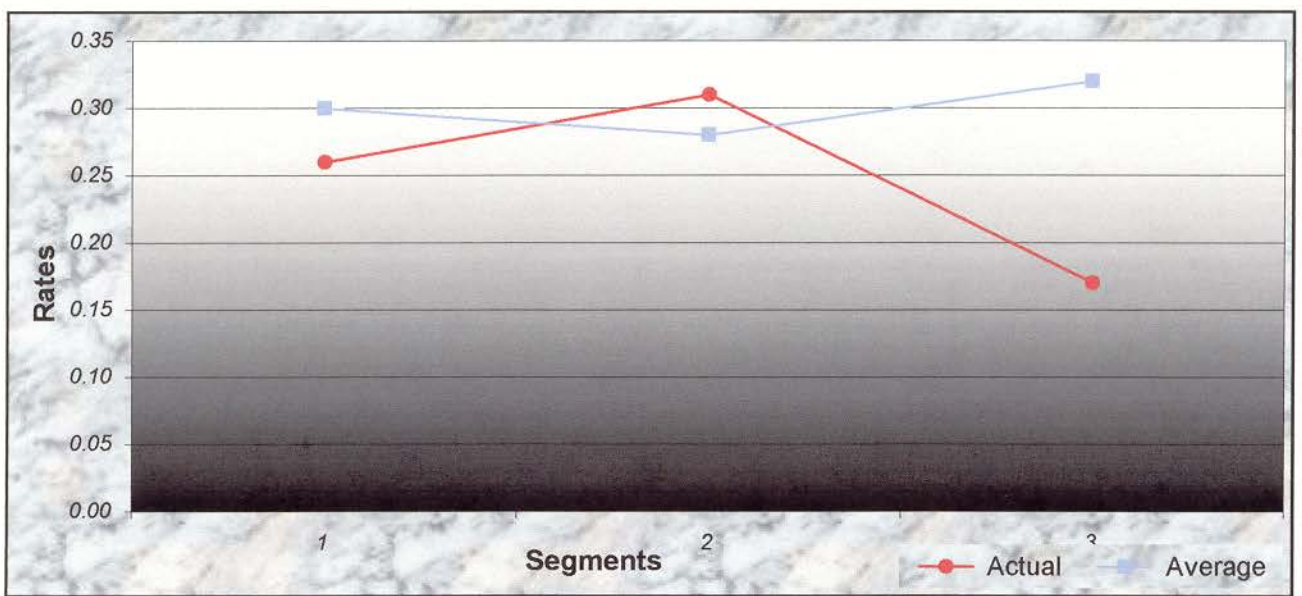
STATE ROUTE 134 ACCIDENT RATES

Fatal + Injury (Per Million Vehicle Miles)



	1	2	3
Actual	0.26	0.31	0.17
Average	0.30	0.28	0.32

Total Accidents (Per Million Vehicle Miles)



	1	2	3
Actual	0.26	0.31	0.17
Average	0.30	0.28	0.32

State Route 134

ACCIDENT LOCATIONS HIGHER THAN AVERAGE
Fatal plus Injury per Million Vehicle Miles (F+I/MVM)

SEGMENT 1	Route 101 to Route 5
SEGMENT 2	Route 5 to Rte 2

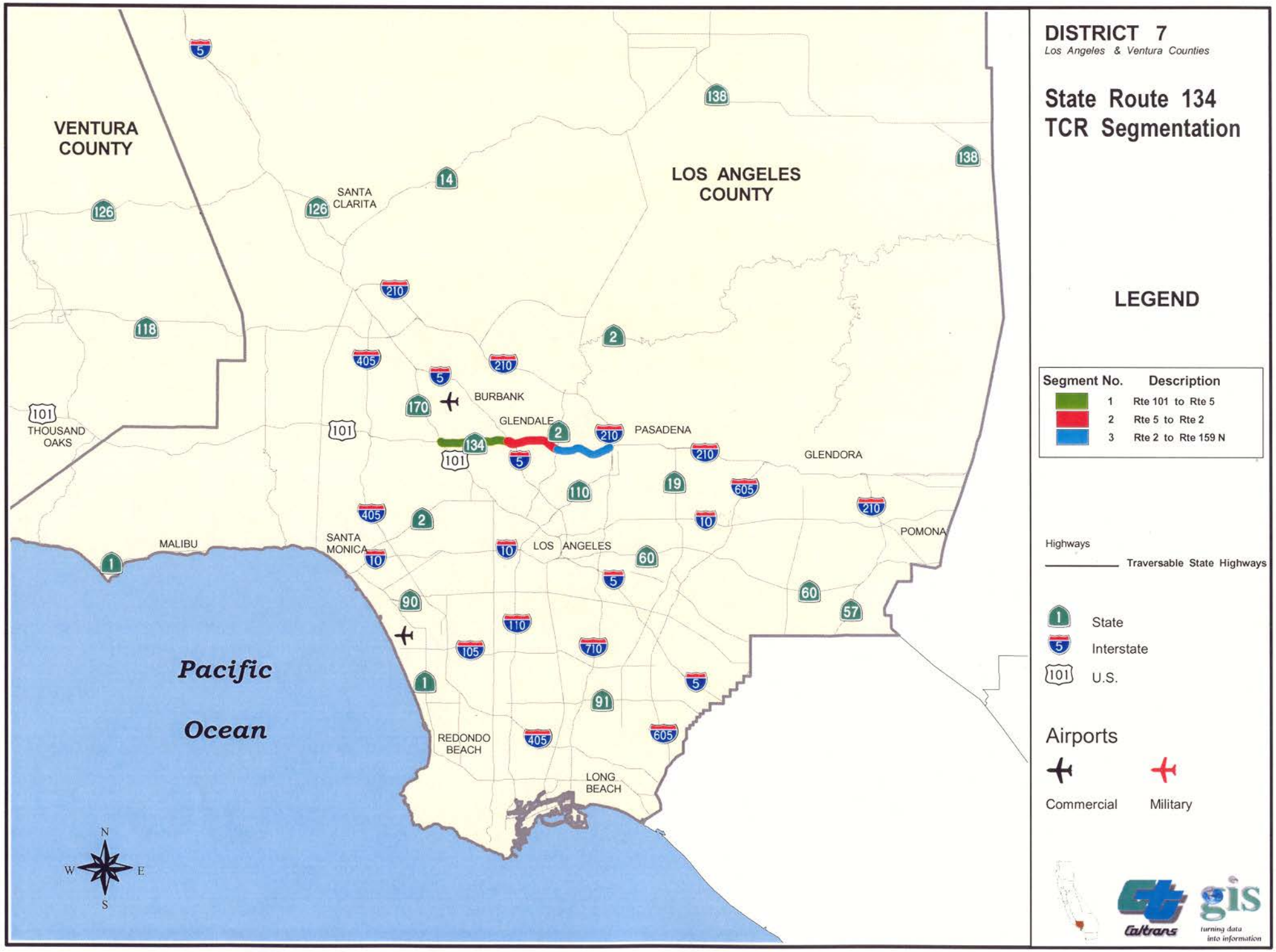
ACCIDENT LOCATIONS HIGHER THAT AVERAGE
Total Accidents per Million Vehicle Miles (Total/MVM)

SEGMENT 1	Route 101 to Route 5
SEGMENT 2	Route 5 to Rte 2

VIII. SEGMENT SUMMARIES
INTRODUCTION

This TCR analyzes State Route 134 conditions using the "segment" as the study unit. Segments are generally defined as "freeway interchange to freeway interchange", "county line to freeway interchange" or "freeway interchange to end of freeway". The map on the following page illustrates these segments.

Each of the summaries that follows describes the segment's current and projected operating characteristics, existing configuration, projected traffic demand and proposed alternative improvements.


