DRAFT

ROUTE CONCEPT REPORT

STATE ROUTE 90
IMPERIAL HIGHWAY
12-ORA-PM 0.50/12.83

JULY 2000

Caltrans

ROUTE CONCEPT REPORT

STATE ROUTE 90
IMPERIAL HIGHWAY
12-ORA POSTMILE 0.5-12.8

PREPARED BY DISTRICT 12 DIVISION OF PLANNING

JANUARY 2001

CALTRANS DISTRICT 12 APPROVAL

Recommended for
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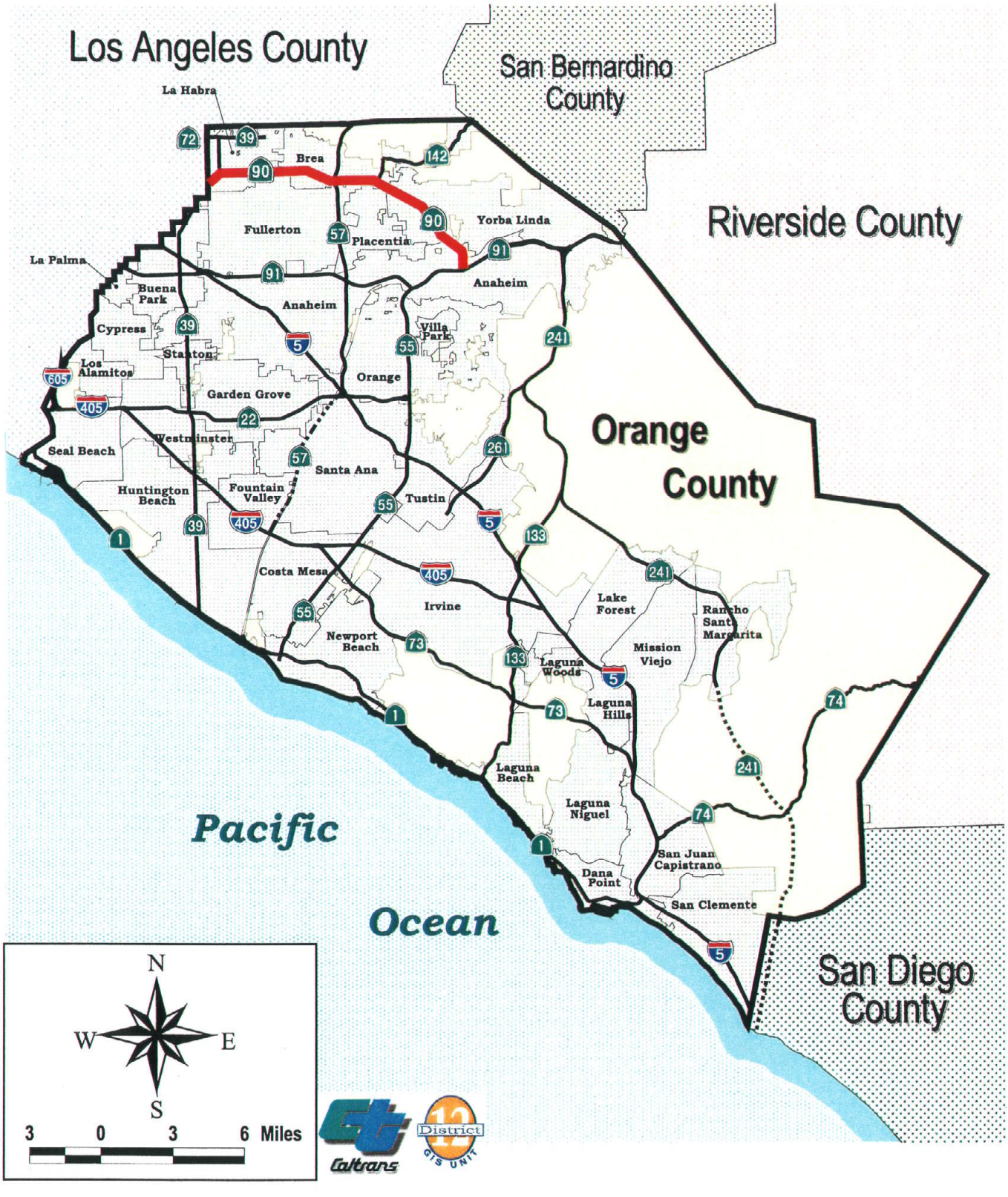
Date_____

LOCATION MAP



ROUTE CONCEPT REPORT
STATE ROUTE 90
IMPERIAL HIGHWAY
12-ORA-PM 0.50/12.83
SUMMARY

State Route 90 (SR-90), also known as Imperial Highway, is a conventional highway from the Los Angeles/Orange County line to Yorba Linda Boulevard and designated a freeway from Yorba Linda Boulevard to State Route 91 (SR-91). However, the segment between Orangethorpe and Esperanza and SR-91 remains a conventional facility. SR-90 is a major east-west transportation corridor in northern Orange County and traverses the Cities of La Habra, Fullerton, Brea, Placentia, Yorba Linda, and Anaheim, and unincorporated areas of Orange County. SR-90 begins at postmile 0.50 in La Habra at Beach Boulevard (SR-39) and ends at postmile 12.83 at SR-91 in Anaheim consisting of approximately 12.5 miles in District 12 located in Orange County.

SR-90 provides access between cities that are located in both Orange and Los Angeles Counties. It is used for commuting and inter-regional travel along with direct and indirect access to employment centers. SR-90 is also used by trucks which supply major retail distribution centers and other industries. Imperial Highway has a high average daily traffic (ADT) of 68,000 with an average of 44,000.

ROUTE CONCEPT

The objective of this Route Concept Report is to provide the best Level of Service (LOS) possible and reduce the duration of congestion. If no major capital improvements are made, it is anticipated that longer traffic delays will occur. For planning purposes, the route has been divided into segments shown below.

Seg No.	POSTMILE	LIMITS	1997 No. LANES PEAK Hr.LOS	2020 Concept No. Lanes Peak Hr LOS
1	0.5/2.5	L.A./ Orange County Line to Harbor Blvd.	5/6-lane conventional hwy LOS D	6-lane conventional highway LOS F0
2	2.5/4.0	Harbor Blvd. To Berry St.	4-lane conventional hwy LOS F0	6-lane conventional highway LOS F1
3	4.0/5.5	Berry St. to SR-57	4/6-lane conventional hwy LOS E	6-lane conventional hwy LOS F3
4	5.5/8.0	SR-57 to Rose Dr.	5/6-lane conventional highway LOS D	6-lane conventional highway LOS F3
5	8.0/10.1	Rose DR. to Lakeview Ave.	4/6-lane conventional hwy LOS C	6-lane conventional hwy LOS F0
6	10.1/12.3	Lakeview Ave. to Orangethorpe/Esperanza Rd.	2/4-lane freeway LOS C	4-lane freeway LOS D
7	12.3/12.8	Orangethorpe Ave./Esperanza Rd. to Santa Ana Canyon Rd.	4/5-lane conventional highway LOS C	8-lanes conventional highway LOS F0

State Route 90 has been designated as a Smart Street. The concept of the Smart Street is to improve major arterial highways by widening the highways/streets, synchronizing traffic signals, removing on-street parking, constructing frontage roads and railroad grade separations, to improve traffic flow. At the corridor level the Smart Street project alignment for SR-90 consists of approximately 12.5 miles along Imperial Highway between the Los Angeles County/Orange County line west of Beach Boulevard (SR-39) and Santa Ana Canyon Road, just south of the Riverside Freeway (SR-91).

Smart Street improvements include pavement rehabilitation, mid block improvements soundwalls and intersection improvements for all seven segments. In addition, segments five and six will have soundwalls on landscaped berms. The City of La Habra is responsible for segments one through four, the City of Yorba Linda is responsible for segments five and six and the City of Anaheim is responsible for segment seven. Freeway segment six will be improved to two lanes in each direction with a divided section median barrier. The Smart Street program will improve the Level of Service (LOS) on SR-90. Segments one through four involve street widening at intersections for right turn lanes, soundwalls and signal modifications. Segment five realigns portions of the road, adds soundwalls, traffic signal improvements and landscaping.

City of Yorba Linda proposed a railroad grade-separation at Orangethorpe Avenue/Esperanza Road on Imperial Highway (SR-90) to improve traffic flow and alleviate potential safety concerns associated with the roadway crossing of the Burlington Northern Santa Fe (BNSF) Railroad at this location. However, Caltrans has since taken over this project and will continue on the improvements as planned by the City. The separation would encompass the area along Imperial Highway between La Palma Avenue on the south to a point approximately (2,950 feet) to the northwest of the centerline of Orangethorpe Avenue Esperanza Road. The north and south limits are from 11.8-12.6 postmile. The elevated section of Imperial Highway would add additional lanes to aid in traffic flow through the improved area.

There are six pavement rehabilitation jobs programmed for SR-90. They are strategically located throughout the route to complement the Smart Street concept and grade separation project.

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ROUTE CONCEPT REPORT

STATEMENT OF PLANNING INTENT

The Route Concept Report (RCR) is an internal planning document which expresses the Department's judgement on what the characteristics of each state highway should be in response to proposed land use and projected travel demand over a 20-year planning period. RCRs are prepared in the districts and represent the combined expertise of district, Orange County Transportation Authority (OCTA) cities, the County and local and regional planning agency staff.

The RCR contains the Department's goals for the development of each route in terms of Level of Service (LOS). The RCR broadly identifies the nature and extent of improvements needed to reach those goals. More specific design and operational detail will be included and analyzed in subsequent project development documents such as Project Study Reports, Environmental Documents, Project Reports and Preliminary and Final Design. These concept reports are used in the development of the District System Management Plan and other State and local planning and project development documents.

The traffic data for this report has been prepared for the following alternatives: Base year 1997 year 2020 includes Null (projects under construction and funded), year 2020 Concept. System Configurations for these 3 alternatives are displayed in *Appendix 6*. The LOS for this concept report is based on the rationale of Year 2020 forecast volume over capacity. The LOS shown in Table 5 (ADT Summary Table) is for peak hour/peak direction. *See appendix 1 Graphic Representation and Definition of Levels of Service.*

In developing this RCR , the System Planning Branch considered using the metric system for designating segment limits and other significant points along this route. It was decided that it would be inappropriate for System Planning to perform even a soft conversion at this point in the planning process. System Planning will begin using the metric system in RCRs and other System Planning documents when the postmile system is converted and a standard set of data is in use throughout the District.

Information contained in the RCR is subject to change as conditions and priorities change and as new information is obtained. The nature and size of identified improvements may change as they move through the project development stages, with final determinations made at the time of project planning and design. Changes that occur during project development may require revision of the RCR.

Preparation of this report included field reviews, review of planned and programmed projects, review of previous RCRs prepared for State Route 90, projects under construction, and analysis of Level of Service. Internal documents from Traffic, Maintenance, Project Development and Programming, and external documents from the County of Orange Planning and Development Services Department (PDSD) and Public Facilities and Resource Department (PFRD), Orange County Transportation Authority (OCTA), and Southern California Association of Governments (SCAG) were used to

prepare this RCR. Coordination with the Advanced Planning/Intergovermental Review Branch at District 12 was done to assess the impact of local development on this route.

ROUTE DESCRIPTION- STATE ROUTE 90 (SR-90)

State Route 90 is 16 miles long, approximately 13 miles in Orange County and 3 miles in Los Angeles County. All segments of SR-90 in Orange County are located on Imperial Highway. SR-90 is also known as the Richard M.Nixon Freeway in Yorba Linda and the Marina Freeway in Los Angeles County. SR-90 passes through the following cities: La Habra, Fullerton, Brea, Placentia, Yorba Linda, and Anaheim in Orange County. The 3 mile section of SR-90 in Los Angeles County begins at SR-1 (Lincoln Boulevard) north of LAX and stops at the end of the Marina Freeway at Slauson Avenue. It should be noted that there is a 25-mile break in SR-90 until it begins in Orange County at SR-39 (Beach Boulevard). The State Route designation in Orange County is only on the part of Imperial Highway which begins in La Habra at SR-39 (Beach Boulevard) postmile 0.50 and ends at postmile 12.83 in Anaheim at SR-91. State Route 90 has sensitive species and habitats located at postmile .50-5.45 see Appendix 7.

HISTORY

SR-90 was originally added to the State Highway System as State Route 176 in 1933 and then added to the Freeway & Expressway System in its entirety in 1959. Associated Names: "Marina Freeway", "Imperial Highway", and "Richard M. Nixon Freeway" (State Route 90 from Route 1 to State Route 91 is named the "Marina Freeway"). The Marina Freeway opened in 1968 it runs from SR-1 to SR-91 although it is not all constructed to freeway standards. Between 1968 and 1976 the freeway was named the "Richard M. Nixon" Freeway probably because of the intended final terminus in Yorba Linda. Originally the name of this route was to have been the Marina-Slauson Freeway and would have continued to I-605.

ROUTE PURPOSE AND CLASSIFICATION

This route serves as a major east-west transportation corridor in northern Orange County. It is a major goods movement facility into and out of Orange and Los Angeles Counties.

Federal/State Functional Classification

SR-90 is classified as follows:

DESIGNATION	LIMITS
Primary Arterial Highway	Beach Boulevard to Harbor Boulevard
Major Arterial	Harbor Boulevard to Yorba Linda Blvd.
State Freeway	Yorba Linda to SR-91
Primary	SR-91 to Ranch Road

Information from Master Plan of Arterial Highways (MPAH) map.