DISTRICT 7
Los Angeles & Ventura Counties
State Route 134
TCR Segmentation
LEGEND
Segment No.
Description
1
Rte 101 to Rte 5
2
Rte 5 to Rte 2
3
Rte 2 to Rte 159 N
Highways
Traversable State Highways
State
Interstate
U.S.
Airports
Commercial
Military
VENTURA COUNTY
LOS ANGELES COUNTY
SANTA CLARITA
THOUSAND OAKS
BURBANK
GLENDALE
PASADENA
GLENDORA
POMONA
MALIBU
SANTA MONICA
LOS ANGELES
REDONDO BEACH
LONG BEACH
Pacific Ocean
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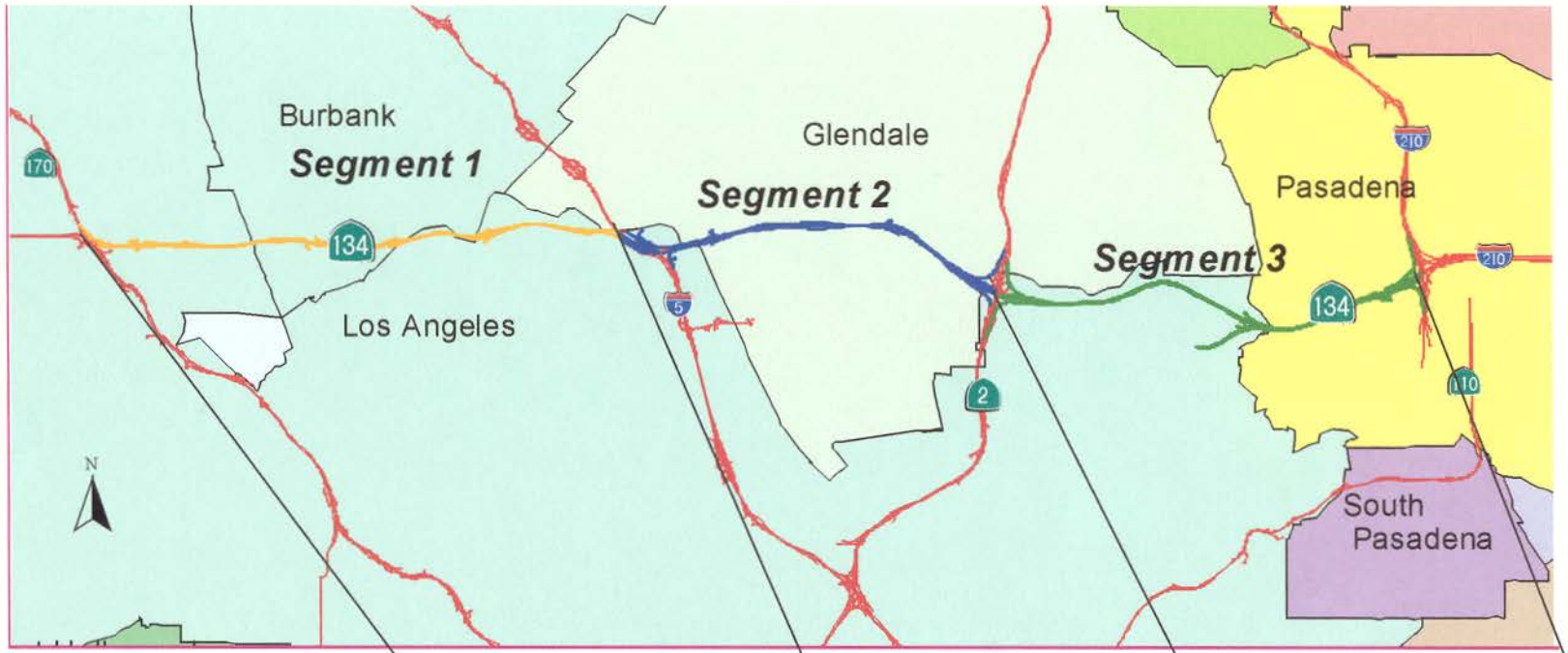
gis
turning data into information

STATE ROUTE 134
Concept Summary - Segment Configuration



	1	2	3
Existing			
Demand / Capacity	1.58	1.43	1.45
Avg. Daily Traffic (x1,000)	192	218	179
Number of Lanes	4	4	4
Pk.hour Level Of Service	F3	F2	F2
2020 Null With Route 710 (Main Line)			
Demand / Capacity	1.59	1.72	1.52
Avg. Daily Traffic (x1,000)	219	270	224
Number of Lanes	4	4	4
Pk.hour Level Of Service	F3	F3	F3
2020 Concept (Alternate #1)			
Demand / Capacity	1.49	1.60	1.40
Avg. Daily Traffic (x1,000)	208	233	184
Number of Lanes	4	4	4
Pk.hour Level Of Service	F3	F3	F2

STATE ROUTE 134 - SEGMENT 1 SUMMARY

DESCRIPTION	
Limits:	Rte. 101 /170/134 interchange to Rte 5
Post Mile / Kilometer:	0.00-5.97

Purpose
International, Interstate, Interregional, Intraregional Travel (commute and non-commute) and Goods Movements

Classification	
Functional Classification:	Urban Principal Arterial - P3
MPAH Designation:	State Freeway
Other Systems:	NHS,STAA,IRRS,STRAHNET,ICES,LIFELINE

Ultimate Concept	
Main Line	HOV Lane(s)
4	2

Physical Characteristics	
Terrain:	Flat
Mainline R/W	165' - 277'
Median / Outside Shoulder:	16' / 8'
Design Speed (MPH)	70
Bridge Structures:	9

Corridor Characteristics	
Trucks (% of ADT):	16%
Express Transit (lines):	LX 549
Operators:	LADOT
Rail Service:	NONE
Park & Ride Lots (Spaces):	NONE

Accident Rates per Million Vehicle Miles (MVM) (1/96 to 12/98)			
ACTUAL		AVERAGE	
Fatal + Injury	Total	Fatal + Injury	Total
0.26	1.00	0.30	1.09

TRAFFIC DATA

		EXISTING (1995)		2020 NULL (w/o Route 710)		2020 NULL (with Route 710)		2020 CONCEPT (Alt1)		2020 CONCEPT (Alt2)	
		Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)
Average Daily Traffic (ADT)		192,400	NA	196,200	19,500	219,300	17,500	207,500	17,600	206,800	14,400
Lanes Configuration (ea. direction)		4	1	4	1	4	1	4	1	4	2
Volume											
AM Peak Hour	E	8,400		9,700	1,700	10,400	1,350	8,700	1,250	8,050	1,000
AM Peak Hour	W	10,900		6,950	550	6,950	550	6,150	450	6,000	450
PM Peak Hour	E	7,100		9,150	750	9,300	700	8,850	700	8,800	650
PM Peak Hour	W	10,100		10,700	1,250	11,000	1,200	10,300	1,350	10,150	950
Speed (mph)											
AM Average	E	47		36	53	30	57	44	58	49	60
AM Average	W	26		56	60	56	60	60	60	61	60
PM Average	E	56		40	60	39	60	43	60	43	60
PM Average	W	33		28	58	26	59	31	57	32	60
Service Characteristics											
Level Of Service, AM	E	F0		F2	E	F3	D	F0	C	F0	A
Level Of Service, AM	W	F3		E	A	E	A	D	A	D	A
Level Of Service, PM	E	F0		F1	B	F1	B	F1	B	F1	A
Level Of Service, PM	W	F3		F3	C	F3	C	F3	D	F3	A
Directional Split (%) AM	E	43%		58%	77%	59%	71%	58%	73%	57%	69%
Directional Split (%) PM	E	57%		42%	23%	41%	29%	42%	27%	43%	21%

NOTES: 2020 Concept Alternates 1 & 2 are both modeled with I-710 gap closure built between I-10 and I-210
Speeds are estimated and are for comparative purposes only

STATE ROUTE 134 - SEGMENT 2 SUMMARY

DESCRIPTION	
Limits:	Rte.5 to Rte. 2
Post Mile / Kilometer:	5.97-9.4

Purpose
International, Interstate, Interregional, Intraregional Travel (commute and non-commute) and Goods Movements

Classification	
Functional Classification:	Urban Principal Arterial - P3
MPAH Designation:	State Freeway
Other Systems:	NHS,STAA,IRRS,STRAHNET,ICES,LIFELINE

Ultimate Concept	
Main Line	HOV Lane(s)
5	2

Physical Characteristics	
Terrain:	Flat
Mainline R/W	165' - 277'
Median / Outside Shoulder:	16' / 8'
Design Speed (MPH)	70
Bridge Structures:	9

Corridor Characteristics	
Trucks (% of ADT):	16%
Express Transit (lines):	LX 549
Operators:	LADOT
Rail Service:	NONE
Park & Ride Lots (Spaces):	1[215]

Accident Rates per Million Vehicle Miles (MVM) (1/96 to 12/98)			
ACTUAL		AVERAGE	
Fatal + Injury	Total	Fatal + Injury	Total
0.31	1.03	0.28	0.91

TRAFFIC DATA

		EXISTING (1995)		2020 NULL (w/o Route 710)		2020 NULL (with Route 710)		2020 CONCEPT (Alt1)		2020 CONCEPT (Alt2)	
		Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)
Average Daily Traffic (ADT)		217,800	NA	246,600	20,700	270,100	19,500	233,000	19,700	232,900	15,400
Lanes Configuration (ea. direction)		4	1	4	1	4	1	4	1	4	2
Volume											
AM Peak Hour	E	10,000		9,500	1,400	10,450	1,500	9,000	1,600	8,400	1,050
AM Peak Hour	W	10,000		9,650	700	9,500	650	8,400	550	8,100	500
PM Peak Hour	E	10,000		11,300	750	11,250	750	10,700	700	10,600	650
PM Peak Hour	W	10,000		11,500	1,500	12,050	1,300	11,200	1,400	11,100	1,050
Speed (mph)											
AM Average	E	34		38	57	31	56	42	55	47	60
AM Average	W	34		37	60	38	60	47	60	49	60
PM Average	E	34		24	60	25	60	29	60	29	60
PM Average	W	34		23	56	20	58	25	57	26	60
Service Characteristics											
Level Of Service, AM	E	F2		F1	D	F3	D	F1	D	F0	A
Level Of Service, AM	W	F2		F2	B	F1	B	F0	A	F0	A
Level Of Service, PM	E	F2		F3	B	F3	B	F3	B	F3	A
Level Of Service, PM	W	F2		F3	D	F3	C	F3	D	F3	A
Directional Split (%) AM	E	50.00%		50%	66%	52%	70%	49%	74%	50%	65%
Directional Split (%) PM	W	50.00%		50%	34%	48%	30%	51%	26%	50%	35%

NOTES: 2020 Concept Alternates 1 & 2 are both modeled with I-710 gap closure built between I-10 and I-210
Speeds are estimated and are for comparative purposes only

STATE ROUTE 134 - SEGMENT 3 SUMMARY

DESCRIPTION	
Limits:	Rte. 2 to Rte159N
Post Mile / Kilometer:	9.4-13.34

Purpose
International, Interstate, Interregional, Intraregional Travel (commute and non-commute) and Goods Movements

Classification	
Functional Classification:	Urban Principal Arterial - P3
MPAH Designation:	State Freeway
Other Systems:	NHS,STAA,IRRS,STRAHNET,ICES,LIFELINE

Ultimate Concept	
Main Line	HOV Lane(s)
5	2

Physical Characteristics	
Terrain:	Flat
Mainline R/W	165' - 277'
Median / Outside Shoulder:	16' / 8'
Design Speed (MPH)	70
Bridge Structures:	9

Corridor Characteristics	
Trucks (% of ADT):	16%
Express Transit (lines):	LX 549
Operators:	LADOT
Rail Service:	NONE
Park & Ride Lots (Spaces):	NONE

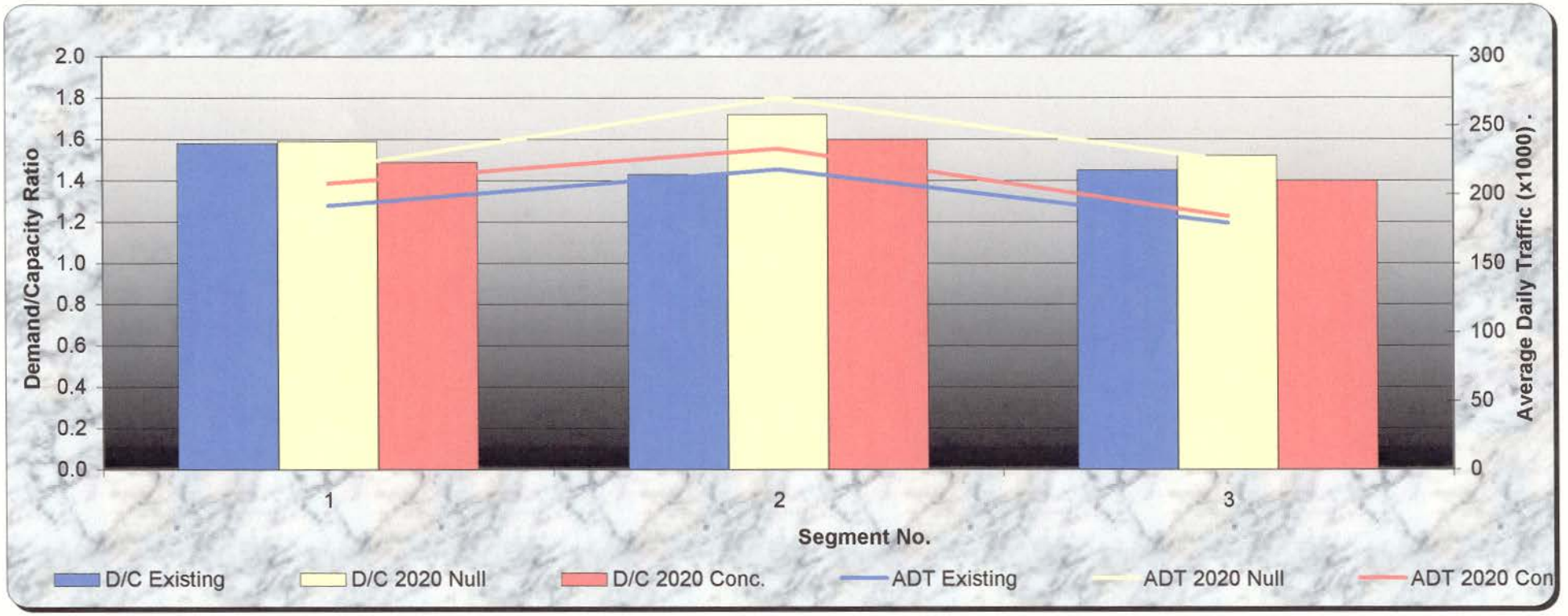
Accident Rates per Million Vehicle Miles (MVM) (1/96 to 12/98)			
ACTUAL		AVERAGE	
Fatal + Injury	Total	Fatal + Injury	Total
0.17	0.47	0.32	1.02

TRAFFIC DATA

		EXISTING (1995)		2020 NULL (w/o Route 710)		2020 NULL (with Route 710)		2020 CONCEPT (Alt1)		2020 CONCEPT (Alt2)	
		Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)	Main Line	HOV Lane(s)
Average Daily Traffic (ADT)		178,800	0	190,400	23,200	223,500	22,300	184,300	19,500	185,500	16,600
Lanes Configuration (ea. direction)		4	1	4	1	4	1	4	1	4	2
Volume											
AM Peak Hour	E	7,250	0	7,750	1,500	9,250	1,800	7,500	1,650	7,150	1,250
AM Peak Hour	W	10,100	0	7,500	750	7,200	650	6,400	450	6,250	450
PM Peak Hour	E	8,600	0	8,600	950	8,600	700	8,150	600	8,250	600
PM Peak Hour	W	7,050	0	9,100	1,700	10,600	1,700	9,750	1,450	9,800	1,250
Speed (mph)											
AM Average	E	55	0	52	56	40	51	54	54	56	60
AM Average	W	33	0	54	60	55	60	59	60	60	60
PM Average	E	46	0	46	60	46	60	59	60	48	60
PM Average	W	56	0	42	53	29	53	36	57	36	60
Service Characteristics											
Level Of Service, AM	E	F0	0	F0	D	F1	F0	F0	E	F0	A
Level Of Service, AM	W	F2	0	F0	B	F0	B	D	A	D	A
Level Of Service, PM	E	F0	0	F0	B	F0	B	F0	A	F0	A
Level Of Service, PM	W	E	0	F1	E	F3	E	F2	D	F2	A
Directional Split (%) AM	E	1	0	1	1	1	1	0	1	0	1
Directional Split (%) PM	E	0	0	0	0	0	0	1	0	1	0

NOTES: 2020 Concept Alternates 1 & 2 are both modeled with I-710 gap closure built between I-10 and I-210
Speeds are estimated and are for comparative purposes only

STATE ROUTE 134
Concept Summary - Level of Service



Segment	1	2	3
Existing			
Demand / Capacity	1.58	1.43	1.45
Avg. Daily Traffic (x1,000)	192	218	179
Number of Lanes	4	4	4
Pk.hour Level Of Service	F3	F2	F2
2020 Null With Route 710 (Main Line)			
Demand / Capacity	1.59	1.72	1.52
Avg. Daily Traffic (x1,000)	219	270	224
Number of Lanes	4	4	4
Pk.hour Level Of Service	F3	F3	F3
2020 Concept (Alternate #1)			
Demand / Capacity	1.49	1.60	1.40
Avg. Daily Traffic (x1,000)	208	233	184
Number of Lanes	4	4	4
Pk.hour Level Of Service	F3	F3	F2

Route # - 134 Summary of Concept Improvements

Segment	Limits	Existing Facility	Alternative Concept #1	Alternative Concept #2	Maintain Current D/C	LOS "D" Attainment
1	US-101/SR-170 to I-5	4MF + 1 HOV	4MF + 1 HOV	4MF + 2 HOV	5MF + 1 HOV	7MF +1HOV
2	I-5 to SR-2	4MF + 1 HOV	4MF + 1 HOV	4MF + 2 HOV	5MF + 1 HOV	7MF +1HOV
3	SR-2 to I-210/I-170	4MF + 1 HOV	4MF + 1 HOV	4MF + 2 HOV	6MF + 2 HOV	6MF + 2 HOV

STATE ROUTE 134

Park and Ride / Bicycle facilities

Lot Name	#	PM/PK	City	Operator	Owner	Bike Lockers	# Stalls	Transit Service
Verdugo	2	17	La Canada	State	State	0	104	None
Riverton	101	10.6	Studio City	LA County	LA County	0	201	None
Glendale	134	8.8	Glendale	LA County	LA County	0	215	None

State Route 134 Transit Component

Current System

There is currently one HOV (High Occupancy Vehicle) in each direction of State Route 134. The table below lists the individual LADOT lines and, where available, their ridership figures.

Agency	Line #	Hours of Operation
LADOT	LX 549	Commute

Future

Recent county legislation ("MTA Reform and Accountability Act of 1998"), which has discontinued funding for all future rail projects, has given the LACMTA the opportunity to expand and enhance its transit strategy. The agency has planned to spend $1 billion to increase its fleet by nearly 2,100 by 2004. In addition, federal rulings to reduce overcrowding during peak periods have required the agency to purchase over 500 additional buses and increase service within the same time frame. One of the major strategies of MTA's Long Range Transportation Plan is the preparation of a Bus System Improvement Plan to promote and augment transit services throughout Los Angeles County. This strategy, in addition to the implementation of new technologies such as Advanced Technology Transit Bus (ATTB) and new transit centers development, can augment increased transit service.