EXISTING CONDITIONS AND OPERATIONAL DEFIENCIES

The current operating conditions of Imperial Highway are described in the Summary. The following table lists existing average daily traffic (ADT) for each segment:

Segment	Link	Existing Lanes	ADT
1	Beach./Harbor	5/6	42,000
2	Harbor/Berry	4	51,000
3	Berry/SR-57	4/6	68,000
4	SR-57/Rose	5/6	50,000
5	Rose/Lakeview	4/6	35,000
6	Lakeview/Orangethorpe	2/4	26,000
7	Orangethorpe/Santa Ana Cyn	4/5	54,000

As seen above the greatest volume of traffic is experienced between Berry Street and the Orange (SR-57) Freeway. In addition, the vicinity of SR-57 Freeway ramps and the Riverside (SR-91) Freeway ramps are areas of significant traffic concentration. The freeway portion of SR-90 between Lakeview Avenue and Orangethorpe Avenue/Esperanza Road experiences the least amount of traffic (25,000-26,000 ADT). Traffic on Imperial Highway currently exceeds its design capacity on most sections.

CURRENT ISSUES/PROBLEM IDENTIFICATION

GRADE SEPARATION

Traffic Congestion Associated with Rail Operations

The crossing of the Burlington Northern Santa Fe (BNSF) railroad tracks at Imperial Highway and Orangethorpe Avenue/Esperanza Road causes traffic delays and congestion when trains cross this intersection. Currently 46 trains of various types freight, commuter and Amtrak cross Imperial Highway at Orangethorpe Avenue/Esperanza Road daily. The Riverside County Transportation Commission (RCTC) Commuter Rail Study, dated November 1990, projected rail traffic along this stretch to increase to 104 crossings per day by the year 2005. The City of Anaheim's Orangethorpe Corridor Grade Crossing Study from March 1996 projected up to 128 train crossings by the year 2010. The BNSF tracks are used by Metrolink and Amtrak. These tracks serve as a main commuter corridor between San Bernardino and Los Angeles Counties.

To improve traffic flow and alleviate potential safety concerns associated with the roadway crossing of the Burlington Northern Santa Fe (BNSF) Railroad, Caltrans and the Orange County Transportation Authority (OCTA) with support from the City of Yorba Linda and the City of Anaheim and the County of Orange are proposing a grade-separation to be placed on Imperial Highway (SR-90). The separation would encompass the area along Imperial Highway between La Palma Avenue to the south to a point approximately (2,950 feet) to the northwest of the centerline of Orangethorpe Avenue/Esperanza Road (O/E). The elevated section of Imperial Highway would add additional lanes to aid in the traffic flow through the improved area. Caltrans has taken over the project and is now preparing the Draft Initial Study/Environmental Assessment and the Historic Property Survey Report. The project is scheduled for completion in the year 2007.

Within the project area the right-of- way follows a north/south alignment passing through the jurisdiction of the Cities of Yorba Linda and Anaheim, as well as, unincorporated County of Orange. Imperial Highway serves as a major component in the area wide arterial highway system and experiences severe delays and congestion due to conflicts with the BNSF railroad tracks located just south of the Imperial Highway/Orangethorpe Avenue-Esperanza Road intersection.

Average daily traffic volumes (ADT) on SR-90 at the BNSF railroad tracks, measured in 1998, is 46,000 vehicles. When ADT is related to the capacity of a roadway or intersection, the resulting ratio is either the intersection capacity utilization (ICU) intersections or the volume/capacity ratio (V/C) (roadway links between the intersections). These ratios are then ranked and the level of service (LOS) letter rating is derived. The City of Yorba Linda policy is to maintain at least a LOS D on roadway links and at signalized intersections before requiring mitigation. The City of Anaheim and the County of Orange also consider LOS D to be the minimum acceptable service level prior to mitigation. Existing Imperial Highway LOS in this area exceeds the adopted minimum acceptable LOS by the Cities of Yorba Linda and Anaheim and the Orange County Master Plan of Arterial Highways (OCMPAH).

Based on the ICU method of analysis, the intersection of Imperial Highway at Orangethorpe Avenue/Esperanza Road and Imperial Highway at La Palma Avenue currently operate at an adverse LOS F during the morning (AM) and afternoon (PM) peak hours. No other intersections in the immediate study area operates at less than LOS C during the same periods.

The Measure M Smart Street improvements (passed by Orange County voters in 1990) call for widening and restriping Imperial Highway through the project area. This would partially alleviate the congestion. However, the bottleneck at the BNSF railroad tracks would still exist and be the major impediment to traffic flow in the area. Funding for the Smart Street improvements south of the proposed project has been obtained and the first segment of the Smart Street has begun construction from Santa Ana Canyon to SR-91 estimated completion date is 2004.

The city of Anaheim has a sound wall project approximately 12,900 feet in length, along the railroad corridor, extending from Imperial Highway (SR-90) to Yorba Linda Boulevard/Weir Canyon Road. The proposed soundwall project will be completely constructed on railroad right-of-way along the south side of the corridor adjacent to existing single-family residences in the City of Anaheim.

SR-90 has five pavement rehabilitation projects planned in SHOPP and one Minor A project 0296E1: Lakeview Avenue to north of Orangethorpe Avenue/Esperanza Road is planned in this area.

SMART STREET

The Imperial Highway (SR-90) Smart Street Improvement Project is part of a countywide Smart Street program intended to ease traffic congestion on over 22 major thoroughfares in Orange County. The Smart Street program is being implemented by Orange County Transportation Authority (OCTA). Imperial Highway from SR-39 in La Habra to SR-91 in Anaheim is a State highway under the jurisdiction of the California Department of Transportation (Caltrans).

The widening project consist of approximately 12.5 miles of Imperial Highway between the Los Angeles County/Orange County line west of Beach Boulevard (SR-39) and Santa Ana Canyon Road, just south of the Riverside Freeway (SR-91).

A Smart Street is a major surface street that has been improved to provide smooth, efficient traffic flow. The Smart Street concept includes roadway widenings, traffic signal synchronization, raised medians, bus turnouts, addition of left-and right-turn lanes, intersection improvements, and restriction or elimination of on-street parking all of which are included for the intersections in this project.

General Smart Street improvements for Imperial Highway include:

- Widen to a four-lane freeway section, with a concrete median barrier between Lakeview Avenue and Orangethorpe-Esperanza Road
- Widen and restripe to eight lanes between Orangethorpe Avenue-Esperanza Road and Santa Ana Canyon Road
- Intersection improvements including additional turn lanes
- Signal interconnection/modifications

- Prohibit on-street parking
- Bridge widening
- Bus Turnouts, consolidating driveways, restricting local street access or the closing of median openings to benefit traffic operations at select locations
- Right-of way acquisition
- Retaining walls (where required)
- Soundwalls (where required)
- Electrical modification (traffic signals, loop detectors, conductors and pedestrian signals)

SR-90 ROADWAY CHARACTERISTICS

State Route 90 alignment is generally a six-lane facility from Beach Boulevard easterly to Harbor Boulevard, where it transitions to a four-lane facility. From Harbor Boulevard eastward, the alignment is a four-lane facility to Randolph Avenue, where it again becomes a six-lane facility.

From Randolph Avenue eastward, the alignment is a six-lane facility until it reaches Placentia Avenue. Between Placentia Avenue and Valley View Avenue, the facility varies between five and six lanes. From Valley View Avenue to the westerly terminus of the Richard M. Nixon Freeway, at Yorba Linda Boulevard, Imperial Highway is generally a two-lane facility. Within the limited-access freeway segment, the easterly terminus which is at Orangethorpe Avenue/ Esperanza the facility varies between two and four lanes. Eastward from Orangethorpe Avenue/Esperanza Road, Imperial Highway is four to five lanes until reaching the alignment's eastern end at Santa Ana Canyon Road.

Except for the freeway segment, which is on an embankment, the project alignment is an at grade facility. Major intersections along the project alignment generally are signalized, with raised medians and left-turn lanes. Most of the mid-block segments have striped medians.

Access to the freeway is limited to Kellogg Drive, which consists of a diamond interchange. Along this segment, the setback from adjacent development generally is about 100 feet. This segment generally is undivided, with medians provided only near Kellogg Drive.

Three railroad tracks cross Imperial Highway:

- Burlington Northern Santa Fe railroad crossing south of Orangethorpe Avenue/Esperanza Road
- The Union Pacific railroad crossing between Harbor Boulevard and Village Drive
- The Union Pacific railroad tracks between Harbor Boulevard and Bonita Place.

The Majority of segment from PM 0 to 12.8 has No Parking Any Time signs. On eastbound Imperial Highway, on street parking is allowed between the Union Pacific railroad tracks east of Harbor Boulevard and Arovista Street. On westbound Imperial Highway, on-street parking is allowed between Valley View Avenue and Prospect Avenue, between Main Street and Olinda Street, and between Palm Street and the Union Pacific railroad tracks

Pedestrian, Bicycle, and Equestrian Facilities

Pedestrian facilities along Imperial Highway are limited to sidewalks adjacent to the road and crosswalks at existing intersections. There are no pedestrian overcrossings.

Bicycle facilities are provided by the local municipalities and the County of Orange. Bicycle trails are classified as either on street (Class II and III) or off street routes (Class I), and include both existing and planned facilities. Off-street facilities (Class I) exist between Rose Drive and Kellogg Drive: however, these off-street facilities are not continuous and indirect travel on residential side streets is required. There are no bike lanes on SR-90.

The El Cajon Regional Riding and Hiking Trail has a right-of way that parallels and crosses Imperial Highway in Orange County. The City of Brea has a recreational easement along the northern side of Imperial Highway between Kraemer Boulevard and Valencia Avenue. An easement also exists between Kraemer Boulevard and Saturn Street on the southern side of Imperial Highway. A County recreational easement exists between Saturn Street and the city limits of Placentia on the southern side of Imperial Highway.

FUTURE TRAFFIC CONDITIONS

Caltrans shows SR-90 as an ultimate six-lane facility, with a four-lane freeway between Yorba Linda Boulevard and Orangethorpe Avenue/Esperanza Road. Year 2020 travel demand forecasts estimate future volumes ranging from 65,900 to 103,900 ADT west of SR-57 and 77,200 to 96,400 ADT east of SR-57. By the year 2020, twenty-three of the twenty-five intersections are projected to operate at LOS E or worse if improvements are not made.

La Habra

Planned Unit Development

There are plans to create a Planned Unit Development (PUD) for the La Habra Westridge Plaza Development 695,000 commercial square foot, at the intersection of Beach Boulevard and Imperial Highway.

Fullerton
Hawks Pointe

210 single-family detached residential dwellings units on Beach Boulevard close to Imperial Highway.

Brea

Brea Industrial Specific Plan development of a 50 acre site and a residential development 1000 units north of Imperial Highway. The traffic analysis will include Imperial Highway.

Placentia

City is built out in the area of Imperial Highway, only a 2-acre parcel remains in the Imperial Road Shopping center.

Yorba Linda

The city of Yorba Linda has expressed interest for relinquishment of Imperial Highway, State Route 90, within the City of Yorba Linda's city limits from Rose Drive to Orangethorpe Avenue/Esperanza road.

Anaheim

There is a vacant 5 -acre parcel on the Imperial Highway area however, the city has not received any plans for any development at this time.

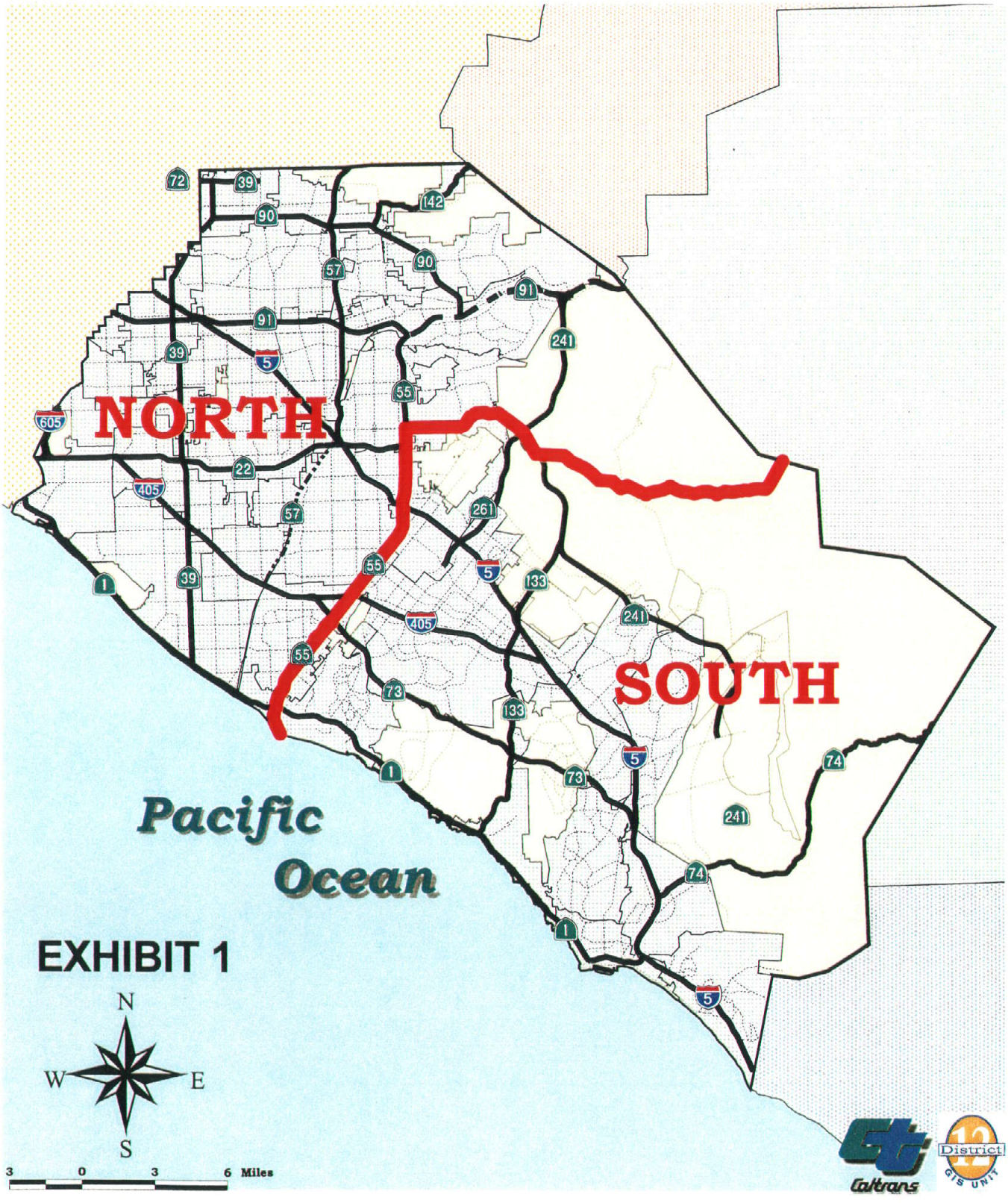
Land Use/Growth

Orange County encompasses 790 square miles and has a population of 2.7 million people. For transportation planning purposes, Orange County is considered to be a fully urbanized county. The county is a continuation of the greater Los Angeles metropolitan area with the Pacific Ocean to the west, the Cleveland National Forest to the east and Camp Pendelton Marine Corps Base to the south. The majority of the land in the county not within or adjacent to the boundaries of the national forest is developed. The primary land use is residential with pockets of retail commercial, light industrial and professional office space. Industrial and commercial uses usually border freeways and major arterials.