IX. ROUTE ANALYSIS

Current / Future Operating Conditions

Operating deficiencies occur when the existing or projected LOS falls below the concept LOS. A deficiency also exists on urban freeways when the LOS is F0 or below (i.e. F1, F2, etc.).

The following table shows the current transit deficiencies for State Route 134. This information utilizes the "Sketch Plan" (RCR Guidelines, 1987) method to roughly estimate the amount of transit service (if any) would be necessary to achieve the desired route concept. The formula employed can be summarized as follows:

The "sketch plan" formula is based on the above assumptions.

- One way Peak Hour volume = PK
- Maximum Service Flow (MSF) for route concept LOS "D" = 0.93
- 1500 vehicles per lane per hour X 0.93 X Number of lanes = Freeway Capacity @ LOS "D"
- Vehicle Occupancy Factor = 1.3 Passengers Per Vehicle (SCAG is currently using an Average Vehicle Occupancy rate of 1.1 Persons per Vehicle (PPV) in the AM peak and an PPV of 1.3 in the PM peak. These tables utilize the largest peak volume regardless of time or direction and it uses the 1.3 PPV value for illustrative purposes only).
- Peak hour volumes are taken from the segment summaries found in Section III.

Transit Required = (PK – MSF @ "D") x 1.3 (ppv) ÷ 40 (ppv)

The formula was used to calculate both current and future transit deficiencies. Where negative values occur for hourly bus requirements, the value is equal to zero.

Current Operating Conditions

Segment	Highest Peak Hour Volume	# Lanes	Vehicle Capacity Hr/Ln	LOS "D" (0.93) Capacity	0.93 x # Lanes	Demand Exceeding Capacity @ LOS "D"	Buses per Hour Required to Achieve Concept
1	10900	4	2000	7440	3460	4498	**112**
2	10000	4	2000	7440	2560	3328	**83**
3	10000	4	2000	7440	2560	3328	**83**

* No current transit service on these segments.

2020 Null Operating Conditions

Segment	Highest Peak Hour Volume	# Lanes	Vehicle Capacity Hr/Ln	LOS "D" (0.93) Capacity	0.93 x # Lanes	Demand Exceeding Capacity @ LOS "D"	Buses per Hour Required to Achieve Concept
1	10700	4	2000	7440	3260	4238	106
2	11500	4	2000	7440	4060	5278	132
3	9100	4	2000	7440	1660	2158	54

* No current transit service on these segments.

2020 Concept Operating Conditions

Segment	Highest Peak Hour Volume	# Lanes	Vehicle Capacity Hr/Ln	LOS "D" (0.93) Capacity	LOS "D" x # Lanes	Demand Exceeding Capacity @ LOS "D"	Buses per Hour Required to Achieve Concept
1	10300	4	2000	7440	3718	2860	71
2	11200	4	2000	7440	4888	3760	94
3	9750	4	2000	7440	3003	2310	58

Even though the information presented in these tables is a rudimentary estimate at best and a more detailed analysis is necessary, it is clear that in order to achieve the future desired route concept, additional transit service is needed. To be sure, apparent need (congestion and time delay) will not be adequate to divert drivers from their vehicles. Transit and Transportation officials need to make transit use more attractive to its potential customers. Increased service, safe, clean, well-maintained buses and Park-and-Ride facilities, and attractive fare pricing (similar to the Proposition "A" 41% fair reduction from July 1982 to July 1985[1]) will induce many driver out of their vehicles. Obviously, the transit component is just one facet in a multi-modal and multi-agency approach to a long-term solution.

Transportation System Management/Travel Demand Management

With the passage of SB-45 in 1998, the Transportation System Management program funds were consolidated with other program funds to provide for a broad range of

transportation improvements through the Interregional Improvement Program (IIP), which include transportation system and demand management projects.

GOODS MOVEMENT

The economic vitality and well being of the Los Angeles region depends upon the safe and timely transport of goods as well as people. Current levels of congestion are detrimental to this vitality, and future projections indicate that this situation will get much worse. In terms of freight alone, the 1998 SCAG RTP forecasts international trade to double by 2020, with overall goods movement increasing by over 30%. Significant actions thus need to be taken to protect the economic well being of the region. These include improved rail service, including more grade separations; additional and improved intermodal transfer facilities; truck lanes on major truck routes; improved access to and enhanced cargo handling capabilities at seaports; and improved air cargo accessibility with separation from passenger activities at airports. Some of the specific conditions affecting State Route 134 are as follows:

Truck: State Route134 has been identified as having access to and from the National network by STAA (Surface Transportation Assistance Act). Truck volume in 1995 ranges from 4.7% to 10% of ADT. Trucks are allowed for Services, Terminals, and Terminal Access Routes (State Highways). Regionally, truck traffic is expected to increase by over 40% by 2020, with virtually no capacity available to handle this added volume (see SCAG RTP).

Route 134 carries a high percentage of truck traffic and is a vital route for "Goods Movement". Dedicated truck lanes will improve operating conditions, which will have a significant economic effect in the area.

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[1] Jon Hillmer and Stephen t. Perry, *The El Monte Busway: A Twenty-Year Retrospective*, Los Angeles County Metropolitan Transportation Authority, 7th National conference on High Occupancy Vehicle systems, June 5-8, 1994, p. 16.

Parallel Arterials

There are several arterial streets paralleling SR-134 that could provide an alternative to commuters wishing to avoid peak hour congestion on the freeway. Listed below are some selected arterial streets that parallel SR-134.

Arterial Name	Segment #	City or Community	Thomas Guide Page No	Boundary Streets
Riverside Dr.	1	Glendale & Burbank	563, 564	Orange Grove Blvd & Broadway
Glenoaks Blvd	2	Glendale	564, 565	North Central Avenue & Glendale Blvd
Colorado Blvd	3	Glendale & Pasadena	564,565	Arroyo Blvd & Oaks Avenue

X. PROGRAMMED IMPROVEMENTS

The following are seven mechanism-programming documents[1] for project funding within the region.

Regional Transportation Improvement Program (RTIP) -- A five-year list of proposed transportation projects. The Regional Transportation Planning Agency (RTPA) submits the RTIP to the California Transportation Commission (CTC) as a request for State Funding. If RTIP projects have federal funding components, they will also appear in the FTIP once selected for the STIP (see below).

Interregional Improvement Program (IIP) -- A five-year program developed by Caltrans, that includes projects developed through the Interregional Road System Plan, Intercity Rail, Soundwall, Toll Bridge, and Aeronautics programs.

State Transportation Improvement Program (STIP) -- A five-year list of transportation projects proposed in RTIP's and ITIP's that the CTC adopts. Those projects that have federal funding components will also appear in the FTIP and FSTIP.

State Highway Operation and Protection Program (SHOPP) -- A four-year program limited to projects related to State highway safety and rehabilitation.

Federal Transportation Improvement Program (FTIP) -- A three-year list of all transportation projects proposed for federal funding under Federal authorization, within the planning area of an MPO. An MPO develops the FTIP and the Director of Caltrans approves it. In air quality non-attainment areas, the plan must conform to a State Implementation Plan.

Federal State Transportation Improvement Program (FSTIP) -- A three-year list of transportation projects proposed for funding under Federal authorization developed by the State in cooperation with MPO's and in consultation with local non-urbanized

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[1] The governor approved Senate Bill 45 on October 2, 1997. The bill significantly changes transportation funding in California. The California Department of Transportation, in cooperation with the California Transportation Commission (CTC), transportation planning agencies and county transportation commissions and local governments

governments. The FSTIP includes all FTIP projects as well as other federally funded rural projects.

Traffic Operations Program Strategies (TOPS) -- A program developed by Caltrans and the CHP to ensure the safety and service of California motorist by implementing the latest in interactive/integrated transportation management and information system. Caltrans and the CHP use sophisticated electronic technologies to process and analyze freeway traffic data, to monitor traffic flow in order to rapidly detect and effectively respond to incidents resulting congestion. Implementation of TOPS includes minor operational improvements i.e. geometric upgrades and major capital improvements i.e. HOV lanes.