For the purposes of this report, the county is divided into north and south Orange County by the SR-55 from Newport Beach to Chapman Avenue in Orange. The dividing line then turns east on Chapman Avenue to Santiago Canyon Road east to Silverado Canyon Road east to the Orange/Riverside County Line. North County lies west of SR-55 and north of Santiago Canyon Road and Silverado Canyon Road. In this older portion of the county, most of the street system is based on an arterial grid. South County lies South of Santiago Canyon Road and Silverado Canyon Road and east of SR-55. South County contains more new development than North County and street patterns meander with the contour of the land. See *Exhibit1 (North/South County Split).*

Based on the 1997 census, the population of Orange County is approximately 2.7 million. By the year 2020, the population is expected to grow to approximately 3.2 million (19% increase) with 50% of the increase in the North. Given these numbers, the county population distribution in 2020 is projected to be a 57% increase in the North and a 43% increase in the South. Although the majority of growth is

ROUTE CONCEPT
COUNTY NORTH/SOUTH SPLIT



expected to occur in the South, the North will continue to be the more populous area of the county. See *Table 1 page 12 Population Growth/Distribution-year 2020.*

The Orange County job base is approximately 1.3 million based on the 1997 census estimates. By the year 2020, the job base is expected to grow to approximately 2.1 million (61% increase). Given these numbers, the county job base distribution in 2020 is projected to be 55% in the North and 45% in the South. As with the population projections, the majority of growth is expected to South, yet the North will continue to have a higher concentration of jobs. See *Table-Population Growth/Distribution-Year 2020*

TABLE 1
POPULATION GROWTH/DISTRIBUTION
2020

	Year 1997	% in North County	% in South County	Year2020	% in North County	% in South County
Population	2.7*	58%	42%	3.2*	57%	43%
Employment	1.3%	58%	42%	2.1*	55%	45%

*In Millions

Land use patterns along and around SR-90 reflect the diversity of land use throughout the entire county. This includes residential (from low to high density); retail commercial, industrial, institutional, business and recreation/conservation open space. With just under half of the expected growth in population and employment in Orange County by 2020 occurring in the North it will be important, not only to the county but to the region, to maintain the highest possible level of service on SR-90.

SR-90 is unique in that many of the commuter trips on the facility are inter-county and intra-regional in nature. This route serves as a major commuter route between Orange County and Los Angeles County. In addition, to the commuter trips, there are traffic generators and attractions in the vicinity of SR-90 in Orange County.

Brea Mall
Yorba Linda Golf Course
Richard M. Nixon Library
Cal State Fullerton
La Habra Malls

ROUTE ANALYSIS

SR-90 was originally planned to be a freeway for its entire length. Only a short section of the route at the west and east ends were actually constructed as a freeway. From SR-39 to existing SR-90 continues easterly and southerly to SR-91 (P.M. 0.5/P.M 12.8) In Orange County there are six cities served by SR-90 they are La Habra, Brea., Fullerton, Placentia, Yorba Linda, and Anaheim.

Parallel Routes

A number of parallel routes serve a significant portion of SR-90. Included among these are: SR-91, Malvern Avenue, Chapman Avenue and Orangethorpe Avenue. The east end of SR-90 interchanges with SR-91. Traffic signals exist at nineteen locations on the conventional section of the route from SR-39 to Yorba Linda Boulevard.

Bus

The Orange County Transportation Authority (OCTA) is the primary bus transit provider in Orange County. OCTA operates a mini bus line 20 on SR-90 from Beach Boulevard to State College Boulevard. The bus runs only during peak hours eastbound in the morning and westbound in the evening.

Park and Ride Lots

Currently there are no Park and Ride lots on SR-90. The Four Corners Task Force report has conceptually sited a Park and Ride lot at the northeast corner of SR-90 and SR-91. The Four Corners Task Force is a group of local agencies from Los Angeles, Orange, San Bernardino, and Riverside Counties that meet to discuss transportation issues and potential solutions.

Rail

There is a railroad crossing grade separation planned for the BNSF railroad tracks at the intersection of Imperial Highway and Orangethorpe Avenue/Esperanza Road. There are two other rail crossings on SR-90, one at Harbor Boulevard and Village Drive, and the other at Harbor Boulevard and Bonita Place (Refer to Exhibit 2).

TRAFFIC ANALYSIS

Average Daily Traffic

The ADT Summary Table 7 for SR-90 is located in the appendix. There are three time frames given for this information: Existing, Year 2020 Null (project under construction and funded), and Year 2020 Concept. The existing data was collected from the 1997 *Traffic Volumes on California State Highways* book and for the Los Angeles Regional Transportation Study (LARTS) base year forecast. Other

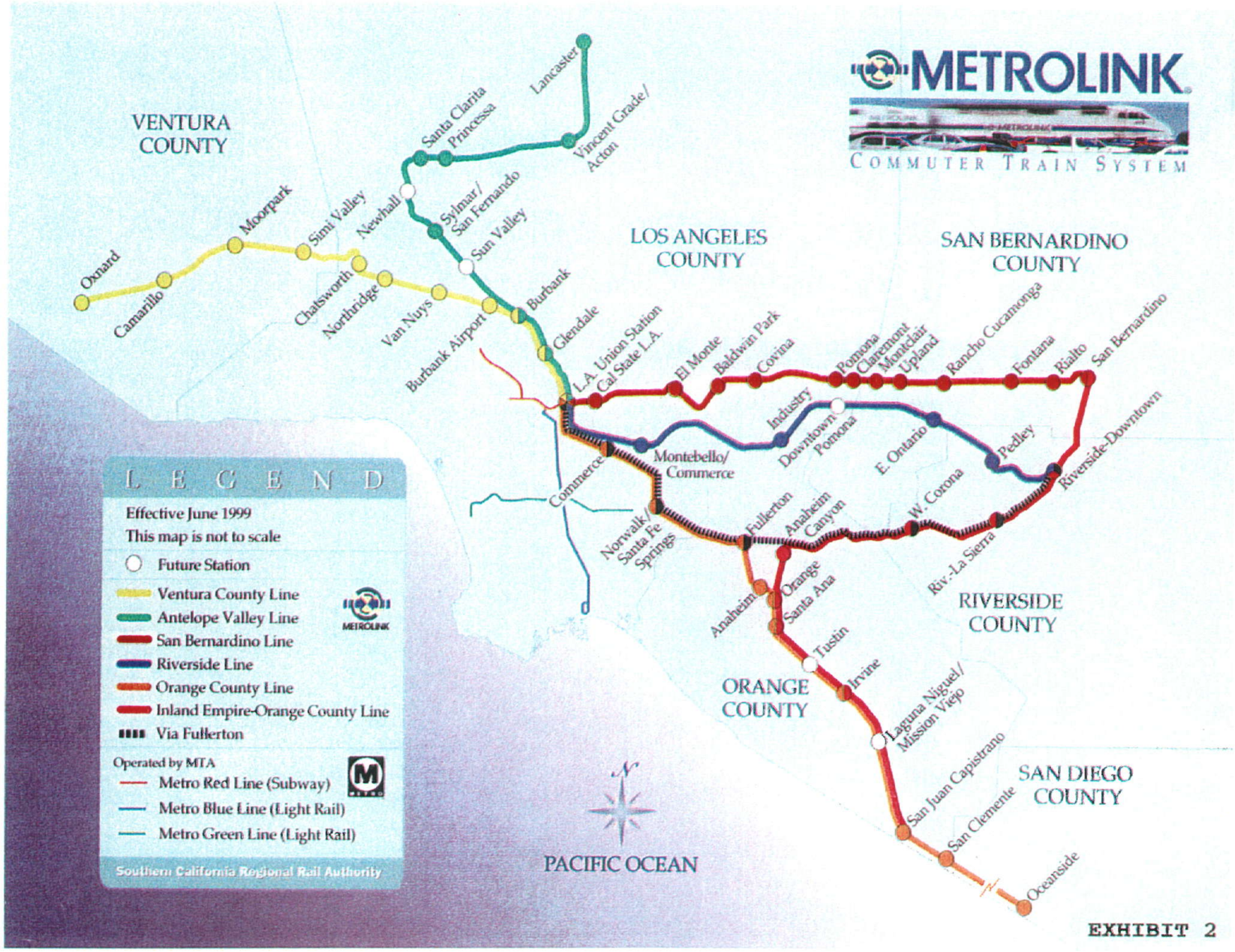

METROLINK
COMMUTER TRAIN SYSTEM
VENTURA COUNTY
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
ORANGE COUNTY
SAN DIEGO COUNTY
PACIFIC OCEAN
Oxnard
Camarillo
Moorpark
Simi Valley
Newhall
Chatsworth
Northridge
Van Nuys
Burbank Airport
Burbank
Glendale
Sylmar/ San Fernando
Sun Valley
Santa Clarita
Princessa
Lancaster
Vincent Grade/ Acton
L.A. Union Station
Cal State L.A.
El Monte
Baldwin Park
Covina
Pomona
Claremont
Montclair
Upland
Rancho Cucamonga
Fontana
Rialto
San Bernardino
Industry
Downtown Pomona
E. Ontario
Pedley
Riverside-Downtown
Commerce
Montebello/ Commerce
Norwalk/ Santa Fe Springs
Fullerton
Anaheim Canyon
W. Corona
Riv.-La Sierra
Anaheim
Orange
Santa Ana
Tustin
Irvine
Laguna Niguel/ Mission Viejo
San Juan Capistrano
San Clemente
Oceanside
LEGEND
Effective June 1999
This map is not to scale
Future Station
Ventura County Line
Antelope Valley Line
San Bernardino Line
Riverside Line
Orange County Line
Inland Empire-Orange County Line
Via Fullerton
Operated by MTA
Metro Red Line (Subway)
Metro Blue Line (Light Rail)
Metro Green Line (Light Rail)
Southern California Regional Rail Authority

EXHIBIT 2

sources of information used for existing volumes may include: count stations and other information taken from previously completed environmental documents and project related studies.

The future traffic data presented in this document is a product of the Los Angeles Regional Transportation Study (LARTS) transportation model. The peak hour traffic volume, peak hour direction volumes, and LOS are all products of the (LARTS) transportation model.

Transportation Modeling Description and Socioeconomic Summary

The future traffic data presented in this document is a product of the Los Angeles Regional Transportation Study (LARTS) transportation model. The LARTS model simulates the interaction between socioeconomic factors and the transportation system. The LARTS model is as socioeconomic driven transportation model. Among existing and projected socioeconomic variables used in the development of the of the LARTS model include population, employment, income, highway transportation system, and transit service (includes rail service).

Table 2 shows numbers for population, housing and employment for Orange County and the SCAG region.

TABLE 2
Year 2020 Socioeconomic Data Summary

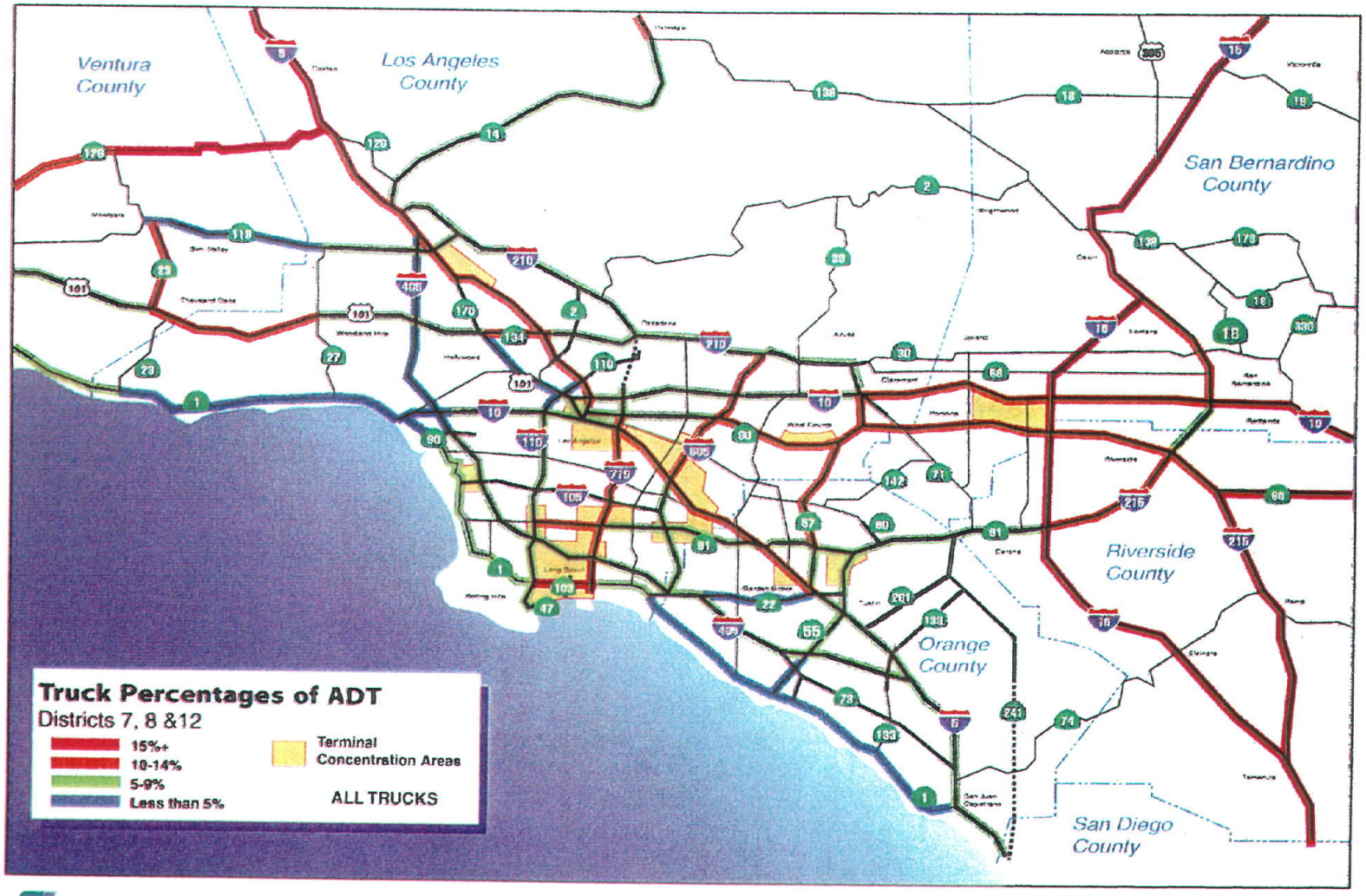
Socioeconomic	Year 2020- Orange County*	Year 2020- Region**
Population	3,206,020	20,632,271
Housing	1,094,024	7,151,115
Employment	2,101,316	10,028,476

*Source: Orange County Transportation Authority
**Source: Southern California Association of Governments (except Orange County)
Los Angeles, Orange, Ventura, and Metropolitan portions of Riverside, and San Bernardino counties

The Southern California Association of Governments (SCAG), in cooperation with state and local county governments (Los Angeles, Orange, Riverside, San Bernardino, Ventura, and Imperial) prepared the socioeconomic forecast for the year 2020. In April 1998 SCAG completed the Regional Transportation Plan (RTP) – CommunityLink 21, the long-range transportation plan for the SCAG region. The inputs used in the traffic forecast for this RCR are consistent with SCAG's 1998 RTP.

Goods Movement

According to the publication 1997 *Annual Average Daily Truck Traffic on the California State Highway System,* daily truck volumes on SR-90 in Orange County range from approximately 2700 to 4150. These numbers as a percentage of ADT range between 5% and 7.7%. The low numbers occurs in the vicinity of SR 142 and the high numbers are in the vicinity of Harbor Boulevard where several retail distribution centers are located. See Exhibit 3.



Graphic Prepared by District 7, Graphic Services 10/92
Orange County Freeways Revised 11/96

EXHIBIT 3

Accident Rates

The accident rate information shown below is taken from Table B of the Traffic Accident Surveillance and Analysis System (TASAS). It should be used for general planning purposes and as an indicator of how the accident rate of a particular segment of a route compares to the accident rate averages on similar routes statewide. Higher than average rates described in this report are alone not an indicator that there is a significant problem since accident rates can be greatly influenced by the length of the segment as well as the time period being measured.

The Accident Surveillance Procedures Manual developed by Division of Traffic is used to ensure Caltrans has statewide consistency in identifying safety problem locations for developing recommended solutions. One tool used in this process is the TASAS Table C Report that lists high accident concentration locations and uses an automated system for flagging locations requiring investigation.

Highway safety on state highway is Caltrans number one priority. Identification of safety problem areas is a continuous process. After a safety project is identified, it is prioritized and programmed as soon as possible in either the State Highway Operation and Protection Program (SHOPP) or through the District's Yearly Minor Program. For more detailed information please refer to the Accident Surveillance Procedures Manual.

The chart below shows that between July 1, 1996 and June 31, 1999 the Actual Total Accident Rate exceeds the Average Total Accident Rate in segments given see Table 3 below.

Table 3
Accident Rates from TASAS
(Table B)
SR-90

7-1-96 through 6-31-99		ACTUAL			AVERAGE	
	FATAL	FATAL & INJURE	TOTAL	FATAL	FATAL& INJURE	TOTAL
1. 0.500-5.430	0	1.04	2.76	.015	1.09	2.40*
2. 5.431-09.965	0	.90	2.24	.017	1.10	2.45*
3. 9.966-12.74	0	.31	1.02	. 030	.60	1.30*
4. 12.275-12.827	0	1.43	3.05	.019	.62	1.36*

***per 1 million vehicle miles traveled**

Traffic Systems Management

Traffic Systems Management is a strategy for improving mobility on the transportation system without adding capacity. The theory is to implement operational improvements and disseminate motorist information to achieve the maximum operating efficiency of the transportation system. In particular, Caltrans goal is to develop all freeways in Orange County to full Urban Freeway Standards. Integral to

this development is the Traffic Operation Systems (TOS) Plan and the system elements outline in it. See *Appendix 5 Urban Freeway Standards* for an introduction to the TOS Plan and its system elements. On State Highways Conventional Routes such as SR-90, Smart Street strategies are implemented instead of Traffic Operations Strategies (TOPS). TOPS is to maximize utilization of the existing urban freeway system through performance-based investment strategies.

A Smart Street is a major surface street that has been improved to provide smooth, efficient traffic flow. The Smart Street concept includes traffic signal synchronization, raised medians, bus turnouts, addition of left and right turn lanes, intersection improvements, and restriction or elimination of on-street parking all of which are included for the intersections in this project.

Congestion Management Plan

The Congestion Management Plan (CMP) is a legislatively required countywide program, which addresses congestion problems. The CMP became effective with the passage of Proposition 111 in 1990. Proposition 111 provided for a nine-cent increase in the state gas tax over a five-year period.

In essence, it is an effort to improve the relationship between land use, transportation and air quality. The purpose of the CMP is to develop a new integrated approach to making transportation programming decisions. Caltrans in partnership with the cities of La Habra, Fullerton, Brea, Placentia, Yorba Linda, Anaheim and OCTA have worked together to develop solutions for addressing congestion on SR-90. The Smart Street Project is the product of this collaboration and it meets the Congestion Management Plan criteria.

As a new integrated approach to addressing congestion concerns, the CMP was created for the following purposes:

1. To link land use, transportation and air quality decisions
2. To develop a partnership among transportation decision makers on devising appropriate transportation solutions that include all modes of travel
3. To propose transportation projects which are eligible to compete for state gas tax funds.

Since 1991 the Orange County Transportation Authority (OCTA) has worked extensively with the local agencies in Orange County in overseeing Orange County's Congestion Management Program. This work has provided for a systematic level of service LOS analysis of Orange County's streets and roads network as a means of identifying locations where improvements may be needed. As a result of the cooperative effort towards implementation of the CMP over the last two years, each local jurisdiction in Orange County has been eligible to receive Proposition 111 funding. Consequently, local investments in the transportation infrastructure have been maintained.

PROGRAMMED PROJECTS

For this report, major programmed projects are identified as major capacity enhancement and operational improvement projects programmed for construction beginning in State Fiscal Year 96-97 or later. Projects are programmed into one of the two State Highway Programs. State Transportation Improvement Program (STIP), the State Highway Operations and Protection Plan (SHOPP). Some to the programmed projects may be partially funded or totally funded by local funding sources. **Table 4** shows programmed projects that are related to traffic congestion on SR-90.

PAVEMENT REHABILATION

SR-90 has six pavement rehabilitation projects planned five are SHOPP and one is Minor A.

0296A1: Beach Boulevard to Rose Avenue
0296C1: Rose Avenue to Lakeview Boulevard
0296E1: Lakeview Avenue to north of Orangethorpe Avenue/Esperanza Road
029621: North of Orangethorpe Avenue/Esperanza Road to La Palma (Minor A)
029631: La Palma to Santa Ana River
029641: Santa Ana River to State Route 91 IC

TABLE 4
PROGRAMMED PROJECTS
SR-90

EA	POSTMILE	DESCRIPTION	EST$	COMPLETION DATE *
0164U1	05.00-8.0	Intersection Imp./Mid Block	Data Not Available	Data Not Available
0164U1	8.0-10.0	Intersection Imp./Mid Block.	Data Not Available	Data Not Available
0164U1	10.0-11.8	Intersection Imp./Mid Block	Data Not Available	Data Not Available
0164U1	11.8-12.4	Intersection Imp./Mid Block	Data Not Available	Data Not Available
016451	8.14-10.1	Pavement Rehab & Wid.	$11.6	4-01
016461	10.1-11.8	Pavement Rehab & Wid.	$11.2	1-02
0164A1	11.8-12.4	Pavement Rehab & Wid.	$1.1	10-01
056200	11.8-12.4	Grade Separation	$38,997	4-07

Legend
EA=Expenditure Authorization
PM= Postmile
*Target date for completion
$ all cost are in millions

OB5801: Culvert extension to provide a sidewalk at Village Drive Minor A project.

ROUTE CONCEPT

Although the Concept will provide additional capacity along most of SR-90 in Orange County, some segments will continue to operate at LOS F or below. Due to environmental and financial constraints, it will be impossible to relieve congestion on urban roadways strictly by adding capacity. Therefore, it will be necessary now, and in the future, to better manage the existing transportation system to its full potential. Given projected increases in traffic demand and limited funding, multimodal solutions to congestion problems should continue to be implemented and expanded.

The full implementation of Traffic Operation System elements (CCTV, ramp metering, CMS) is strongly recommended as a means of managing the State Highway System in the urban areas of California. On SR-90 traffic flow can be improved through the use of Intelligent Transportation Systems (ITS) such as loop detection, changeable message signs, and improved public transportation systems.

Regional Consistency

The route concept called for in this report is consistent with SCAG's 1998 Community Link 21. The Community Link 21 is the long-range regional transportation plan for the six counties in the Southern California Region. By law, all projects programmed in the Regional Transportation Improvement Program (RTIP) must be contained in the Regional Transportation Plan and have a funding source identified. All projects currently programmed in the RTIP for SR-90 are contained in the Community Link 21 therefore, this concept is consistent with regional planning efforts.

Caltrans and OCTA are in agreement on the following concept outlined for SR-90.

Segment by Segment Analysis

Segment 1
PM 0.5/2.5 from Los Angeles/Orange County line

to Harbor Blvd.	**Lanes**	**LOS**
Existing Facility:	**6**	**C**
Concept Facility:	**6**	**F1**

This segment is located between the Los Angeles County line (P.M. 0.0) and Harbor Boulevard (P.M. 2.5) a distance of 2.5 miles. The project segment is located in the City of La Habra. Improvements include **Pavement Rehabilitation, Mid Block Improvements, and Intersection Improvements.**

This segment operates as a six lane conventional highway. The roadway will be restriped to provide six lanes in areas where six lanes do not exist. The existing striped median would be reduced by one foot which would result in a three foot striped median at some locations. This is recommended to obtain one additional foot of roadway width without impact to adjacent properties in the mid-block section.

Segment 2

PM 2.5/4.0 Harbor Blvd. To Berry Street.	**Lanes**	**LOS**
Existing Facility:	**4**	**E**
Concept Facility:	**6**	**F0**

This segment is located between Harbor Boulevard (P.M. 2.5) and Berry Street (P.M. 4.0) a distance of 1.5 miles. The project segment is located in the City of Fullerton and the City of Brea. Improvements include **Pavement Rehabilitation, Mid Block Improvements, Intersection Improvements, and Soundwalls.**

The upper four inches of asphalt concrete will be replaced for the entire segment. Roadway will be restriped to provide six lanes in areas where six lanes do not exist. Soundwalls will be constructed in those areas that go from four to six lanes. Intersection improvements will be on Palm and Puente Streets. On Palm Street, provide 3 through lanes and a left turn lane in each direction by widening the intersection. On Puente Street, provide 3 through WB lanes, a left turn lane and a right turn lane by widening the intersection.

Segment 3

PM 4.0/5.5: Berry Street to SR-57		
Existing Facility:	**Lanes**	**LOS**
Concept Facility:	**6**	**D**
	6	**F0**

This segment is located between Berry Street (P.M. 4.0) and SR-57 (P.M. 5.5) a distance of 1.5 miles. The project segment is located in the City of Brea. This segment includes the City off Brea's improvement projects: Berry Street to Randolph Avenue and Randolph Avenue to State Route 57.

Two projects provide six through lanes throughout the segment: added a WB right turn on SR-90 at Randolph Avenue: added a fourth EB lane and a right turn lane on SR-90 at State College Boulevard; added a NB right turn lane on State College Boulevard; added a lane to SR-57 NB off ramp and added four bus turnouts in the segment.