PROGRAMMED PROJECT

STATE ROUTE 134

The proposed project with an estimated cost of over 25 million dollars will enhance safety, relieve congestion, and improve access to and from State Route-134. The media District of City of Burbank, major entertainment industries and major employers, including NBC, Walt Disney, Warner Brothers Studios are some of the concerned entities. The Project involves improvements to State Route 134 westbound ramps at Hollywood Way in the Media District of the City of Burbank in Los Angeles County. The limits of this improvement are within the Media District of the City of Burbank. The Media District area is expected to grow significantly with a doubling of its job base within 10 years. Increase in traffic will undoubtedly accompany this growth, which will contribute to overloading of these freeway ramps. The proposed improvements will enhance safety, relieve congestion, and improve access to and from SR-134. The cities of Burbank and Glendale have identified two interchange projects for which improvements are vital to the economic growth of the

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developed guidelines for the development of the State Transportation Improvement Program (STIP) and the incorporation of projects into the STIP.

region. This proposed Project is included in the City of Burbank's Capital Improvement Program.[2]

Segmt	EA	PPNO	CO	Rte	Post Mile	Description	Total Est. Cost	Const. Start Date	Completion Date
1	188501	2223	LA	134	01.9/02.3	Modify IC / New Ramps	33M CC=32.320M SC = 2.846M	12/12/03	12/18/05
2	178701	2121	LA	134	5.60/6.60	Modify Rte.134 I/C & Realign Ramps	5M CC=3.564M SC = 1.38M	01/22/03	10/31/03

EA = Expenditure Authorization

PPNO = Planning and Program Number

Complete = Target Completion Date

CC = Capital Cost

SC= Support Cost

RAMP METERING AND HOV BYPASS LANES

Currently all 27 ramps along route 134 are metered. Five of these ramps have HOV bypass lanes. There are a total of 859 metered ramps in Los Angeles and Ventura Counties; of which, 320 have separate HOV bypass lanes, where the HOVs do not have to stop at the ramp meter signal. Ramp metering is one of Traffic Management's tools to

[2] Fact Sheet For EA 18850 (For Internal Use Only) Modify IC/New Ramps.

regulate the flow of traffic entering the freeways during the peak traffic hours. Ramp metering will:

a. Smooth the overall flow of freeway traffic
b. Accommodate more vehicles per hour on the freeway
c. Decrease commuting travel times
d. And increase safety on the freeway.

Ramp metering reduces traffic congestion on the freeway. This increases the capacity of the mixed flow lane and enables traffic to flow at greater speeds. The number of traffic accidents are reduced as well. Freeway congestion is most often caused by a bottleneck, where the freeway demand exceeds the freeway capacity. This condition usually occurs during the weekday peak hours, but some freeways experience congestion during the mid-day and some on weekends. When the demand exceeds the capacity, congestion creates queues of stop-and-go traffic, and ramp metering limits the amount of traffic entering the freeway so that the demand at the bottleneck does not exceed the capacity. A free-flowing traffic lane can carry 33% more cars than a congested lane. It is in the interest of all the public to keep the freeways moving freely.

On weekdays, the meters operate 3 to 4 hours during the peak traffic periods. Some ramps are also metered during the mid-day hours, and some are even metered on weekends. The rate at which cars are allowed onto the freeway is determined by the ramp volume as well as the volume on the freeway. The mainline responsive controllers react to the volumes on the freeway, such that if the volumes decrease significantly, then the meter will adjust and allow more cars onto the freeway. If the freeway volumes are very light, the meter may go to continuous green.

Projects within freeway segments identified in the Ramp Meter Development Plan should include provisions for ramp metering. However, there are ramp locations that are not metered, due to the heavy volume of traffic and/or insufficient storage area for the metered vehicles. The average cost for a complete installation of a ramp meter is $50,000. This cost as a percentage of the freeway construction varies depending on the type of freeway construction.

There are no ramp meters in Ventura County. The District's "Ramp Meter Development Action Plan, 1997-2007" indicates that an additional 60 ramps will be metered by 2007, 27 of which will be in Ventura county.

In addition to ramp meters, a system of electronic traffic sensors, changeable message signs, and closed-circuit television cameras have been installed district-wide to monitor traffic flow and respond to congestion in a variety of ways. These, plus a Highway Advisory Radio and 24 hour traffic condition cable access "Freeway Vision" are controlled from a state-of-the-art Traffic Management Center in the Caltrans district office.

XI. TRANSPORTATION CONCEPT AND CONCLUSIONS

Transportation Concept

The transportation concept describes the operating conditions and physical facilities required to provide those conditions that could exist on State Route 134 after considering the conclusions, priorities and strategies discussed in the District System Management Plan (DSMP), the SCAG Regional Transportation Plan (RTP), and other planning documents. The route concept represents what could reasonably be accomplished to facilitate the mobility of traffic desiring to use the route. It assumes that management improvement strategies and system operation management improvements to maximize the efficiency on State Route 134 will be implemented.

The transportation concept is composed of a LOS and facility component. The concept LOS indicates the minimum level of service the District would allow on a route prior to proposing an alternative to improve operating conditions. The concept facility is the facility that could be developed to maintain or attain the concept LOS.

Alternative #1 is based on existing plans, primarily the SCAG RTP, the LACMTA Long Range and HOV Plans, and the Caltrans District System Management Plan. Alternative #1 proposes maintaining the Null condition which consists of 4 mixed flow + 1 HOV lanes in segments 1, 2 & 3.
Alternative # 2 recommends adding an extra HOV lane in each direction, in segments 1, 2 & 3.

CONCLUSIONS

Route 134 is an interregional freeway that runs a distance of 13.3 miles. It runs through 3 cities of Southern California Association of Governments (SCAG), and provides access to major multi-billion industries and businesses located in the facility area. The Burbank Airport is easily accessible from Route 134. With traffic demand projected to increase by approximately 30% and the total freight size to double over the next 20 years, each of these facilities will be affected. Failure to anticipate the potential economic damage of increased congestion may cost the county some of it nationally and internationally significant facilities.

In conclusion; Alternative #1 is recommended since volume comparisons show very little difference in congestion relief as a result of adding a second HOV lane for the additional cost and no real benefit.

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GLOSSARY

AADT: (Average Annual Daily Traffic) Denotes that the daily traffic is averaged over one calendar year.

ADT: (Average Daily Traffic) The average number of vehicles passing a specified point during a 24-hour period.

AQMD: (Air Quality Management District) A regional agency, which adopts and enforces regulations to achieve and maintain state and federal air quality standards.

AQMP: (Air Quality Management Plan) The plan for attaining state air quality as required by the California Clean Air Act of 1988. The plan is adopted by air quality districts and is subject to approval by the California Air Resources Board.

ATIS: (Advanced Traveler Information Systems)

ATMS: (Advanced Traffic Management Systems)

AV: (Antelope Valley Transit)

AVCS: (Automated Vehicle Control Systems)

AVO: (Average Vehicle Occupancy) The average number of persons occupying a passenger vehicle along a roadway segment intersection, or area, as typically monitored during a specified time period. For the purpose of the California Clean Air Act, passenger vehicles include autos, light duty trucks, passenger vans, buses, passenger rail vehicles and motorcycles.

AVR: (Average Vehicle Ridership) The number of employees who report to a worksite divided by the number of vehicles driven by those employees, typically averaged over an established time period. This calculation includes crediting vehicle trip reductions from telecommuting, compressed workweeks and non-motorized transportation.

Caltrans: (California Department of Transportation) As the owner/operator of the state highway system, state agency responsible for its safe operation and maintenance. Proposes projects for intercity rail, interregional roads, and sound walls. Also responsible for the SHOPP, Toll Bridge, and Aeronautics programs. Caltrans is the implementing agency for most state highway projects, regardless of program, and for the Intercity Rail program.

CBD: (Central Business District) The downtown core area of a city, generally an area of high land valuation, traffic flow, and concentration of retail business offices, theaters, hotels, and service businesses.

CCTV: (Closed Circuit Television)

CEQA: (California Environmental Quality Act) A statute that requires all jurisdictions in the State of California to evaluate the extent of environmental degradation posed by proposed development or project.

CHP: (California Highway Patrol)

CIP: (Capital Improvement Program) A seven-year program of projects to maintain or improve the traffic level of service and transit performance standards developed and to mitigate regional transportation impacts identified by the CMP Land Use Analysis Program, which conforms to transportation-related vehicle emissions air quality mitigation measures.

CMA: (Congestion Management Agency) The agency responsible for developing the Congestion Management Program and coordinating and monitoring its implementation.

CMAQ: (Congestion Mitigation Air Quality program) Part of ISTEA, this is a funding program designed for projects that contribute to the attainment of air quality goals.

CMP: (Congestion Management Program) A legislatively required countywide program, which addresses congestion problems.

CMS: (Changeable Message Sign)

CMS: (Congestion Management System) Required by ISTEA to be implemented by states to improve transportation planning.

COG: (Council of Governments) A voluntary consortium of local government representatives, from contiguous communities, meeting on a regular basis, and formed to cooperate on common planning and solve common development problems of their area. COGs can function as the RTPAs and MPOs in urbanized areas.

Commute Hours: AM and PM peak commute travel times. Generally, between the hours of 5:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m., Monday through Friday.

Concept: A strategy for future improvements that will reduce congestion or maintain the existing level of service on a specific route.

Congestion: Defined by Caltrans as, reduced speeds of less than 35 miles per hour for longer than 15 minutes.

CTC: (California Transportation Commission) A body established by Assembly Bill 402 (AB 402) and appointed by the Governor to advise and assist the Secretary of the Business, Transportation and Housing Agency and the Legislature in formulating and evaluating state policies and plans for transportation.

D/C: (Demand-to-Capacity ratio) The relationship between the number of vehicle trips operating on a facility, versus the number of vehicle trips that can be accommodated on that facility.

DSMP: (District System Management Plan) A part of the system planning process. A district's long-range plan for management of transportation systems in its jurisdiction.

EIR: (Environmental Impact Report) A report prepared pursuant to CEQA that analyzes the level of environmental degradation expected to be caused by a proposed development or project.