Segment 4

PM 5.5/8.0 SR-57 to Rose Avenue	**Lanes**	**LOS**
Existing Facility:	**6**	**B**
Concept Facility:	**6**	**C**

This segment is between SR-57 (PM5.5) and Rose Drive (P.M.8.0) a distance of 2.5 miles. The project segment is located in the City of Brea and the City of Placentia. Improvements include **Pavement Rehabilitation, Mid Block Improvements, and Intersection Improvements.**

The upper four inches of asphalt concrete will be replaced for the entire segment. The roadway will be restriped to provide six lanes in areas where six lanes do not presently exist. The restriping will be accomplished within the existing curbs except for a section east of Placentia Avenue on the north side

of SR-90, adjacent to Birch Hills Golf Course in the City of Brea. New Right of way will be required through this section. Intersection improvements will be required on Associated Road, Valencia Avenue and Rose Drive see Project Report for details.

Segment 5		
PM 8.1/10.1 Rose Drive to Lakeview Avenue	**Lanes**	**LOS**
Existing Facility:	**6**	**B**
Concept:Facility:	**6**	**C**

This segment is between Rose Drive (P.M. 8.0) and Lakeview Avenue (P.M. 10.1), ad distance of 2.1 miles. The project segment is located in the City of Placentia and City of Yorba Linda. Improvements include **Pavement Rehabilitation, Mid Block Improvements, and Intersection Improvements.**

The upper four inches of asphalt concrete will be replaced for the entire segment. The roadway will be widened and restriped to provide six lanes in areas where six lanes do not exist. The widening and restriping will require additional right of way. To be consistent with the City of Yorba Linda General Plan, an 1120-ft, cross section is proposed from Rose Drive to Lemon Drive and to minimize impacts to adjacent properties a 100 ft. cross section is proposed between Lemon Drive and Lakeview Avenue. Intersection improvements are on Bastanchury Road, Valley View Avenue, Casa Loma Avenue, Eureka Avenue, Lemon Drive, and Yorba Linda Boulevard. .

Segment 6		
PM 10.1/12.3 Lakeview Avenue		
to Orangethorpe/Esperanza Road	**Lanes**	**LOS**
Existing Facility	**2**	**B**
Concept Facility:	**4**	**D**

This segment is between Lakeview Avenue (P.M. 10.1) and Orangethorpe Avenue/Esperanza Road (P.M. 12.3) a distance of 2.2 miles. The project segment is located in the City of Yorba Linda and City of Anaheim. Improvements include **Pavement Rehabilitation, Mid Block Improvements, Intersection Improvements, and a (Grade Separation).**

The upper four inches of asphalt concrete will be replaced for the entire segment. Mid-block improvements the roadway will be widened and restriped to provide four lanes in areas where they do not exist. Caltrans, Burlington Northern Santa Fe Railroad (BNSF), the City of Yorba Linda, the City of Anaheim and the County of Orange are proposing a grade-separation on SR-90 to alleviate potential safety concerns associated with the roadway crossing in this segment. Intersection improvements on Orangethorpe Avenue/Esperanza Road (see Project Report for details).

Segment 7
PM 12.3/12.8 Orangethorpe Avenue

/Esperanza Road to Santa Ana Canyon Road	**Lanes**	**LOS**
Existing Facility:	**4**	**C**
Concept Facility:	**8**	**E**

This segment of the project between Orangethorpe Avenue/Esperanza road (P.M. 12.3) and Santa Ana Canyon road (P.M.12.8) a distance of 0.5 miles. The project segment is located in the City of Anaheim. Improvements include **Pavement Rehabilitation, Mid Block Improvements, and Intersection Improvements.**

The upper four inches of asphalt concrete will be replaced the entire segment. Mid block improvements the roadway will be widened and restriped to provide eight lanes, four in each direction. The widening and restriping will require additional right of way. Intersection Improvements are at La Palma Avenue and Santa Ana Canyon Road. La Palma to Santa Ana Bridge is the last section to be rehabilitated.

TABLE 5
ADT SUMMARY TABLE

			EXISTING					
			ADT	# OF LANES	PK HR PK DIR VOL		PK HR PK DIR LOS	
SEG	PM	LIMITS			EB	WB	EB	WB
1	0.0/2.5	L.A County Line/Harbor Bl.	42,000	5/6	2,340	2,200	D	C
2	2.45/4.0	Harbor Blvd./Berry Street	51,000	4	1,880	1,900	F0	E
3	4.0/5.5	Berry Street/SR-57	68,000	4/6	2,780	2,930	E	E
4	5.5/8.0	SR-57/Rose Drive	34,000	5/6	1,470	1,630	C	D
5	8.0/10.1	Rose Drive Lakeview Ave.	26,000	4/6	1,080	1,140	C	C
6	10.1/12.3	Lakeview Ave./Orangethorpe	45,000	2/4	18,20	1,860	C	C
7	12.3/12.8	Orangethorpe/Esperanza RD /Santa Ana Canyon	54,000	4/5	22,30	2,160	C	C

			2020 NULL					
			ADT	# OF LANES	PK HR PK DIR VOL		PK HR PK DIR LOS	
SEG	PM	LIMITS			EB	WB	EB	WB
1	0.0/2.5	L.A County Line/Harbor Bl.	68,000	6	3,780	3,800	F1	F1
2	2.45/4.0	Harbor Blvd./Berry Street	78,800	4	3,310	3,330	F0	F0
3	4.0/5.5	Berry Street/SR-57	103,900	6	4,700	4,350	F0	F3
4	5.5/8.0	SR-57/Rose Drive	62,200	6	2,850	2,760	E	D
5	8.0/10.1	Rose Drive Lakeview Ave.	61,800	6	2,900	3,100	E	F0
6	10.1/12.3	Lakeview Ave./Orangethorpe	79,000	2	3,720	3,760	E	E
7	12.3/12.8	Orangethorpe/Esperanza RD /Santa Ana Canyon	93,200	4	4,040	4,070	F0	F0

			2020 CONCEPT					
			ADT	# OF LANES	PK HR PK DIR VOL		PK HR PK DIR LOS	
SEG	PM	LIMITS			EB	WB	EB	WB
1	0.0/2.5	L.A County Line/Harbor Bl.	65,900	6	3,560	3,630	F0	F0
2	2.45/4.0	Harbor Blvd./Berry Street	67,100	4	3,890	3,840	F1	F1
3	4.0/5.5	Berry Street/SR-57	103,900	6	4,690	4,390	F0	F3
4	5.5/8.0	SR-57/Rose Drive	60,600	6	2,950	2,810	F3	E
5	8.0/10.1	Rose Drive Lakeview Ave.	61,400	6	3,030	2,900	F0	E
6	10.1/12.3	Lakeview Ave./Orangethorpe	79,700	6	3,380	3,530	D	D
7	12.3/12.8	Orangethorpe/Esperanza RD /Santa Ana Canyon	96,400	8	4,240	3,950	F0	E

State Route 90

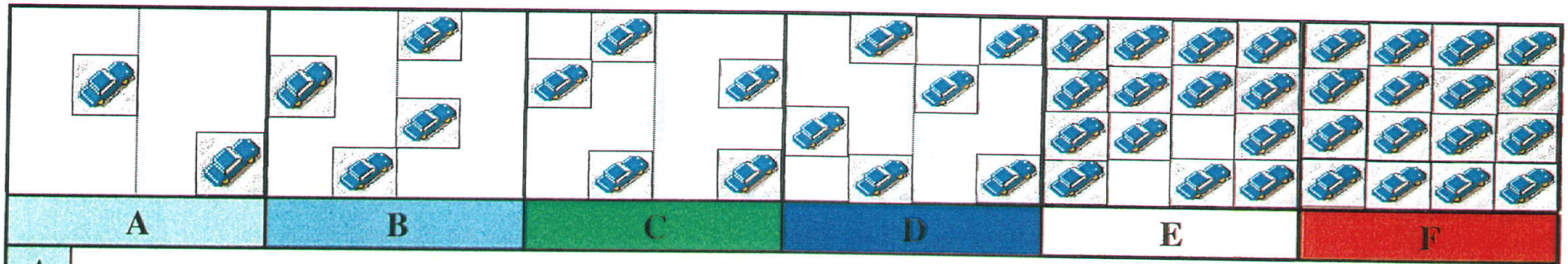
Table 6 - LOS Comparison

Post Mile	Description of Location	1997 LOS A.M. (EB)	1997 LOS P.M. (EB)	1997 LOS A.M. (WB)	1997 LOS P.M. (WB)	2020 Null LOS A.M. (EB)	2020 Null LOS P.M. (EB)	2020 Null LOS A.M. (WB)	2020 Null LOS P.M. (WB)	2020 Concept LOS A.M. (EB)	2020 Concept LOS P.M. (EB)	2020 Concept LOS A.M. (WB)	2020 Concept LOS P.M. (WB)
0.50	Beach Blvd (SR-39)	C	D	C	D	F2	F0	D	F2	F1	F0	D	F1
1.76	Euclid St	D	D	C	D	F3	F0	C	F3	F2	F0	C	F2
2.50	Harbor Blvd	F0	F0	E	F0	F0	F0	D	F0	F0	F0	D	F0
4.39	Brea Blvd	C	D	C	D	F0	F0	F0	F1	F0	F0	E	F1
5.19	State College Blvd	E	F0	D	F0	F3	F3	F0	F3	F3	F3	F3	F3
R5.45	Orange Freeway (SR-57)	C	D	D	C	F0	F0	F0	F0	F0	F0	F0	F0
6.58	Kraemer Blvd	B	C	C	C	F1	F0	F0	F3	F0	F0	F0	F2
7.27	Valencia Ave (SR-142)	B	F0	F1	C	F0	F0	F0	F0	D	F0	F0	F0
8.65	Bastanchury Rd	B	D	F0	C	E	F0	F0	F0	D	F0	F0	F0
9.97	Yorba Linda Blvd	B	C	D	C	D	C	C	D	C	C	C	C
11.15	Orchard\Kellogg Dr	B	C	C	B	B	B	B	C	B	B	B	B
12.28	Orangethorpe Ave	C	C	C	C	F0	D	C	F0	E	E	C	E
12.46	La Palma	C	D	D	D	F0	F0	D	F0	F0	F0	E	F0
12.83	Riverside Freeway (SR-91)												

APPENDICES

APPENDIX 1

Graphic Representation and Definition of Level Of Service



A	Freeflow speed. Vehicles are unimpeded in their ability to maneuver within traffic stream.
B	Reasonably freeflow speeds are generally well maintained. The ability to maneuver within traffic is slightly restricted.
C	Flow and speeds still at or near freeflow. Freedom to maneuver within traffic is noticeably restricted and lane changes require more vigilance.
D	Speeds begin to decline slightly with increasing flow. Freedom to maneuver within traffic is more noticeably restricted.
E	Flow rate that corresponds to **maximum capacity** of the facility. Maneuvering within the traffic stream is extremely limited. Some delay may occur.
F	Forced traffic flow. Speed and flow may drop to zero with high densities. Less than 20 mph. Considerable delay.

To reflect the duration of congestion (stop & go, speeds less than 20 mph), the LOS has been expanded to F0, F1, F2, and F3.

F0	0-1 Hour of congestion.
F1	1-2 Hours of congestion.
F2	2-3 Hours of congestion.
F3	More than 3 Hours of congestion.

TOPS LOS

Duration of LOS E (maximum flow rate, speeds 40 mph)

E0	0-1 Hour.
E1	1-2 Hours.
E2	2-3 Hours.
E3	More than 3 Hours.