Extended Commute: Service hours beyond the normal commute hours. Generally, in the evening, this refers to transit service until 10:00 p.m.

F+I Actual: (Fatal Plus Injury Actual) Contains specific data for accidents that are State highway related. Each accident record contains a ramp, intersection or highway postmile address that ties it to the Highway database.

F+I Average: (Fatal Plus Injury Average) The Statewide Average Accident Rate (SWA) is based on a rated segment. The accident-rating factor (ARF) indicates how the existing segment compares to other segments on the Sate Highway System. The ARF is a comparison of the segment's accident rate to the statewide average accident rate for roads of the same type and having similar characteristics. Accident severity as well as accident frequency is considered in

calculating the ARF. If the total number of accidents is less than three, there will not be a calculation for the ARF. If there are more than two, but less than twenty-five total accidents, an accident-rating factor will be generated, but there will not be an accident severity flag listed. If there are more than twenty-five accidents, an accident rating factor and severity flag will be generated.

F+I/MVM: (Fatal Plus Injury per Million Vehicle Miles) The fatality rate of those killed in vehicles plus the injury rate of those injured in vehicles.

FAI: (Federal Aid Interstate) Highway program established in 1956 for national defense purposes, these roadways interconnect the major nationwide population and economic centers. Also, there is a federal funding category for these routes.

FHWA: (Federal Highway Administration)

Free-flow Speed: Speed that occurs when density and flow are "zero".

Freeway Capacity: The maximum sustained 15 minute rate of flow that can be accommodated by a uniform freeway segment under prevailing traffic and roadway conditions in a specified direction.

FSP: (Freeway Service Patrol) A special team of tow truck drivers who continuously patrol freeways during commuter hours to help clear disabled automobiles.

FT: (Foothill Transit)

GM: (Gardena Municipal Bus Lines)

GRT: (Guaranteed Return Trip) A ridesharing strategy which provides a "Guaranteed Return Trip" to those who rideshare, in the case of an emergency or when overtime work hours are required.

HAR: (Highway Advisory Radio)

HCM: (Highway Capacity Manual) Revised in 1994 by the Transportation Research Board of the National Research Council, the HCM presents various methodologies for analyzing the operation (see Level of Service) of transportation systems as freeways, arterial, transit, and pedestrian facilities.

HOT Lanes: (High Occupancy Toll Lane) New HOV lanes that allow single occupant vehicles access for a fee.

HOV: (High Occupancy Vehicle Lane) A lane of freeway reserved for the use of vehicles with more than a preset number of occupants; such vehicles often include buses, taxis and carpools.

HSR: (High Speed Rail) A regional system that will connect major regional activity centers and significant inter-/multi-modal transportation facilities.

I/C: (Interchange) A system of interconnecting roadways in conjunction with one or more grade separations providing for the interchange of traffic between two or more roadways on different levels.

ICES: (Intermodal Corridors of Economic Significance) Significant National Highway System Corridors that link intermodal facilities most directly, conveniently and efficiently to intrastate, interstate and international markets.

IRRS: (Interregional Road System) A series of interregional state highway routes, outside the urbanized areas, that provide access to, and links between,

the state's economic centers, major recreational areas, and urban and rural regions.

ISTEA: (Intermodal Surface Transportation Efficiency Act) Federal legislation and funding Program adopted in 1991. It provides increased funding and program flexibility for multi-modal transportation programs. Update: ISTEA expired on September 30, 1997. In December 1997, Congress passed and the President signed a six-month extension of the law, holding funding to current levels and keeping program structure and formulas intact. This extension expired on March 31, 1998, with an obligation deadline of May 1, 1998. On June 9, 1998, the President signed into law PL 105-178, the Transportation Equity Act for the 21st Century (TEA-21) authorizing highway, highway safety, transit and other surface transportation programs for the next 6 years. TEA-21 builds on the initiatives established in the 1991 ISTEA.

ITIP: (Interregional Transportation Improvement Program) An improvement program that makes up 25% of the STIP. 60% of this program is for improvements on Interregional Routes in non-urbanized areas and intercity rail. 40% is to fund projects of interregional significance (for the interregional movement of people and goods).

ITMS: (Intermodal Transportation Management System) A quick-response statewide sketch planning tool to assist planners in evaluating proposals in order to improve spending decisions. It provides the capability to analyze the current transportation network and to evaluate the impacts of investment options at the corridor area or statewide level.

ITS: (Intelligent Transportation Systems) The application of electronics and computer information systems to transportation.

ITSP: (Interregional Transportation Strategic Plan) Caltrans guiding framework for implementing the Interregional Improvement Program under Senate Bill 45.

IVHS: (Intelligent Vehicle Highway Systems) The development of application of electronics, communications or information processing (including advanced traffic management systems, public transportation systems, satellite vehicle tracking systems, and advanced vehicle communications systems) used alone or in combination to improve the efficiency and safety of surface transportation systems.

LACMTA: (Los Angeles County Metropolitan Transportation Authority)

LADOT: (Los Angeles Department of Transportation)

LARTS: (Los Angeles Regional Transportation Study) An organization of transportation planners and data analysts who have developed and are charged with monitoring and forecasting travel in the Los Angeles area. It has primary responsibility for predicting future travel behavior within six counties (Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial) which comprises the Southern California Association of Governments (SCAG) region. It operates under the aegis of CALTRANS, District 7, and functions with the support of SCAG, U.S. Department of Transportation, and transit districts, cities and counties of the SCAG region.

LIR: (Local Implementation Report) A report that jurisdictions must submit to LACMTA to remain in conformance with Los Angeles County Congestion Management Program (CMP) requirements. This report is submitted on an annual basis, and contains a resolution of conformance, new development activity reporting, selected mitigation strategies and credit claims and future transportation improvements.

LOS: (Level of Service) A qualitative measure describing operational conditions within a traffic stream; generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

LROP: (Long-Range Operations Plan)

LX: (Los Angeles Department of Transportation Commuter Express)

MF: (Mixed Flow) Traffic movement having automobiles, trucks, buses, and motorcycles sharing traffic lanes.

Model: (1) A mathematical or conceptual presentation of relationships and actions within a system. It is used for analysis of the system or its evaluation under various conditions. (2) A mathematical description of a real-life situation, that uses data on past and present conditions to make a projection about the future.

Model, Land Use: A model used to predict the future spatial allocation of urban activities (land use), given total regional growth, the future transportation system, and other factors.

Model, Mode Choice: A model used to forecast the proportion of total person trips on each of the available transportation modes.

Model, Traffic: A mathematical equation or graphic technique used to simulate traffic movements, particularly those in urban areas or on a freeway.

MPAH: (Master Plan of Arterial Highways)

MPO: (Metropolitan Planning Organization) According to U.S. Code, the organization designated by the governor and local elected officials as responsible, together with the state, for the transportation planning in an urbanized area. It serves as the forum for cooperative decision making by principal elected officials of general local government.

MTA: (Metropolitan Transportation Authority) Metro Bus Lines

Multi-modal: Pertaining to more than one mode of travel.

NHS: (National Highway System) Will consist of 155,000 miles (plus or minus 15 percent) of the major roads in the U.S. Included will be all Interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

Night Owl: Evening transit service hours that extend beyond the normal commute service hours, but is less than 24 hour per day.

NOP: (Notice of Preparation) A notice informing potentially affected agencies that an Environmental Impact Report (EIR) is being prepared for a proposed development or project.

Null: A concept that includes only existing projects and those projects which may or may not be constructed but are programmed in the 1996 STIP.

OHC: Other Highway Construction.

Peak: (Peak Period, Rush Hours): (1) The period during which the maximum amount of travel occurs. It may be specified as the morning (a.m.) or afternoon or evening (p.m.) peak. (2) The period during which the demand for

transportation service is the heaviest. (AM Peak period represents 6:30 a.m. to 8:30 a.m. and PM Peak period represents 3:00 p.m. to 6:00 p.m.)

Performance Indicator: Quantitative measures of how effective an activity, task, or function is being performed. In transportation systems, it is usually computed by relating a measure of service output or use to a measure of service input or cost.

PM: (Post Mile) Is the mileage measured from a county line or the beginning of a route to another county line or the ending of the route. Each post mile along a route in a county is a unique location on the State Highway System.

PMT: (Passenger Miles Traveled) The number of miles traveled by all passengers on a transportation mode such as transit.

PPN: (Planning and Program Number) Used in the State Transportation Improvement Program (STIP) to identify projects.

PSR: (Project Study Report) The pre-programming document required before a project may be included in the STIP.

Public Transportation: Transportation service to the public on a regular basis using vehicles that transport more than one person for compensation, usually but not exclusively over a set route or routes from one fixed point or another. Routes and schedules may be determined through a cooperative arrangement. Subcategories include public transit service, and paratransit services that are available to the general public.

RAS: (Rehabilitation and Safety)

Ridesharing: Two or more persons traveling by any mode, including but not limited to, automobile, vanpool, bus, taxi, jitney, and public transit.

RME: (Regional Mobility Element) SCAGs major policy and planning statement on the region's transportation issues and goals. It is comprised of a set of long-range policies, plans, and programs that outline a vision of a regional transportation system compatible with federal and state mobility objectives. Formerly called the Regional Mobility Plan (RMP).

RMP: (Regional Mobility Plan) The equivalent to the federal and state required Regional Transportation Plan (RTP) for the SCAG region.

Roadway Characteristics: The geometric characteristics of the freeway segment under study, including the number and width of lanes, lateral clearances at the roadside and median, free-flow speeds, grades and lane configurations.

RSA: (Regional Statistical Area) An aggregation of census tracts for the purpose of sub-regional demographic and transportation analysis within the Southern California Association of Governments (SCAG) area.

RTIP: (Regional Transportation Improvement Program) A list of proposed transportation projects submitted to the CTC by the regional transportation planning agency, as a request for state funding through the FCR and Urban and Commuter Rail Programs. The individual projects are first proposed by local jurisdictions (CMAs in urbanized counties), then evaluated and prioritized by the RTPA for submission to the CTC. The RTIP has a seven-year planning horizon, and is updated every two years.

RTP: (Regional Transportation Plan) A comprehensive 20-year plan for the region, updated every two years by the regional transportation-planning agency.

The RTP includes goals, objectives, and policies, and recommends specific transportation improvements.

RTPA: (Regional Transportation Planning Agency) The agency responsible for the preparation of RTPs and RTIPs and designated by the State Business Transportation and Housing Agency to allocate transit funds. RTPAs can be local transportation commissions, COGs, MPOs or statutorily created agencies. In the Los Angeles area, SCAG is the RTPA.

SC: (Santa Clarita Transit)

SCAB: (South Coast Air Basin) A geographic area defined by the San Jacinto Mountains to the east, the San Bernardino Mountains to the north, and the Pacific Ocean to the west and south. The entire SCAB is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

SCAG: (Southern California Association of Governments) The Metropolitan Planning Organization (MPO) for Ventura, Los Angeles, Orange, San Bernardino, Riverside and Imperial counties that is responsible for preparing the RTIP and the RTP. SCAG also prepared land use and transportation control measures in the 1994 Air Quality Management Plan (AQMP).

SCAQMD: (South Coast Air Quality Management District) The agency responsible for preparing the Air Quality Management Plan (AQMP) for the South Coast Air Basin.

SCRRA: (Southern California Regional Rail Authority) Operates Metrolink.

SHELL: (Subsystem of Highways for the movement of Extra Legal Loads)

SHOPP: (State Highway Operation and Protection Program) A four-year program limited to projects related to State highway safety and rehabilitation.

SJHTC: (San Joaquin Hills Transportation Corridor)

SM: (Santa Monica Transit)

Smart Shuttle: A multiple occupant passenger vehicle equipped with advanced technology for more effective vehicle and fleet planning, scheduling and operation, as well as offering passengers more information and fare payment options.

SR: (State Route)

SRTP: (Short-Range Transit Program) A five-year comprehensive plan required by the Federal Transit Administration for all transit operators receiving federal funds. The plans establish the operator's goals, policies, and objectives, analyze current and past performance, and describe short-term operational and capital improvement plans.

STAA: (Surface Transportation Assistance Act)

STIP: (State Transportation Improvement Program) A list of transportation projects, proposed in RTIPs and the PSTIP, which are approved for funding by the CTC.

STP: (Surface Transportation Program) Part of ISTEA, this is a funding program intended for use by the states and cities for congestion relief in urban areas.

STRAHNET: (Strategic Highway Corridor Network)

TASAS: (Traffic Accident Surveillance and Analysis System) A system that provides a detailed list and/or summary of accidents that have occurred on highways, ramps or intersections in the State Highway System. Accidents can be selected by location, highway characteristics, accident data codes or any combination of these.

TCM: (Transportation Control Measure) A measure intended to reduce pollutant emissions from motor vehicles. Examples of TCMs include programs to encourage ridesharing or public transit usage, city or county trip reduction ordinances, and the use of cleaner burning fuels in motor vehicles.

TCR: (Transportation Concept Report) Formerly Route Concept Report (RCR) this report analyzes a transportation corridor service area, establishes a twenty-year transportation planning concept and identifies modal transportation options and applications needed to achieve the twenty-year concepts.

TDM: (Transportation Demand Management) Demand based techniques for reducing traffic congestion, such as ridesharing programs and flexible work schedules enabling employees to commute to and from work outside of peak hours.

TEA-21: (Transportation Equity Act for the 21st Century) Signed by President Clinton on June 9, 1998. TEA-21 builds on the initiatives established in the ISTEA Act of 1991. This new Act combines the continuation and improvement of current programs with new initiatives to meet the challenges of improving safety as traffic continues to increase at record levels, protecting and enhancing communities and the natural environment as we provide transportation, and advancing America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

TIA: (Transportation Impact Analysis) An analysis procedure to assist local jurisdictions in assessing the impact of land use decisions on the Congestion Management Program (CMP) system for Los Angeles County.

TL: (Truck Lane)

TMC: (Transportation Management Center) A focal point that can monitor traffic and road conditions, as well as train and transit schedules, and airport and shipping advisories. From here, information about accidents, road closures and emergency notifications is relayed to travelers.

TOS: (Traffic Operation System) Computer based signal operation.

TOT/MVM: (Total Accidents Per Million Vehicle Miles)

TPMP: (Transit Performance Measurement Program) A state mandated program to evaluate transit operator system performance on the basis of operating statistics. The program monitors transit system performance of Los Angeles County operators that receive state and federal funds and analyzes the institutional relationships among operators to ensure coordination.

Traffic Conditions: Any characteristics of the traffic stream that may affect capacity or operations, including the percentage composition of the traffic stream by vehicle type and driver characteristics (such as the differences between weekday commuters and recreational drivers).

Transportation Management Association (TMA)/Organization (TMO): A private/non-profit association that has a financial dues structure joined together in a legal agreement for the purpose of achieving mobility and air quality goals and objectives within a designated area. There are fourteen operating TMA/TMO's in Los Angeles County.

TRO: (Trip Reduction Ordinances)

TSM: (Transportation System Management) That part of the urban transportation Process undertaken to improve the efficiency of the existing transportation system. The intent is to make better use of the existing transportation system by using short-term, low capital transportation improvements that generally cost less and can be implemented more quickly than system development actions.

TT: (Torrance Transit)

TW: (Transitway)

UTPS: (Urban Transportation Planning System) A tool for multi-modal transportation planning developed by the Urban Mass Transportation Administration (now the Federal Transit Administration) and the Federal Highway Administration. It is used for both long and short-range Planning, particularly system analysis and covers both computerized and manual planning methods. UTPS consists of computer programs, attendant documentation, user guides and manuals that cover one or more of five analytical categories: highway network analysis, transit network analysis, demand estimation, data capture and manipulation, and sketch planning.

VCTC: (Ventura County Transportation Commission)

Vehicle Occupancy: The number of people aboard a vehicle at a given time; also known as auto or automobile occupancy when the reference is to automobile travel only.

Vehicle Trip: A one-way movement of a vehicle between two points.

V/C: (Volume/Capacity).

VMT: (Vehicle Miles Traveled) (1) On highways, a measurement of the total miles traveled in all vehicles in the area for a specified time period. It is calculated by the number of vehicles multiplied by the miles traveled in a given area or on a given highway during the time period. (2) In transit, the number of vehicle miles operated on a given route or line or network during a specified time period.

VSM: (Vehicle Service Miles) The total miles traveled by transit service vehicles while in revenue service.

XII. APPENDIX
SUMMARY SHEET SOURCES

Summary sheet data entries and their sources are as indicated below:

1. Segment limits - System Planning
2. Post Miles/Kilometers - 1995 Traffic Volume book, 1995 State Highway Log, 1995 Route Segment Report, 1996 Highway Inventory
3. Functional Classification - 1992 Functional Classification System Map, NHS Map
4. MPAH Designation - County Master Plan of Arterial Highways Map
5. Other Systems - STAA Map, STRAHNET Map, IRRS Map, ICES List, Lifeline Map
6. Terrain - 1995 Route Segment Report, 1996 Highway Inventory
7. Mainline R/W - 1995 State Highway Log, 1996 Highway Inventory, R/W Maps
8. Median/Shoulder - 1995 State Highway Log, 1996 Highway Inventory
9. Design Speed - 1995 Route Segment Report, 1996 Highway Inventory
10. Bridge Structures - Office of Structure, Maintenance and Investigations
11. Trucks (% of ADT) - 1995 Daily Truck Traffic on State Highway System, 1996 Highway Inventory
12. Express Transit (lines) - 1996 MTA Route Maps, Individual Route Schedules (Various Operators)
13. Operators - Individual Route Schedules (Various Operators)
14. Rail Service - 1996 MTA Route Maps, 1996 Metrolink Schedules, 1996 AMTRAK Schedules
15. Park & Ride Lots (Spaces) - 1996 Park & Ride Map
16. Purpose - System Planning
17. Ultimate Mainline ADT - Not applicable
18. Ultimate Mainline Lanes - System Planning, 1991 Route Concept Report
19. Ultimate HOV ADT - Not applicable
20. Ultimate HOV Lanes - System Planning, 1991 Route Concept Report
21. Actual Fatal & Injury Accidents - 1997 TASAS Traffic Data
22. Actual Total Accidents - 1997 TASAS Traffic Data