APPENDIX 2

Traffic Data Tables

Route 90
Year 1997

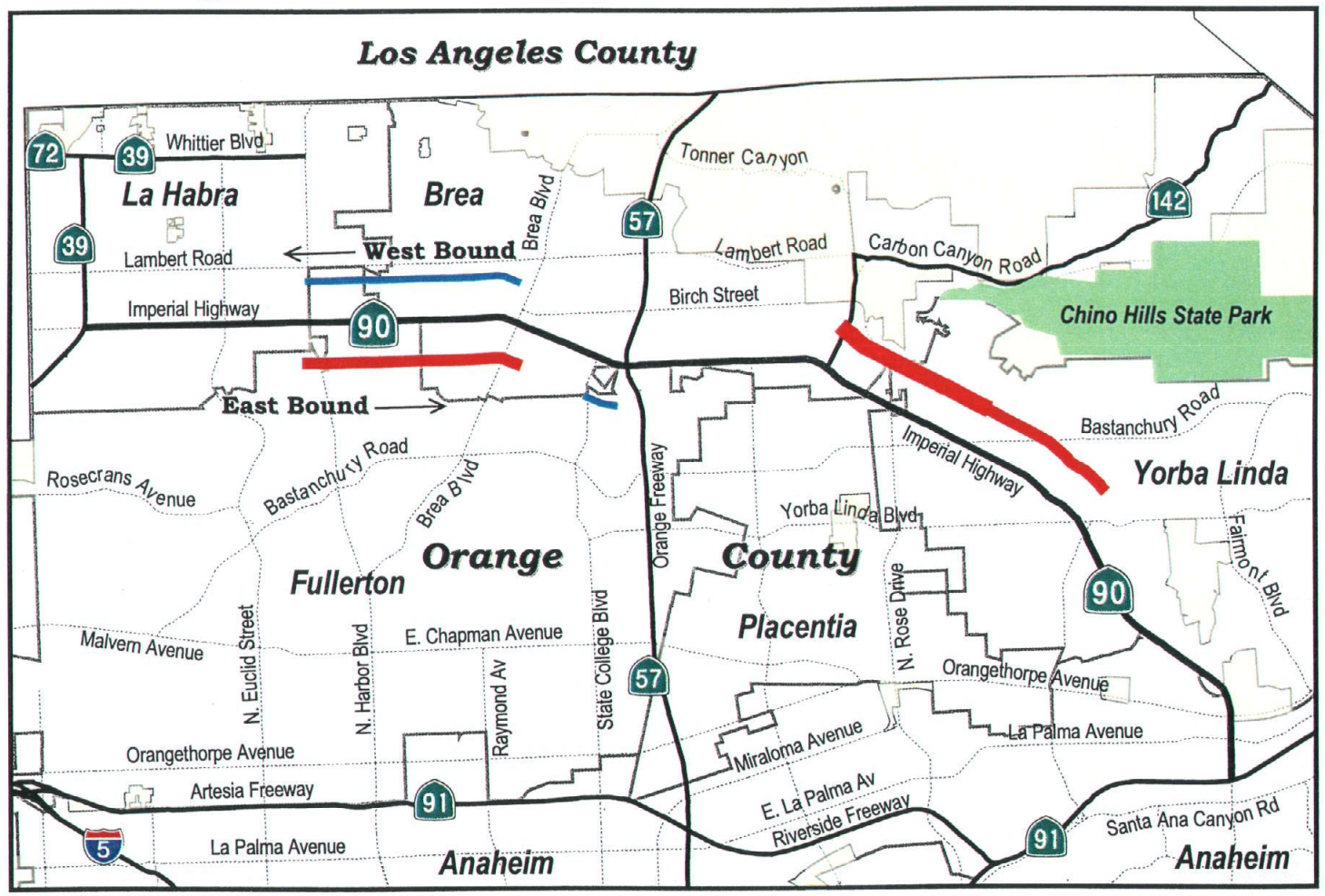
Post Mile	Decription of Location	No. Lanes	2-way ADT*	(1) 1 hr A.M Peak (EB)*	(2) 1 hr P.M Peak (EB)*	(3) 1 hr A.M Peak (WB)*	(4) 1 hr P.M Peak (WB)*	(1) V/C A.M Peak (EB)*	(2) V/C P.M Peak (EB)*	(3) V/C A.M Peak (WB)*	(4) V/C P.M Peak (WB)*	(1) LOS A.M Peak (EB)*	(2) LOS P.M Peak (EB)*	(3) LOS A.M Peak (WB)*	(4) LOS P.M Peak (WB)*
0.50	Beach Blvd (SR-39)	3	42,000	1,750	2,340	2,020	2,200	0.65	0.87	0.75	0.81	C	D	C	D
1.76	Euclid St	3	47,000	2,280	2,310	1,970	2,390	0.84	0.86	0.73	0.89	D	D	C	D
2.50	Harbor Blvd	2	51,000	1,880	1,880	1,800	1,990	1.04	1.04	1.00	1.11	F0	F0	E	F0
4.39	Brea Blvd	3	54,000	1,910	2,170	2,050	2,170	0.71	0.80	0.76	0.80	C	D	C	D
5.19	State College Blvd	3	68,000	2,610	2,780	2,470	2,930	0.97	1.03	0.91	1.09	E	F0	D	F0
R5.45	Orange Freeway (SR-57)	3	50,000	1,470	2,150	2,270	1,880	0.54	0.80	0.84	0.70	C	D	D	C
6.58	Kraemer Blvd	3	39,000	1,290	1,760	1,880	1,620	0.48	0.65	0.70	0.60	B	C	C	C
7.27	Valencia Ave (SR-142)	2	35,000	780	1,870	2,280	1,260	0.43	1.04	1.27	0.70	B	F0	F1	C
8.65	Bastanchury Rd	2	31,000	690	1,660	2,020	1,110	0.38	0.92	1.12	0.62	B	D	F0	C
9.97	Yorba Linda Blvd	1	34,000	920	1,470	1,630	1,260	0.46	0.74	0.82	0.63	B	C	D	C
11.15	Orchard\Kellogg Dr	1	26,000	760	1,080	1,140	960	0.38	0.54	0.57	0.48	B	C	C	B
12.28	Orangethorpe Ave	3	45,000	1,820	1,800	1,560	1,860	0.67	0.67	0.58	0.69	C	C	C	C
12.46	La Palma	3	54,000	2,000	2,230	2,070	2,160	0.74	0.83	0.77	0.80	C	D	D	D
12.83	Riverside Freeway (SR-91)														

Route 90

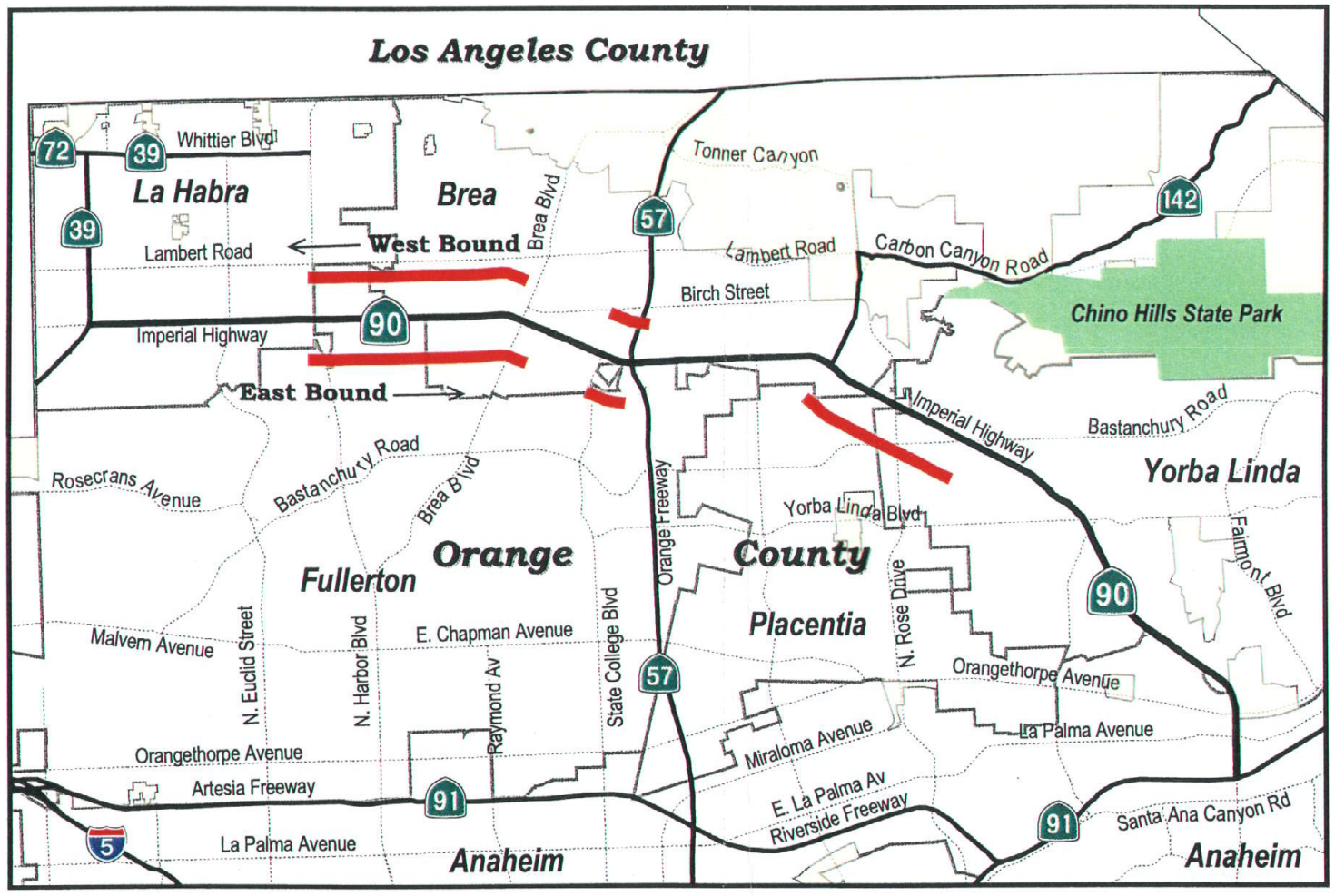
Route Concept Report

Year 1997 Level of Service (LOS)

Morning Peak



Afternoon Peak



Legend

90 State	F3	F1	E
5 Interstate	F2	F0	

N
W E
S

No Scale

Caltrans District 12 GIS UNIT

07/18/2000

Route 90
2020 CONCEPT

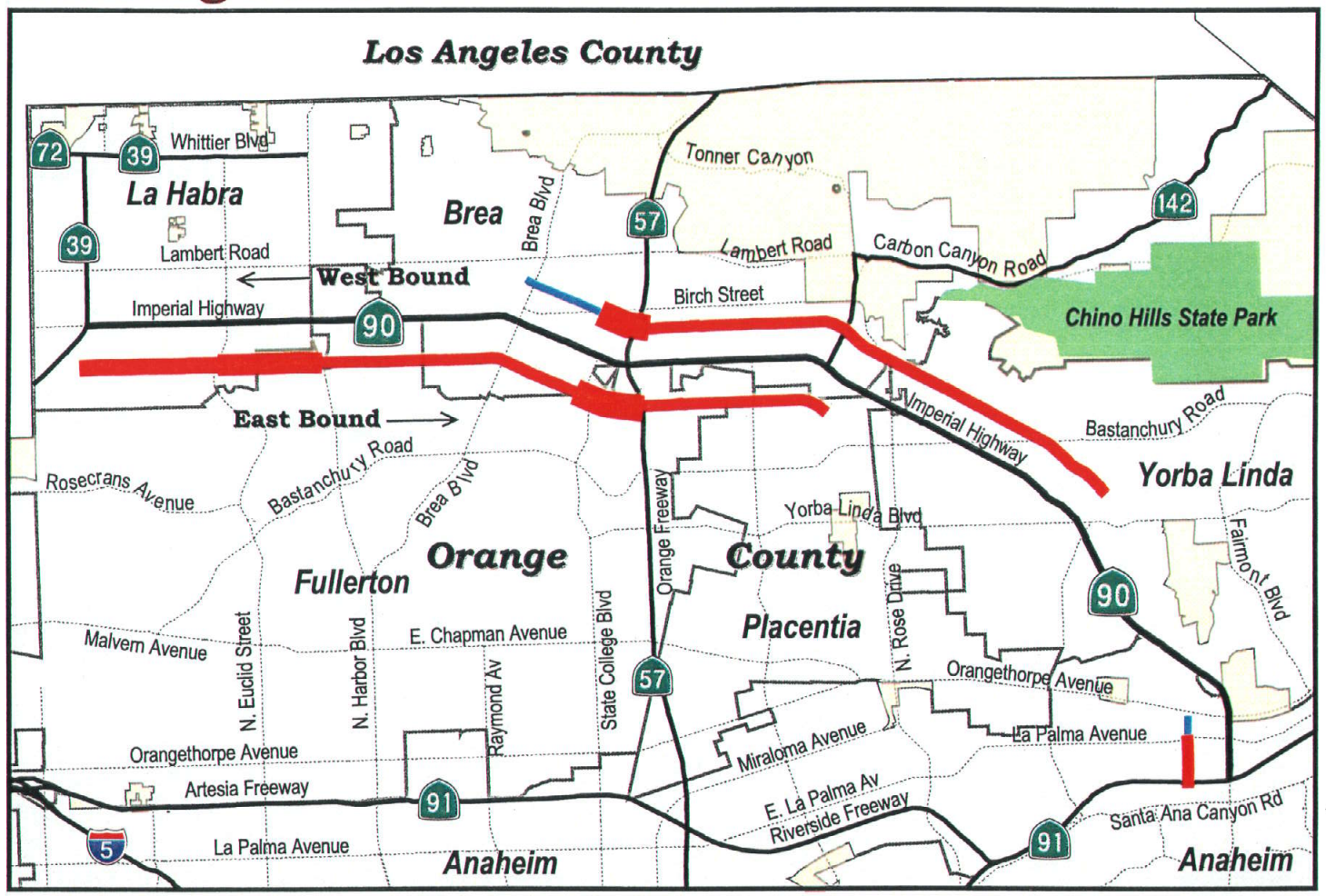
Post Mile	Decription of Location	No. Lanes	2-way ADT*	(1) 1 hr A.M Peak (EB)*	(2) 1 hr P.M Peak (EB)*	(3) 1 hr A.M Peak (WB)*	(4) 1 hr P.M Peak (WB)*	(1) V/C A.M Peak (EB)*	(2) V/C P.M Peak (EB)*	(3) V/C A.M Peak (WB)*	(4) V/C P.M Peak (WB)*	(1) LOS A.M Peak (EB)*	(2) LOS P.M Peak (EB)*	(3) LOS A.M Peak (WB)*	(4) LOS P.M Peak (WB)*
0.50	Beach Blvd (SR-39)	3	65,900	3,560	3,170	2,230	3,630	1.32	1.17	0.83	1.34	F1	F0	D	F1
1.76	Euclid St	3	67,100	3,890	2,840	1,850	3,840	1.44	1.05	0.69	1.42	F2	F0	C	F2
2.50	Harbor Blvd	3	78,200	3,280	2,870	2,300	3,200	1.21	1.06	0.85	1.19	F0	F0	D	F0
4.39	Brea Blvd	3	79,700	3,270	3,320	2,700	3,430	1.21	1.23	1.00	1.27	F0	F0	E	F1
5.19	State College Blvd	3	103,900	4,100	4,690	3,990	4,390	1.52	1.74	1.48	1.63	F3	F3	F3	F3
R5.45	Orange Freeway (SR-57)	3	77,200	2,760	3,240	3,260	3,060	1.02	1.20	1.21	1.13	F0	F0	F0	F0
6.58	Kraemer Blvd	3	77,200	3,200	3,350	3,000	3,770	1.19	1.24	1.11	1.40	F0	F0	F0	F2
7.27	Valencia Ave (SR-142)	3	60,600	2,270	2,950	2,790	2,810	0.84	1.09	1.03	1.04	D	F0	F0	F0
8.65	Bastanchury Rd	3	61,400	2,180	3,030	2,900	2,770	0.81	1.12	1.07	1.03	D	F0	F0	F0
9.97	Yorba Linda Blvd	2	66,200	2,700	2,800	2,370	3,000	0.68	0.70	0.59	0.75	C	C	C	C
11.15	Orchard\Kellogg Dr	2	45,900	1,810	1,880	1,590	2,010	0.45	0.47	0.40	0.50	B	B	B	B
12.28	Orangethorpe Ave	4	79,700	3,380	3,350	2,630	3,530	0.94	0.93	0.73	0.98	E	E	C	E
12.46	La Palma	4	96,400	3,920	4,240	3,540	3,950	1.09	1.18	0.98	1.10	F0	F0	E	F0
12.83	Riverside Freeway (SR-91)														