23. Average Fatal & Injury Accidents - 1997 TASAS Traffic Data
24. Average Total Accidents - 1997 TASAS Traffic Data
25. Existing Mainline ADT - 1995 Traffic Volume book, 1995 Traffic Count Data
26. Existing Mainline Lanes - 1995 State Highway Log, 1996 Highway Inventory, 1995 Route Segment Report, 1996 Video Log
27. Existing HOV ADT - 1995 Traffic Volume book, 1995 Traffic Count Data
28. Existing HOV Lanes - 1995 State Highway Log, 1996 Highway Inventory, 1995 Route Segment Report, 1996 Video Log
29. 2020 Null without I-710 Mainline ADT - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations
30. 2020 Null without I-710 Mainline Lanes -1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations
31. 2020 Null without I-710 HOV ADT - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations
32. 2020 Null without I-710 HOV Lanes - 1997 Status of HOV Projects List, 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations
33. 2020 Null with I-710 Mainline ADT - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations
34. 2020 Null with I-710 Mainline Lanes - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations
35. 2020 Null with I-710 HOV ADT - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations
36. 2020 Null with I-710 HOV Lanes - 1997 Status of HOV Projects List, 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations
37. 2020 Concept Alternate 1 Mainline ADT - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations
38. 2020 Concept Alternate 1 Mainline Lanes - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations
39. 2020 Concept Alternate 1 HOV ADT - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations
40. 2020 Concept Alternate 1 HOV Lanes - 1997 Status of HOV Projects List, 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations
41. 2020 Concept Alternate 2 Mainline ADT - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

42. 2020 Concept Alternate 2 Mainline Lanes - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

43. 2020 Concept Alternate 2 HOV ADT - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

44. 2020 Concept Alternate 2 HOV Lanes - 1997 Status of HOV Projects List, 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

45. Existing Mainline AM Peak Hour Volume (North/East) - 1995 Traffic Volume book, 1995 Traffic Count Data

46. Existing Mainline AM Peak Hour Volume (South/West) - 1995 Traffic Volume book, 1995 Traffic Count Data

47. Existing Mainline PM Peak Hour Volume (North/East) - 1995 Traffic Volume book, 1995 Traffic Count Data

48. Existing Mainline PM Peak Hour Volume (South/West) - 1995 Traffic Volume book, 1995 Traffic Count Data

49. Existing HOV AM Peak Hour Volume (North/East) - 1995 Traffic Volume book, 1995 Traffic Count Data

50. Existing HOV AM Peak Hour Volume (South/West) - 1995 Traffic Volume book, 1995 Traffic Count Data

51. Existing HOV PM Peak Hour Volume (North/East) - 1995 Traffic Volume book, 1995 Traffic Count Data

52. Existing HOV PM Peak Hour Volume (South/West) - 1995 Traffic Volume book, 1995 Traffic Count Data

53. 2020 Null without I-710 Mainline AM Peak Hour Volume (North/East) -1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

54. 2020 Null without I-710 Mainline AM Peak Hour Volume (South/West) -1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

55. 2020 Null without I-710 Mainline PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

56. 2020 Null without I-710 Mainline PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

57. 2020 Null without I-710 HOV AM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

58. 2020 Null without I-710 HOV AM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

59. 2020 Null without I-710 HOV PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

60. 2020 Null without I-710 HOV PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Null without I-710 Model, Spreadsheet Segment Calculations

61. 2020 Null with I-710 Mainline AM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

62. 2020 Null with I-710 Mainline AM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

63. 2020 Null with I-710 Mainline PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

64. 2020 Null with I-710 Mainline PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

65. 2020 Null with I-710 HOV AM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

66. 2020 Null with I-710 HOV AM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

67. 2020 Null with I-710 HOV PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

68. 2020 Null with I-710 HOV PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Null with I-710 Model, Spreadsheet Segment Calculations

69. 2020 Concept Alternate 1 Mainline AM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

70. 2020 Concept Alternate 1 Mainline AM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

71. 2020 Concept Alternate 1 Mainline PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

72. 2020 Concept Alternate 1 Mainline PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

73. 2020 Concept Alternate 1 HOV AM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

74. 2020 Concept Alternate 1 HOV AM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

75. 2020 Concept Alternate 1 HOV PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

76. 2020 Concept Alternate 1 HOV PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 1 Model, Spreadsheet Segment Calculations

77. 2020 Concept Alternate 2 Mainline AM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

78. 2020 Concept Alternate 2 Mainline AM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

79. 2020 Concept Alternate 2 Mainline PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

80. 2020 Concept Alternate 2 Mainline PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

81. 2020 Concept Alternate 2 HOV AM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

82. 2020 Concept Alternate 2 HOV AM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

83. 2020 Concept Alternate 2 HOV PM Peak Hour Volume (North/East) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

84. 2020 Concept Alternate 2 HOV PM Peak Hour Volume (South/West) - 1990 LARTS Base/2020 Concept Alternate 2 Model, Spreadsheet Segment Calculations

85. Existing Mainline AM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

86. Existing Mainline AM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

87. Existing Mainline PM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

88. Existing Mainline PM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

89. 2020 Null without I-710 Mainline AM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

90. 2020 Null without I-710 Mainline AM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

91. 2020 Null without I-710 Mainline PM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

92. 2020 Null without I-710 Mainline PM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

93. 2020 Null with I-710 Mainline AM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

94. 2020 Null with I-710 Mainline AM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

95. 2020 Null with I-710 Mainline PM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

96. 2020 Null with I-710 Mainline PM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

97. 2020 Concept Alternate 1 Mainline AM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

98. 2020 Concept Alternate 1 Mainline AM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

99. 2020 Concept Alternate 1 Mainline PM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

100. 2020 Concept Alternate 1 Mainline PM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

101. 2020 Concept Alternate 2 Mainline AM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

102. 2020 Concept Alternate 2 Mainline AM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

103. 2020 Concept Alternate 2 Mainline PM Average Speed (North/East) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

104. 2020 Concept Alternate 2 Mainline PM Average Speed (South/West) - 1994 Highway Capacity Manual, 1995 Traffic Operations Speed Map, 1990/2020 LARTS Model Runs, Spreadsheet Segment Calculations

105. Existing Mainline AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

106. Existing Mainline AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

107. Existing Mainline PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

108. Existing Mainline PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

109. Existing Mainline AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

110. Existing Mainline PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

111. Existing HOV AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

112. Existing HOV AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

113. Existing HOV PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

114. Existing HOV PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

115. Existing HOV AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

116. Existing HOV PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

117. 2020 Null without I-710 Mainline AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

118. 2020 Null without I-710 Mainline AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

119. 2020 Null without I-710 Mainline PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

120. 2020 Null without I-710 Mainline PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

121. 2020 Null without I-710 Mainline AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

122. 2020 Null without I-710 Mainline PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

123. 2020 Null without I-710 HOV AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

124. 2020 Null without I-710 HOV AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

125. 2020 Null without I-710 HOV PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

126. 2020 Null without I-710 HOV PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

127. 2020 Null without I-710 HOV AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

128. 2020 Null without I-710 HOV PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

129. 2020 Null with I-710 Mainline AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

130. 2020 Null with I-710 Mainline AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

131. 2020 Null with I-710 Mainline PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

132. 2020 Null with I-710 Mainline PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

133. 2020 Null with I-710 Mainline AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

134. 2020 Null with I-710 Mainline PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

135. 2020 Null with I-710 HOV AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

136. 2020 Null with I-710 HOV AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

137. 2020 Null with I-710 HOV PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

138. 2020 Null with I-710 HOV PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

139. 2020 Null with I-710 HOV AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

140. 2020 Null with I-710 HOV PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

141. 2020 Concept Alternate 1 Mainline AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

142. 2020 Concept Alternate 1 Mainline AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

143. 2020 Concept Alternate 1 Mainline PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

144. 2020 Concept Alternate 1 Mainline PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

145. 2020 Concept Alternate 1 Mainline AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

146. 2020 Concept Alternate 1 Mainline PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

147. 2020 Concept Alternate 1 HOV AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

148. 2020 Concept Alternate 1 HOV AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

149. 2020 Concept Alternate 1 HOV PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

150. 2020 Concept Alternate 1 HOV PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

151. 2020 Concept Alternate 1 HOV AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

152. 2020 Concept Alternate 1 HOV PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

153. 2020 Concept Alternate 2 Mainline AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

154. 2020 Concept Alternate 2 Mainline AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

155. 2020 Concept Alternate 2 Mainline PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

156. 2020 Concept Alternate 2 Mainline PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

157. 2020 Concept Alternate 2 Mainline AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

158. 2020 Concept Alternate 2 Mainline PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

159. 2020 Concept Alternate 2 HOV AM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

160. 2020 Concept Alternate 2 HOV AM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

161. 2020 Concept Alternate 2 HOV PM LOS (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

162. 2020 Concept Alternate 2 HOV PM LOS (South/West) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

163. 2020 Concept Alternate 2 HOV AM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations

2020 Concept Alternate 2 HOV PM Directional Split (North/East) - 1994 Highway Capacity Manual, Spreadsheet Segment Calculations