Route 90

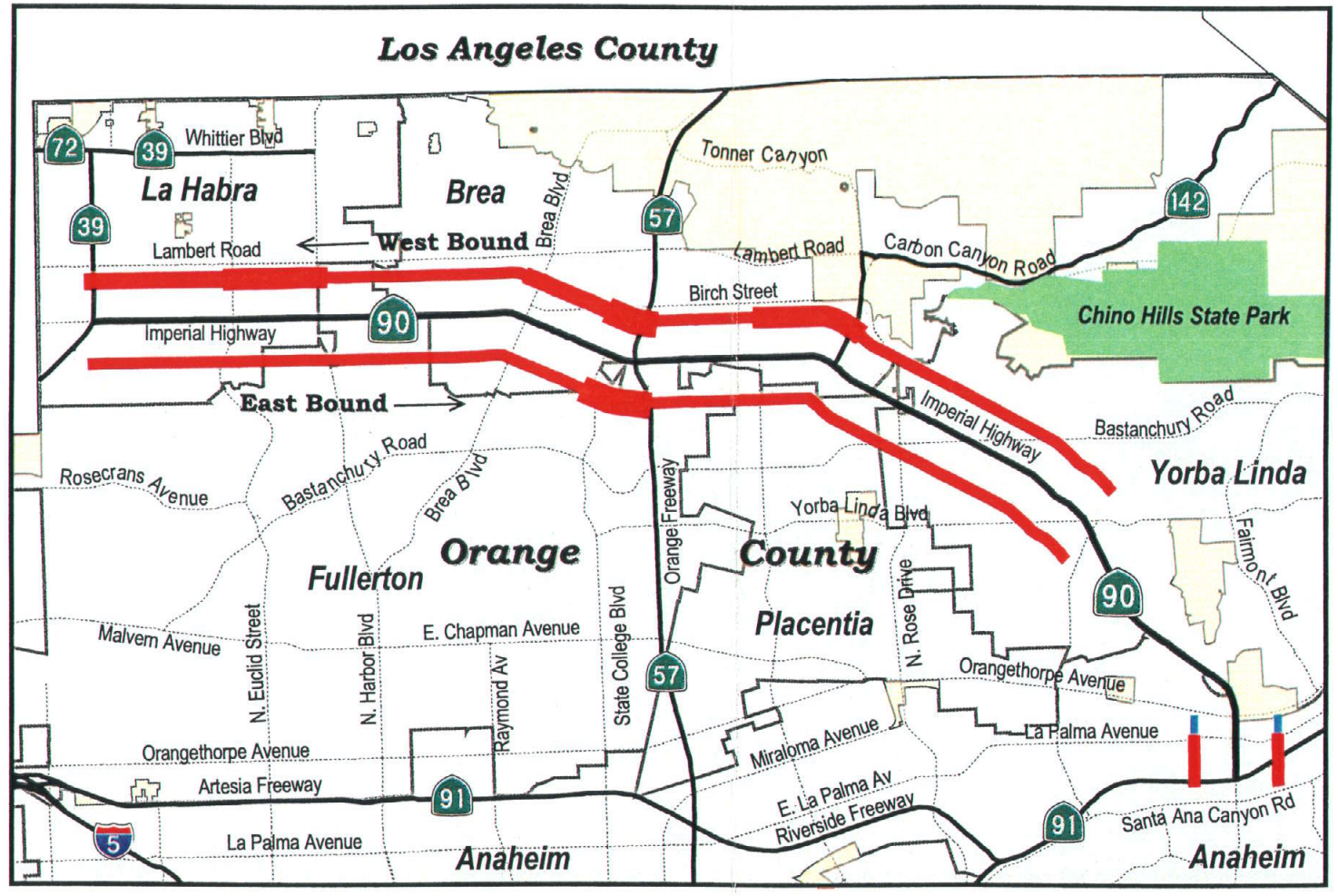
Route Concept Report

Year 2020 Level of Service (CONCEPT)

Morning Peak



Afternoon Peak



Legend

90 State	F3		F1	
				E
5 Interstate	F2		F0	

N
W E
S

No Scale

Caltrans District 12 GIS UNIT

07/18/2000

Route 90
2020 NULL

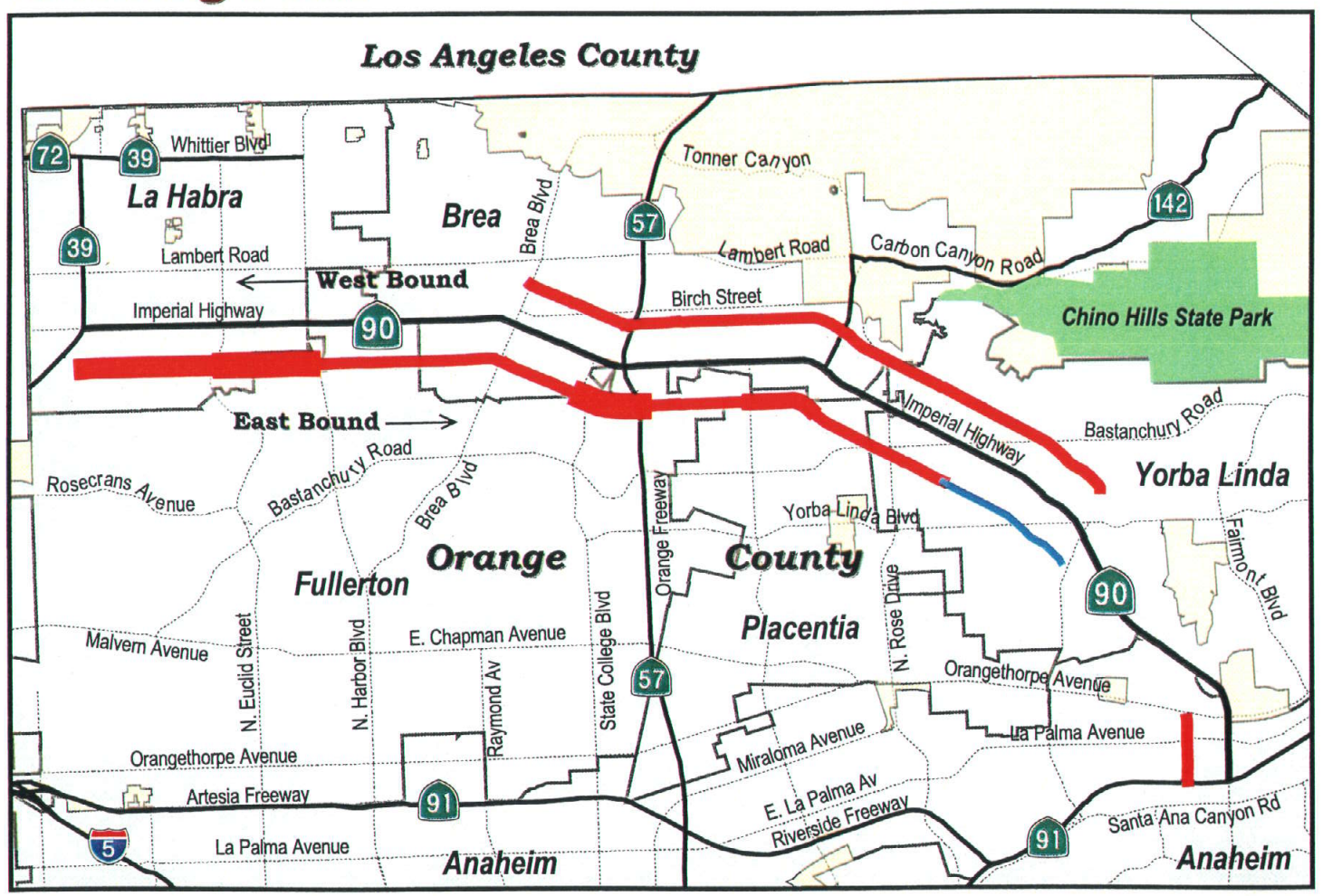
Post Mile	Decription of Location	No. Lanes	2-way ADT*	(1) 1 hr A.M Peak (EB)*	(2) 1 hr P.M Peak (EB)*	(3) 1 hr A.M Peak (WB)*	(4) 1 hr P.M Peak (WB)*	(1) V/C A.M Peak (EB)*	(2) V/C P.M Peak (EB)*	(3) V/C A.M Peak (WB)*	(4) V/C P.M Peak (WB)*	(1) LOS A.M Peak (EB)*	(2) LOS P.M Peak (EB)*	(3) LOS A.M Peak (WB)*	(4) LOS P.M Peak (WB)*
0.50	Beach Blvd (SR-39)														
		3	68,200	3,780	3,310	2,220	3,800	1.40	1.23	0.82	1.41	F2	F0	D	F2
1.76	Euclid St														
		3	69,200	4,140	2,910	1,900	3,950	1.53	1.08	0.70	1.46	F3	F0	C	F3
2.50	Harbor Blvd														
		3	78,800	3,310	2,880	2,270	3,330	1.23	1.07	0.84	1.23	F0	F0	D	F0
4.39	Brea Blvd														
		3	79,800	3,280	3,310	2,740	3,470	1.21	1.23	1.01	1.29	F0	F0	F0	F1
5.19	State College Blvd														
		3	103,900	4,250	4,700	3,030	4,350	1.57	1.74	1.12	1.61	F3	F3	F0	F3
R5.45	Orange Freeway (SR-57)														
		3	75,300	3,060	3,010	3,170	3,230	1.13	1.11	1.17	1.20	F0	F0	F0	F0
6.58	Kraemer Blvd														
		3	77,300	3,430	3,110	2,930	4,010	1.27	1.15	1.09	1.49	F1	F0	F0	F3
7.27	Valencia Ave (SR-142)														
		3	62,200	2,720	2,850	2,730	2,760	1.01	1.06	1.01	1.02	F0	F0	F0	F0
8.65	Bastanchury Rd														
		3	61,800	2,580	2,900	2,730	3,100	0.96	1.07	1.01	1.15	E	F0	F0	F0
9.97	Yorba Linda Blvd														
		2	65,000	3,100	2,540	2,160	3,270	0.78	0.64	0.54	0.82	D	C	C	D
11.15	Orchard\Kellogg Dr														
		2	45,300	2,070	1,720	1,460	2,190	0.52	0.43	0.37	0.55	B	B	B	C
12.28	Orangethorpe Ave														
		4	79,000	3,720	3,140	2,560	3,760	1.03	0.87	0.71	1.04	F0	D	C	F0
12.46	La Palma														
		4	93,200	4,040	3,940	3,260	4,070	1.12	1.09	0.91	1.13	F0	F0	D	F0
12.83	Riverside Freeway (SR-91)														

Route 90

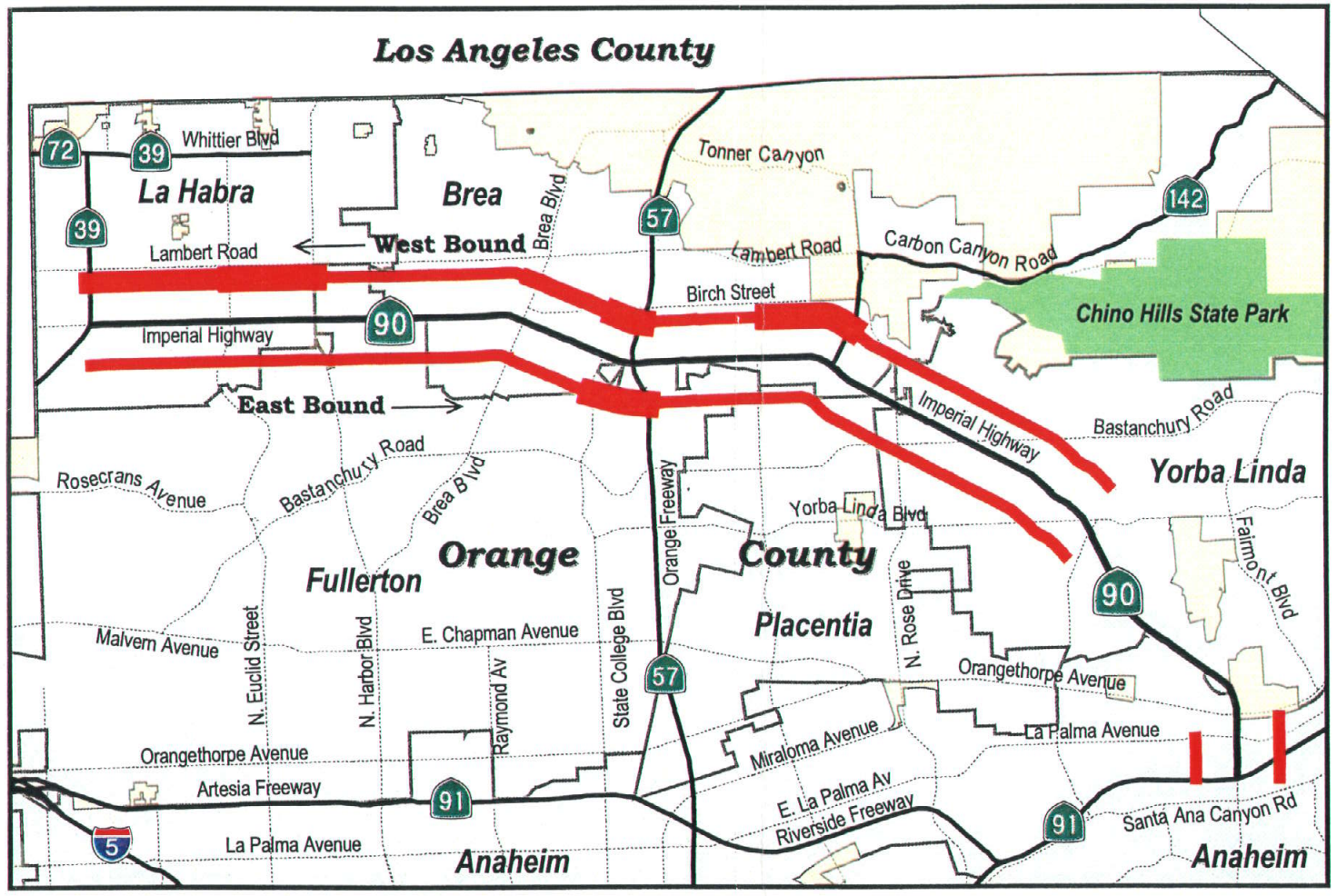
Route Concept Report

Year 2020 Level of Service (NULL)

Morning Peak



Afternoon Peak



Legend

90 State	F3		F1	
				E
5 Interstate	F2		F0	

N
W E
S

No Scale

Caltrans District 12 GIS UNIT

07/18/2000

APPENDIX 3

Bikeway Classifications

Class I Bikeway (Bike Path):	Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.
Class II Bikeway (Bike Lane):	Provides a restricted right-of-way (striped lane) for the exclusive or semi-exclusive use of bicycles with through travel by motorized vehicles or pedestrians prohibited but with cross flows by pedestrians and motorists permitted.
Class III Bikeway (Bike Route):	Provides for shared use with pedestrian or motor vehicle traffic.

APPENDIX 4

New Technology

Intelligent Transportation Systems (ITS)
There are currently two pilot projects on-going in Orange County which may be considered as Intelligent Transportation System (ITS) projects. The first of these is the Mobile Video Surveillance and Communications Project. This project locates portable trailers at critical locations along the highway to monitor flow conditions on the mainline and interactively regulate on-ramp traffic flow. The second ITS project is the Integrated Freeway Ramp Meter/Arterial Adaptive Signal Control Project. This project will allow for the joint monitoring of the I-5 and I-405 interchange area and Alton Parkway by the District and the City of Irvine. The intent of both of these projects is to apply several new technologies in an effort to optimize traffic flow.

Intelligent Vehicle Highway Systems (IVHS)
These systems utilize what is also commonly referred to as smart systems. There are three basic components necessary to implement a fully functional IVHS. These three are discussed below.

- **Advanced Traveler Information Systems (ATIS)**
  This type of system would provide the motorist with real-time traffic routing information. This information could be provided to the motorist using virtually any medium including television, radio, telephone and personal computer. Information could be routed to offices, homes or even directly to an in-vehicle device.

- **Advanced Traffic Management Systems (ATMS)**
  These systems include the potential use of AVI (Automatic Vehicle Identification) systems and ATIS for electronic detection and interface with real-time TOS information. Other areas of research include bottleneck evaluations and the policies and procedures-to be required for automated highway operation.

- **Automated Vehicle Control Systems (AVCS)**
  The greatest potential for improving highway safety within the IVHS technologies is the AVCS. These systems can electronically enhance or automate driving functions. There are two basic types of driving control offered for use of this new technology. First is the lateral control system which controls vehicle steering, and the second is the longitudinal system which automates vehicle spacing, or the distance between vehicles. PATH (see below) is currently researching both types of driving control systems. It is anticipated that these systems are more long term innovations but do have a high potential for feasible implementation.

Showcase for IVHS - The Priority Corridor

The Priority Corridor proposal is an endeavor to demonstrate the actual full potential of the transportation network with all possible new technologies in place and integrated. This comprehensive and coordinated approach should reveal new capabilities of the transportation system. It is meant to serve as a living laboratory for new developments in transportation.

The Priority Corridor is geographically described as: bounded on the north by SR-126 and I-210; on the east by SR-71, I-15 and I-215; on the south by the U.S. border with Mexico, the Otay Mesa Border crossing and SR-905; and on the west by the Pacific Ocean. This corridor includes a myriad of intermodal systems for moving people and goods. It is also an air quality non-attainment area and experiences severe congestion. The corridor is host to over half the population and jobs in California. It is being viewed as a Showcase for IVHS. This plan proposes to take full advantage of four Transportation Management Centers (TMC's), IVHS and Intermodal Transportation Management and Information System (ITMIS).

Consequently, the numerous and diverse difficulties experienced within the corridor area render it an ideal proving ground for new technology. These factors also provide an excellent opportunity to evaluate intermodal technologies, traffic management techniques, traveler information systems, passenger and fleet management systems, as well as freight vehicle control systems. Deployment and implementation of these different technologies will attempt to optimize and coordinate freeway and street operations with public and private transportation systems within the corridor. A cooperative effort among Caltrans, CHP, regional, county and city governments and the MPOs is essential to the success of Priority Corridor operations.

New Technology Research and Development

The Program on Advanced Technology for the Highway (PATH) has been established in cooperation with Caltrans and the California Institute of Transportation Studies. PATH researches new technologies such as warning and avoidance systems and electronic braking. PATH also analyzes ATIS, IVHS and ATMS developments for costs and feasibility.

The District is committed to working with cities, the county, regional agencies, other state agencies, and academic institutions on the research, development and implementation of new technology in the development of the transportation system. The implementation of new technology is necessary to obtain optimum efficiency of the system.

APPENDIX 5

Urban Freeway Standards

In April 1992 the Transportation Planning Branch completed a Transportation Operation Systems (TOS) Plan for District 12. The TOS Plan outlined the traffic system management elements required for efficient operation of the state highway system. Following is an excerpt from that report.

> "The goal of the Plan is to develop ultimate urban and regional freeways and highways, defined as transportation corridors, which have all system elements satisfied and will provide the following benefits:
>
> - Operate facilities at maximum efficiency
> - Minimize and manage travel delay and congestion
> - Disseminate motorist information using advanced technologies.
>
> The typical urban freeway operations plan includes:
>
> - Electronic Loop Detectors
> - Closed Circuit Television (CCTV)
> - Changeable Message Signs (CMS)
> - Highway Advisory Radio (HAR)
> - Freeway Ramp Meters
> - Fiber Optic Communications System
> - Traffic Management Center (TMC)
> - Major Incident Response Teams
> - Motorist Call Boxes
> - Freeway Service Patrols (FSP)
> - Airborne Surveillance
> - Smart Corridor Interface with Local Agencies
> - High Occupancy Vehicle (HOV) Facilities.
> - Maintenance Pullouts
>
> Methods to achieve maximum efficiency on transportation facilities include: ramp metering, freeway incident detection and confirmation (CCTV surveillance, etc.), freeway incident response teams, and FSP. Methods to disseminate motorist information include provision of real-time information on traffic conditions to allow motorists to make informed route decisions by using CMS, HAR, In-Vehicle Navigation Systems and teletext services (Commuter TV). Management of data includes monitoring technologies such as loop detectors and CCTV."

APPENDIX 6

Year 1997 System Configuration

Legend :

Mixed Flow No. of Lanes + HOV No. of Lanes (Directional)
June 2000

Caltrans District 12 GIS UNIT

APPENDIX 6

Concept System Configuration

Legend :

Mixed Flow No. of Lanes + HOV No. of Lanes (Directional)
May 2000

Caltrans District 12 GIS UNIT

APPENDIX 6

Year 2020 Null System Configuration

Legend :

Mixed Flow No. of Lanes + HOV No. of Lanes
(Directional)
May 2000

Caltrans

District 12 GIS UNIT

APPENDIX 7

Imperial Highway: SR 90
Sensitive Species & Habitats
8/30/1999 Revision

SR-90 **PM .50 – 5.45**
Coastal Cactus Wren: ½ km South of 90
California Gnatcatcher: 1km East of Freeway
*Santa Ana River Woolystar: 90/91 Santa Ana River (presumed extinct)
Santa Ana Sucker: present upstream in Santa Ana River

*Within Caltrans Right of Way

Possible:

Plants:
- Braunton's Milk Vetch
- Seaside Calandrinia
- Catalina Mariposa Lily
- Many-stemmed Dudleya
- Palmer's Grapplinghook
- Southern Tarplant
- Smooth Tarplant
- Robust Prickly Poppy
- San Fernando Valley Chorizanthe
- L.A. Sunflower
- Heart-leaved Pitcher Sage
- Valley Sagittaria

Fish:
- Santa Ana Three-spined Sickleback
- Santa Ana Speckled Dace
- Arroyo Chub

Amphibians:
- California Red-legged Frog
- Western Spadefoot Toad

Reptiles:
- Orange-throated Whiptail Lizard
- Coastal Western Whiptail Lizard
- San Diego Banded Gecko
- Red Diamond Banded Gecko
- Red Diamond Rattlesnake
- San Diego Mountain Kingsnake
- Coastal Rosy Boa
- San Diego Horned Lizard
- Coast Patch-nosed Snake
- Two-striped Garter Snake

Mammals:
- Northwestern San Diego Pocket Mouse

Southern Marsh Harvest Mouse
Stephan's California Vole

Butterflies and Moths:

Dun Skipper
Hermes Copper Butterfly
Wright's Checkerspot Butterfly
Callippe Silverspot Butterfly

Birds:

Bald Eagle
Peregrine Falcon
White-faced Ibis
Ferruginous Hawk
Swainson's Hawk
Mountain Plover
Long-billed Curlew
Loggerhead Shrike
California Horned Lark
Southern California Rufous-crowned Sparrow
Large-billed Savannah Sparrow
Great Blue Heron
Black-shouldered Kite

Beetles:

Greenest Tiger Beetle

APPENDIX 8

References

Annual Average Daily Truck Traffic on the California State Highway System (1997)

California State Highway Log- District 7, District 8 and District 12 (1994)

Caltrans 1997 Traffic Volumes on California State Highways

FastForward OCTA (7/1998)

Imperial Highway, SR-90 Superstreet Improvements Program June 7,1993

Imperial Highway (Route 90) Smart Street Project Final Initial Study Negative Declaration 1994

OCEMA Existing Bikeways Map (1992)

OCEMA Traffic Flow Map Showing ADTs (1997)

SCAG Regional Transportation Plan CommunityLink (1998)

Screencheck Grade Separation of SR-90 (Imperial Highway) at Orangethorpe Avenue-Esperanza Road/BNSF Railroad Intersection

Traffic Accident Surveillance and Analysis System (TASAS)

Transportation System Development Plan District 12 (7-1999)

Traffic Volumes on California State Highways (1997)

ACRONYM GLOSSARY

ADT - Average Daily Traffic
ATIS - Advanced Traveler Information Systems
ATMS - Advanced Traffic Management Systems
AVCS -Automated Vehicle Control Systems
AVI – Automatic Vehicle Identification

BNSF- Burlington Northern Santa Fe Railroad

CBD - Central Business District
CCTV - Closed Circuit Television
CHP - California Highway Patrol
CMS - Changeable Message Sign

DOD - Department of Defense
DSMP - District System Management Plan

EB - Eastbound
EIR - Environmental Impact Report
ETC - Eastern Transportation Corridor

FAA - Federal Aviation Administration
FCR - Flexible Congestion Relief
FSP - Freeway Service Patrol
FTC - Foothill Transportation Corridor

HAR -Highway Advisory Radio
HOT - High Occupancy Toll
HOV - High Occupancy Vehicle

ITS - Intelligent Transportation Systems
ITMIS - Intermodal Transportation Management and Information System.
ITMS - Intermodal Transportation Management System
IVHS - Intelligent Vehicle Highway Systems

LARTS - Los Angeles Regional Transportation Study
LOS - Level Of Service
LOSSAN - Los Angeles/San Diego

MPAH - Master Plan of Arterial Highways
MPO - Metropolitan Planning Organization

NB - Northbound
NHS - National Highway System

OCTA - Orange County Transportation Authority
OHC - Other Highway Construction

PATH – Partners for Advanced Transit and Highways
PM - Post Mile
PPNO - Planning and Program Number
PSR - Project Study Report
PDSD Planning Development Services Department
RAS - Rehabilitate and Safety
RCR - Route Concept Report
RME - Regional Mobility Element
RTIP - Regional Transportation Improvement Plan
RTP - Regional Transportation Plan

SANDAG - San Diego Association of Governments
SB - Southbound
SCAG - Southern California Association of Governments
SCRRA - Southern California Regional Rail Authority
SHELL - Subsystem of Highways for the movement of Extra Legal Loads
SHOPP - State Highway Operation and Protection Program
SJHTC - San Joaquin Hills Transportation Corridor
SR - State Route
STAA - Surface Transportation Assistance Act
STIP - State Transportation Improvement Program
STRAHNET – STRategic Highway NETwork

TASAS - Traffic Accident Surveillance and Analysis System
TMC - Transportation Management Center
TOPS – Traffic Operations Strategies
TOS - Traffic Operation System
TSM - Traffic Systems Management
TSM - Transportation System Management

UCI - University of California Irvine

WB – Westbound